Emoticons: A corpus-based analysis of their forms and functions

Abstract

Emoticons were the focus of this study. They are defined here as signs that visualize physical aspects of the communicative situation. Lists of them can be found on the Internet, where they are accompanied by ascribed meanings.
Although emoticons are used frequently – especially in computer-mediated communication – we do not yet have clear insight into their functions. We also do not know whether the different forms that have been developed recently serve the same functions equally. Some or all are supposed to be indicative of feelings and emotions; some and maybe all might help to convey the intended tone of a message; and some might be used simply as embellishment. Moreover, they might create misunderstandings. They can also fulfill different functions simultaneously. A review of previously conducted research on emoticons shows that a framework for the classification of their functions and insight into the relationships between forms and functions are lacking.
We aimed to fill this gap. We propose an instrument for the functional analysis of emoticons, based on insights from three strands in discourse analysis: speech act theory, politeness theory, and Gumperz' work on contextualization cues.
We applied this instrument to a collection of 200 facial emoticons, embedded in their contexts and produced in naturally occurring computer-mediated communication of young women.
We found that emoticons function either independently as speech acts, more specifically as expressive speech acts (71.0%), or they function in the context of textually expressed speech acts as 'embellishments' or as politeness strategies (29.0%). In addition, they can function as contextualization cues, i.e., they supply context and prevent misunderstanding (18.0%). The majority of emoticons have additional value in the exchange and cannot simply be removed.
We also found a relationship between the forms and functions.
We checked whether contextual variables such as the topic of the chat or the mood of the interaction influenced our results. Most variables had no effect. However, emoticons appear to be less adequate in a business context than in a personal context.
Limitations of the study and directions for future research are discussed.

Emoticons: A corpus-based analysis of their forms and functions [1]

1 Introduction

The communicative repertoire of the human species has been extended recently with emoticons. Emoticons can provisionally be defined as graphic symbols or combinations of keyboard characters that visualize physical aspects of the communicative situation. As communicative utterances, they have a form (i.e., an *observable* aspect), a meaning (i.e., they *denote* to conceptual categories and relationships between categories), and a function (i.e., they *do* something in an exchange). Below is a message with some examples:

(1) *Me, I'm a fun, at times somewhat shy, bigmouth*
Often I do not know very well how to behave…
At such times I come across a bit bitchy and arrogant… nose in the air and tits straight ahead
But in the meantime I am always practicing how to talk, sounds weird but it's true
What type of person are you and how do you deal with it?

Emoticons also occur in formal contexts, for example:

(2) *Can somebody give me the email address and telephone number of Angela Verdoncke?*
You can mail it to ilsekramers@hotmail.com
Thanks

Emoticons originated in computer-mediated communication, but their use is not limited to this context. Initially, emoticons were a limited set of carriers of meaning which could be produced using mainly non-alphabetical characters on the keyboard which had to be read sideways, for example, :-) and :-((Sanderson, 1993). Later, a huge number of graphic symbols came into being, as exemplified in Figure 1:

Figure 1: The emoticons and the keystrokes to produce them on FOK!, a discussion list for Dutch adolescents (http://www.fok.forum.nl/).

Why study emoticons? Users consider them to be funny and suppose that they enliven a text-only message. They do not make a problem of them. However, for an analyst and linguist it is quite puzzling that these seemingly superficial embellishments of messages have permeated computer-mediated communication, and even more than that: they abound in ordinary life. A closer look reveals that they are more than simple pictures. Complicated functions come to the fore when they are analyzed from discourse-analytic perspectives. The Internet has, therefore, bred a new form of

communication, which deserves our attention because users exploit it in a more intricate manner than they – and many scholars up to now – are aware of.
In this study a collection of 200 emoticons, embedded in their contexts of use, was analyzed in respect of form and function. The main questions were the following:
1 What communicative functions do emoticons fulfill? For example, are they used simply to embellish a message, do they give relevant information, and/or do they prevent or create misunderstandings?
2 Is there a relationship between the form of the emoticon used (for example, the smiley vs. the winkey face) and its communicative functions (for example, expressing emotions vs. creating a common ground for understanding of the message)?
The study was restricted to facial emoticons spontaneously produced by young women, because the analysis might otherwise have had too broad and diverse an empirical object.

2 Meanings and functions of emoticons

The analysis of the function of emoticons is not without pitfalls. First, it requires that we know what they mean, i.e., which conceptual categories they denote. However, the interpretation of emoticons is not straightforward. Do they have a 'literal' or 'referential' meaning which could be laid down in a dictionary and which is basic for their interpretation in different contexts? Is there agreement about their meanings in different contexts? At the moment, we do not have answers to these questions. Van de Graaf (2003) provides an inventory of the meanings attached to emoticons in the chat program MSN Messenger 4.5 by the program itself and by 15 subjects. Table 1 shows what he found for three common emoticons.

Table 1: Some emoticons and the meanings attached to them by the chat program MSN Messenger 4.5 and by 15 subjects

Emoticon	MSN	Subjects	
	Smiley says Oh really? Surprised smiley	1	Oh really? I'm surprised
		2	Oh
		3	Surprise
		4	Oooh, too bad
		5	Surprised
		6	Huh?? Shocking!!
		7	Are you serious?
		8	Surprised.
		9	Stunned, really surprised
		10	Are you really serious?
		11	Oh, that's horrible
		12	Warning, watch out
		13	Now what? Ooooohhhh? oh oh??
		14	You indicate that you're surprised or didn't know something
		15	That's surprising, oh??
	Winkey smiley. Winkey face	1	Wink of the eye
		2	Ok Fine
		3	Don't take what I just said serious
		4	I'm kidding!! Don't take me too serious.
		5	I'm kidding
		6	Conspiratorial, when you have fun together with some inside joke

		7	Naughty move
		8	Eyewink
		9	Wink of the eye, I'm kidding!
		10	You got it all worked out
		11	NOT!!
		12	Say something with a wink of the eye, indicate you're joking
		13	Do something behind someone's back
		14	You indicate you agree with someone, a type of greeting
		15	Wink of the eye
	Grumpy smiley. Confused smiley	1	Right/ Yeah/ Sure (ironic) I'm a bit confused.
		2	Bummer
		3	You're kidding, right?
		4	Huh? I don't get it
		5	I'm scared
		6	If you're not getting something
		7	Indicate your mood is so-so
		8	Groggy / hangover
		9	Duh! I don't get it at all.
		10	Don't wanna.
		11	I dunno
		12	Show you've been beaten
		13	Totally lost it
		14	You show you're bummed
		15	Don't feel well.

Table 1 shows that the meanings given in MSN are very close to the physical appearances of the emoticons, leaving open many options for interpretation. Moreover, it shows that the meanings given to emoticons by subjects vary considerably.
Second, the analysis of the functions of emoticons requires a conceptual framework with the terms for a classification of the functions that emoticons can fulfill in an exchange. They can have many different functions, as a global inspection of larger corpora (Van de Graaf, 2003; Van der Loo, 2004; Sinke, 2004) of spontaneously (i.e., not with the aim of investigation) produced emoticons shows:

1 Expressing emotions of the speaker/sender S; for example,

(3) (S just described herself as a 'disease magnet')
But I keep laughing despite it all

See also the examples in (1).

2 Adding a symbolic gift to a request:

(4) (S suffers from self-injuries)
I'd appreciate feedback from you, or pointers that would help me 

See also example (2).

3 Supporting an interaction participant:

(5) Have only read what Khaslan said and support her for the time bein

4 Showing/asking for sympathy:

(6) Am single and am looking for a fun guy who can handle me

5 Mitigating a point of criticism:

(7) Is he so busy that he can't even spare a little 'hi' after all this time

6 Showing understanding:

(8) Chatter 1: Does anyone have some good pointers on how to get a firmer butt?
Chatter 2: Sit on your hands and knees, and then keep your leg at a 90 degrees angle, and move it upward and sideways, just like a dog peeing against a tree. Repeat this 50 times, for both legs

7 Supposing/raising/claiming common ground:

(9) Chatter 1: How do you deal with the fact that you earn more than your partner?
Chatter 2: I was mindful of him when buying things, and if it was the case again that he didn't have any money, we used to do things that don't cost anything, which can also be really fun.

8 Signalling that the verbal message need not be taken seriously / the speaker is not fully committed to his/her words:

(10) Chatter 1: Did you know that I had been out on a date with a girl…?
Chatter 2: Who, you? Finally! But that's great for you. Who, what where?
Chatter 1: Karin
Chatter 2: How was it?
Chatter 1: Oh, quite fun, but that was all
Chatter 2: Wouldn't expect anything different, a light like you ..

9 Signalling a non-literal, dual meaning / changing the activity type:

(11) (A proposal, done by a boy at a party, to go outside and/or to bill and coo)
Hey, you wanna go outside check out the mopeds? Or would you rather do it inside?

10 Invoking vagueness:

(12) (A friend of the chatters is going to make a journey around the world)
Chatter 1: His mom didn't know it yet, I bet she'll stress out
Chatter 2: Of course, they all do
Chatter 1: Yeah, but HE and HIS mom…

11 Performing a syntactic function:

(13) That makes me

The functions listed above are not exclusive. In the example below, the emoticon fulfills a number of functions simultaneously: it expresses the emotions of the speaker/sender while it also signals that S is not serious:

(14) Chatter 1: My stepdad has his birthday today.
Chatter 2: Congrats! MY stepdad had his operation today, for his groin problem.
Chatter 1: Is that because of his marriage?
Chatter 2: Yeah, my mom's kinda wild. 

Moreover, the list might be incomplete. A comprehensive framework in which functions such as those listed above are organized in an exhaustive and mutually exclusive classification is not yet available.
We aimed to overcome these difficulties by using procedures from linguistics. In tackling the first problem, we used Wierzbicka's (1996) Natural Semantic Metalanguage (NSM). NSM consists of a list of so-called semantic primitives, such as 'I' and 'you' to denote interaction participants, and 'feel' and 'think' to denote mental states. They can be used to describe basic and universal meanings of words, sentences or – as in our case – emoticons. This procedure is called semantic decomposition. It is clarified in section 2.1.
With respect to the second problem – the framework for the classification of functions – we derived its terms from three strands in discourse analysis (Schiffrin, 1994): speech act theory (Searle, 1976), politeness theory (Brown & Levinson, 1987), and Gumperz' work on contextualization cues (1982). It is elaborated in section 2.2.

2.1 Semantic decomposition

Using NSM for the semantic decomposition of emoticons has two advantages. First, the meanings of all emoticons are determined using the same – relatively limited – set of concepts. Second, these concepts are supposed to be universally valid. As an illustration of NSM and the semantic primitives in it, we give the semantic decomposition of the noun 'frustration' and the interjection 'oops'. Note that some sentences are a-grammatical. This highlights that NSM is not a natural language.
The meaning of 'frustration' is as follows (Wierzbicka, 1996): X feels something. Sometimes a person thinks something like this: I want to do something, I can do it. After this, this person thinks something like this: I can't do it. This person feels something bad because of this. X feels this.
The meaning of 'oops' is given as the following (Wierzbicka, 1992): I know now: I did something bad, something bad happened because of this. I didn't want it to happen. I would not want someone to think that it is very bad. I feel something because of this. Note that NSM attributes meaning without taking the context (sentential or social) into consideration.
Here follow the eleven categories of semantic primitives in NSM that are relevant to the semantic decomposition of facial emoticons:

- Substantives: you, I, someone, people, something
- Mental predicates: think, know, want, feel, see, hear
- Speech: say
- Actions, events, and movement: do, happen, move
- Existence and life: be (there is/are), live
- Evaluators: good, bad
- Intensifier: very
- Space: where, far, near, under, above, side, inside, here
- Clause operators: not, maybe
- Similarity: like

- Interclausal linkers: because, if, if…would

There are two options in the semantic decomposition of emoticons: they can be regarded as words or as utterances. When they are regarded as words, their meanings in terms of NSM are, for example,

 Something good
 Something bad
 Something very good
 Something very bad
 Something maybe good, maybe bad

These meanings do not fit in the contexts of messages and message sequences, as can be concluded when they are inserted in examples (1) to (14). Emoticons not only refer to a single object, but they also evoke an exchange between interaction participants. They concern an 'I' (or 'you' or other person) and say something about this 'I' (or 'you' or other person); for example, in the case of a smiley face, 'I feel good'. Therefore, we rejected the possibility of regarding them as words and continued the analysis under the assumption that they are utterances.

To regard emoticons as utterances – which have a propositional content –seemed to yield a problem too, however, since an emoticon consists of a single unit, while a proposition consists minimally of a predicate and an argument. To solve this problem, we followed Weinreich (1980), who proposed the possibility of filling 'empty' arguments in the semantic structure – i.e., arguments without a corresponding syntactic surface manifestation – with elements of the context. This can be either the discourse context or the extralinguistic context. By accepting Weinreich's (1980) principle of filling arguments in the semantic structure with elements of the context, we were able to analyze the facial emoticons as follows:

 I feel good
 I feel bad
 I feel very good

etc..

Although descriptions in terms of 'I feel X' fit in many contexts, they do not fit in all, as is apparent in example (4), where S suffers from self-inflicted injuries and does not feel at all good. Nevertheless, she adds a smiley face to her request for reactions and tips. Example (2) is similar. Here, S requests an email address and telephone number. S might feel good, but this is not the main point of what she is communicating. She makes a request and embroiders it with a smiley face as a symbolic gift: if you can fulfill my request, I will be happy and I show you my happy face in return. In such contexts, the empty argument is not the mental predicate 'feel', but an action or movement in the direction of the addressee, something like 'give' or 'show', or, in the terminology of NSM 'move near you'. In principle, many facial emoticons can have this second meaning, which is more strategic than expressive. In practice, we found only 'good' faces to have these two meanings:

 Meaning 1: 'I feel good'
Meaning 2: 'I move something good near you'

One emoticon is too complicated for a description in terms of 'good', 'bad', 'feel', and 'give':  . The expressive aspect of the wink is 'maybe good, maybe bad'. However, we did not regard this expressive meaning as very relevant. We supposed that the wink has as its basic and universal meaning 'if you understand what I mean'. It claims common ground. It gives something and expects something in return, namely, understanding. It has a reciprocal aspect, which overshadows other meanings. This meaning can be expressed in NSM as 'I want you to know like I think'.

We attributed meaning to the emoticons in our data collection in the way described above, and thus made them amenable to further functional analysis. It is not our claim that users/readers attribute meaning in this way. NSM was used here as an analytical tool, as an aid in grasping a slippery object, and not as a description of a psychological process.

2.2 Functional analysis

A first theoretical framework that is helpful for an analysis of the communicative functions of emoticons is speech act theory (Searle, 1976).

2.2.1 Searle (1976), one of the founders of classical *speech act theory*, aimed to determine the acts that can be performed by uttering words. He called them speech acts. Based on three taxonomic principles – the essential condition, the direction of fit, and the expressed psychological state – he distinguished five classes. Table 2 contains a description of these classes.

Table 2: An overview of Searle's (1976) classification of iilocutionary acts

Class	Some subclasses	Example	Essential condition	Direction of fit	Expressed psychological state
1 Representatives	Statements Conclusions Suppositions	*The door is closed.*	Representatives concern reality	The words reflect a state of affairs in the world	S believes that his/her words are true; if not totally, then at least to some extent
2 Directives	Requests Orders Warnings	*Close the door.*	Directives are attempts to steer the behavior of the addressee	The words do not reflect the world, but the world needs to be brought into accordance with the words	S commits him/herself to wishing or wanting the behavior mentioned
3 Commissives	To promise To swear To guarantee	*I will close the door in a moment.*	With commissives, speakers commit themselves to a future action	The words do not reflect the world, but the world needs to be brought into accordance with the words	S intends to carry out the act mentioned
4 Expressives	To thank To congratulate To regret	*Hey, that's fine.*	Expressives make S's inner state explicit	The words do not change the world, nor do they reflect it, but they suppose a certain state of affairs and express the feelings of the speaker towards it	S commits him/herself to the expressed psychological state
5 Declarations	To open a meeting To baptize a person To marry two people	*I open the meeting,* said the chair.	With a declaration the speaker realizes a state of affairs	The words are used to change the world	Not relevant

We started the analysis by exploring whether emoticons could function as graphic equivalents of speech acts. In accordance with the basic meanings 'I feel (very) good/bad', many emoticons appeared to function as expressive speech acts. Here follows an example:

(15) Chatter 1: *So did you get any Economy examples?*

Chatter 2: *Uhm, well, he really just kinda referred to the literature and derived a few questions from that as examples*
Chatter 2: *But I didn't take them down very well* 😕

The facial emoticon in (15) can be paraphrased in NSM as 'and I feel bad'.

Although it may appear as though there is full correspondence between the meanings 'I feel (very) good/bad' and the function of expressive speech act, this is not true. These meanings can be used to carry out other acts as well. For example, 'I feel bad' can be used as a refusal to an invitation to go to a movie, 'I feel good' can be used to stimulate desired behavior of the addressee, and with 😇 or 😕 one can make a statement about the policy of the cabinet in relation to immigrants.

Many emoticons in our data collection could be analyzed as separate units, performing speech acts independently. The remaining ones did not have such an autonomous function. They functioned in the context of a verbalized speech act – an assertion, a promise, or a directive – as a mitigating or aggravating device, or as a kind of 'embellishment' or 'strategy'. We mentioned example (2) above. S makes a request here and adds 🙂 to it as an indication of her future state, to seek and show sympathy, and as a symbolic gift. We used Brown & Levinson's (1987) politeness theory as a framework for the classification of these non-autonomous uses of emoticons.

2.2.2 *Politeness theory* considers human interaction to be intrinsically face-threatening. The interactants often wish to minimize threat. They can do this in many different ways, called politeness strategies.
Brown & Levinson (1987) developed a subtle classification of politeness strategies, with 40 sub-strategies ordered in 3 main groups:

1 People can be basically direct, but add 'embellishment' to their message aimed at 'approaching' the addressee, showing sympathy, and seeking solidarity. For example, a person can use a term of endearment as in *Close the door, my dear.* Brown & Levinson (1987) distinguish 15 solidarity strategies. They are listed in Table 3.
2 People can also be direct and add 'embellishment' of the 'avoidance' type to their speech act, i.e., they show respect and keep a distance. For example, a person may pay attention to the addressee's need not to be intruded upon with *Would you mind closing the door?* Brown & Levinson (1987) distinguish 10 respectful strategies, also listed in Table 3.
3 People can present their message in an indirect way. They are indirect when they use formulations which have more than one meaning and when they cannot be pinned down – on the basis of their formulation – to one meaning. Indirect utterances leave the addressee options for interpretation. For example, *There is a draft here.* Brown & Levinson (1987) distinguish 15 forms of indirectness. They are listed in Table 3.

Table 3: An overview of Brown & Levinson's (1987) politeness strategies

Solidarity strategies	S1	Notice, attend to addressee A (his interests, wants, needs, goods)
	S2	Exaggerate (interest, approval, sympathy with A)
	S3	Intensify interest to A
	S4	Use in-group identity markers
	S5	Seek agreement
	S6	Avoid disagreement
	S7	Presuppose/raise/assert common ground
	S8	Joke

	S9	Assert or presuppose S's knowledge of and concern for A's wants
	S10	Offer, promise
	S11	Be optimistic
	S12	Include both S and A in the activity
	S13	Give (or ask for) reasons
	S14	Assume or assert reciprocity
	S15	Give gifts to A (goods, sympathy, understanding, cooperation)
Respect strategies	R1	Be conventionally indirect
	R2	Question, hedge
	R3	Be pessimistic
	R4	Minimize the imposition
	R5	Give deference
	R6	Apologize
	R7	Impersonalize S and A: Avoid the pronouns 'I' and 'you'
	R8	State the face-threatening act as a general rule
	R9	Nominalize
	R10	Go on record as incurring a debt, or as not indebting A
Indirect strategies	I1	Give hints (motives and/or conditions for doing the act)
	I2	Give association clues
	I3	Presuppose
	I4	Understate
	I5	Overstate
	I6	Use tautologies
	I7	Use contradictions
	I8	Be ironic
	I9	Use metaphors
	I10	Use rhetorical questions
	I11	Be ambiguous
	I12	Be vague
	I13	Over-generalize
	I14	Displace A
	I15	Be incomplete, use ellipsis

A considerable number of emoticons in our data collection functioned as politeness strategies; more specifically, as S7 – Presuppose/raise/assert common ground (see example (8)), S8 – Joke (see example (16) below), or S15 – Give gifts to A (see example (4)).

(16) When does the training resume after the summer break, so I know for how long I can go on holiday 

All emoticons could be classified either as an autonomous speech act or as a politeness strategy. This means that speech act theory and politeness theory together provide exhaustive and mutually exclusive categories for an instrument for the pragmalinguistic analysis of emoticons.

Thus far, we paid little attention to a notable function of emoticons in computer-mediated communication – a function which differs from the pragmatic functions described above and which can go together with every specific pragmatic function: they can change the activity type of the ongoing interaction. The next section deals with this.

2.2.3 Gumperz' work (1982) on contextualization cues was the third framework that we used in our functional analysis. Contextualization cues are cues that steer the interpretation of an utterance as a part of an activity or as a part of what is taking place. They are cues that supply context.
Basic to Gumperz' (1982) work is the observation that every utterance can be understood in many ways. When interpreting utterances, people decide on an interpretation based on their definition of what is happening at that moment in the interaction. They interpret utterances in relation to the extralingual context and within the framework of certain activities. Utterances often contain cues that are helpful in this process. These cues are called 'contextualization cues'. They can signal that the speaker or sender S is only joking instead of being serious, or that S is playing instead of offending. They can also indicate that S is requesting information instead of giving directives, or that S is kind instead of arrogant.
Contextualization cues can be found in many aspects of the exchange: syntax, lexical choices, intonation, conversational openings and closings, and the sequential structure of the interaction.
Although it is supposed that everyone produces and interprets these contextualization cues in the same way, this supposition is not true. People – and especially cultural and sub-cultural groups – diverge in this respect. This may lead to tension and misunderstanding in intercultural communication. Gumperz (1982) gives many examples of this.
Auer (1992) takes Gumperz' (1982) work one step further and argues that contextualization cues can also be given nonverbally. This gave us cause to consider emoticons as contextualization cues.
An example of an emoticon functioning as a contextualization cue can be found in (10). Here, the emoticon attached to *Wouldn't expect any different, a light like you…*  indicates that chatter 2 is making fun instead of representing a state of affairs. Without the emoticon, the exchange could have been offensive to chatter 1; the emoticon makes this reaction less probable.

In short, the instrument that we developed for the functional analysis can be described as follows. Emoticons can fulfill a function in discourse in different respects:

1 Pragmatically, they can function as
  1.1 speech acts; for example, as expressives.
  1.2 politeness strategies; for example, to
    1.2.1 presuppose/raise/assert common ground (S7);
    1.2.2 joke (S8);
    1.2.3 give gifts to the addressee (S15).
2 They can function as contextualization cues.

In the empirical part of this study, we applied this instrument to a collection of emoticons produced in naturally occurring computer-mediated communication. Before presenting that, we discuss previous research on emoticons and show that many scholars are concerned about emoticon forms and functions, but that an instrument for their analysis has not yet been developed and tested.

3 Previous research on emoticons

3.1 Definitions and functions

In previous studies of emoticons, different definitions of the entity were used; for example,

1 Emoticons are combinations of keyboard characters designed to show an emotional facial expression (Crystal, 2001).

2 Emoticons are strings of typographic symbols often used in CMC to express emotion or as surrogates for nonverbal communication (Thompsen & Foulger, 1996).
3 Emoticons are visual cues formed from ordinary typographical symbols that when read sideways represent feelings or emotions (Rezabek & Cochenour, 1998).

That emoticons are indicative of feelings or emotions is a commonly held view (see also Danet, 2001). They add expressiveness and warmth (Wallace, 1999; Witmer & Katzman, 1997), humor (Walther & Tidwell, 1995; Wolf, 2000; Wyss, 1999) or sarcasm (Thompsen & Foulger, 1996; Walther & D'Addario, 2001; Wolf, 2000; Wyss, 1999) to a text-based message. In a broader version of this view, it is supposed that emoticons reveal attitudes (Crystal, 2001; Shortis, 2001; Walther & D'Addario, 2001).
It is also common to see emoticons as 'electronic paralanguage' (Ma, 1996; Marvin, 1995; Thompsen & Foulger, 1996). They function as a comment on the verbal message, supply context, and change the meaning. Smileys are a 'shorthand' form for the description of a physical condition. Emoticons substitute for the audible, visible, and tactile elements of interpersonal face-to-face communication (Blackman & Clevenger, 1990). They help to convey the intended tone of a message.
As 'paralanguage', emoticons can specifically be used to mark one's intent as not serious (Danet, Ruedenberg-Wright, & Rosenbaum-Tamari, 1997; Thompsen & Foulger, 1996). They can disambiguate meaning (Danet, 2001) or change the valence of a message (Walther & D'Addario, 2001). Some authors associate this function specifically with irony (Danet, 2001; Walther & D'Addario, 2001).
Crystal (2001) is one researcher who highlighted that emoticons – potentially helpful, but extremely crude in capturing some of the basic features of facial expression – can create misunderstanding. He regards their semantic role as limited. He states that one might include a smiley as a reminder of the ongoing context of the conversation, to indicate that one's words don't stand alone. A smiley can also indicate to the other participants in the conversation that they need to understand you and your personality in order to understand what you've said. There is no guarantee, however, that the other participants will recognize the intended meaning. An example from Van Tiggelhoven (2005) clarifies Crystal's (2001) point:

(17) Chatter 1: Hey, how are ya?
Chatter 2: School's kinda busy
Chatter 1 That's a good sign, isn't it?
Chatter 2: Yes, it is, but I'm not enjoying it much anymore
Chatter 1: Oh
Chatter 2: I think I'm gonna quit school 🙂

In (17), chatter 2 signals with a smiley that she is not serious. Whether chatter 1 understands this is not certain: chatter 1 might think that chatter 2 seriously intends to stop with school and feels happy or relieved as a result.
Some authors (Walther & D'Addario, 2001) suggest that not all emoticons serve the same functions. The wink might be a special case, because it is often used to prevent misunderstanding. However, these authors also point to the fact that its physical appearance is ambiguous, with the 'smiling 'aspect suggesting positivity, and the other aspects invoking irony. They doubt, therefore, whether it has the desired effect.
Thompsen & Foulger (1996) address the possibility that emoticons lower tension in exchanges, i.e., that they function as mitigating devices. They might prevent the escalation of an antagonistic exchange. On the other hand, the authors regard an aggravating function possible too: when an exchange is tense already, an emoticon can make it worse.
Finally, Huffaker & Calvert (2005) and Danet (2001) pay explicit attention to the fact that emoticons are related not only to texts, messages, and interaction, but also to

senders. They give an impression of the author of the text. Danet (2001) specifies this impression as playful, young, and inexperienced.

From this overview of definitions and functions of emoticons, the following can be concluded. First, at the beginning of this section, various definitions of emoticons are given that are not appropriate for our study of the relationships between forms and functions, because they mix form and function characteristics. We need a demarcation of the entity in terms of its form or physical appearance in order to find out how it functions. Second, emoticons are supposed to fulfill different functions; for example, (1) they can express emotions; (2) they can provide paralanguage; and (3) they can prevent misunderstanding. Many researchers do not clearly distinguish the functions from each other, although, for example, functions (1) and (3) are conceptually and empirically distinct. Third, not all emoticons serve the same functions equally. It is probable that the wink is functionally different from the rest, but this might be the case with other emoticons too.

3.2 Empirical research

Previous empirical studies of emoticons fall into two categories:

1 Experimental studies.
2 Descriptive studies.

1 The experimental studies were aimed at tracing the *effect* or *impact* of emoticons upon readers. Starting with hypotheses drawn from the literature on nonverbal communication, Walther & D'Addario (2001) assessed the relative contributions of verbal (i.e., textual) vs. nonverbal (i.e., graphic) aspects of the message to its interpretation. They presented a message with two valences (positive and negative) in four graphic conditions (☺, ☹, ;-) and no graphics) to subjects who had to evaluate the message in terms of, for example, 'happiness', 'ambiguity', 'humor', and 'sarcasm'. The results indicated that the emoticons had less effect than the verbal content. However, when the emoticon was negative, it shifted message interpretation substantially in a negative direction.

Thompsen & Foulger (1996) examined the effects of emoticons in the context of flaming. They constructed a mail exchange with five levels of escalating hostility and manipulated the presence of emoticons. Subjects had to indicate their perception of flaming on a 7-point scale. The results showed – as expected – that the presence of pictographs reduced perceptions of flaming. However, this effect diminished as the intensity of hostility increased.

Other effect studies of emoticons are Constantin et al. (2002a; 2002b), King, Dent, & Miles (1991), Utz (2000), and Walther & Tidwell (1995). In the context of moderated chat rooms, Constantin et al. (2002a; 2002b) found negative effects from emoticons: moderators who used them were judged to be less dynamic, less friendly, less valuable, and less talkative. Utz (2000) investigated the effect of emoticons in MUDs. She found that they were predictors of developing relationships. Walther & Tidwell (1995) also found a positive effect of nonverbal cues in computer-mediated communication on developing social relationships. Although they did not specifically examine emoticons, but graphics, King, Dent, & Miles (1991) found that they heightened the impact of a message.

2 The descriptive studies were either *quantitative* and *variational*, aimed at, for example, detecting gender differences (e.g., Huffaker & Calvert, 2005; Lee, 2003; Witmer & Katzman, 1997; Wolf, 2000), cultural differences (Van der Loo, 2004; Rezabek & Cochenour, 1998), or differences between novice and advanced subjects (Asteroff, 1987), or *in-depth* and *bound to a specific context*, for example, web logs or Japan (Huffaker & Calvert, 2005; Katsuno & Yano, 2002; Nishimura, 2003).

Witmer & Katzman (1997) report a gender difference in the use of emoticons: women used them more frequently than men did. However, this does not mean that women are friendlier than men. They also surpassed men in challenges and flames. Wolf (2000) also found that women used more emoticons than men. In a discussion with participants of both genders, men adapted to the level of women instead of the other way around. Lee's (2003) study of women and men interacting in instant messaging shows that men do not use emoticons frequently in contact with other men. However, they do use them when communicating with women. Women use the same number of emoticons whether communicating with men or women. We found two studies that were less definite about women using more emoticons than men. Walther & D'Addario (2001) report that the female and male subjects in their experiment were equally experienced in the use of emoticons. Huffaker & Calvert (2005) found that an equal percentage of men and women used emoticons in their web logs. However, the male users of emoticons used them more frequently than the female. They also used other types, namely, the flirty emoticon (i.e., the wink) and the sad one.
Cultural differences in the use of emoticons are reported by Van der Loo (2004). She compared emoticon use among adolescents who had a background of migration from Turkey to the Netherlands and Dutch adolescents without such a background. The number of emoticons used was significantly lower among the 'Turkish' adolescents than among the 'Dutch'. Rezabek & Cochenour (1998) compared university sites and individuals with respect to emoticon use. They found much individual variation, while 'site' had only a minor effect.
Asteroff (1987) found that novice respondents used more emoticons in more types of mail messages than did advanced respondents.
Other descriptive studies of emoticons were in-depth and concerned specific contexts of use. Nishimura (2003) and Katsuno & Yano (2002) focused on emoticon usage in Japan. Nishimura did this within the broader framework of a description of linguistic innovations in Japan. Katsuno & Yano (2002) report that emoticons are used to establish subjectivity online.
Huffaker & Calvert (2005) describe teenage web logs in terms of characteristics that are relevant to the development of identity. One of these characteristics is the use of emoticons. They distinguish five emoticon forms ('happy', 'sad', 'angry', 'flirty', and 'tired') and three emoticon functions. The most frequently used category is 'happy' (53%), followed by 'sad' (30%). The other categories occur infrequently (5%). Huffaker & Calvert (2005) also distinguish three emoticon functions. First, emoticons help to accentuate or emphasize a tone or meaning during message creation and interpretation. Second, they help to establish a current mood or impression of the author. Third, emoticons are a creative and visually salient way to add expression to an otherwise completely textual form.

This overview of previously conducted empirical research on emoticons shows that a study similar to ours has not been carried out before. We found one study with a part that comes close: Huffaker & Calvert (2005) differentiated between emoticon forms as well as functions. However, these authors did not relate forms to functions and they did not embed their formal and functional categorizations in conceptual frameworks. With our study, we aimed to fill this gap.

4 Design of the empirical study

The focus of the study was on emoticons. Our starting point for defining this entity was work by Ma (1996) and Metz (1992): "Emoticons are signs which visualize physical aspects (cues, actions, conditions, emphasis) of the communicative situation". This definition –although formal, as required – was too broad for our purpose. It also covers phenomena such as exclamation marks and illustrations, which we did not wish to

include. Therefore, we formulated a more restricted, but equally formal definition: Emoticons are signs that visualize physical aspects of the communicative situation and that are placed on lists on the Internet accompanied by ascribed meanings. They have a form, i.e., an observable aspect, a meaning, i.e., they denote conceptual categories and relationships between categories, and a function, i.e., they do something in an exchange.

In describing the meanings of emoticons, we used Wierzbicka's (1996) Natural Semantic Metalanguage; in describing their function, we used terms and insights from three strands in discourse analysis: speech act theory (Searle, 1976), politeness theory (Brown & Levinson, 1987), and Gumperz' work on contextualization cues (1982).

The study was restricted to facial emoticons. The main questions were the following:

- What functions do facial emoticons fulfill?
- Is there a relationship between the forms and the functions of facial emoticons?

The study was discourse-analytic in nature. This implies that – as has been done in many linguistic studies – we aimed to analyze and clarify communicative processes without making the claim that our analysis reflects psychological processes of production and reception.

A consequence of our focus on forms and functions was that we had to put other empirical questions regarding emoticons (such as their variation with respect to gender, age, culture, etc., and their effect upon readers) aside. Our study was restricted to a rather homogeneous group of users, namely, young women. In methodological terms, the study can be qualified as descriptive and in-depth. Relationships were established between forms and functions in a sample that was large enough for the application of descriptive statistics and tests, but too small to be representative of large-scale social categories such as females or younger people.

We did not confine investigation to the two main questions, but deepened the analysis in two respects. First, we included questions concerning the communicative adequacy of inserting emoticons in messages. The answers to these questions might be relevant to the practice of written communication. We regarded a facial emoticon as *in*adequate when its referent (the speaker, the addressee, or another person) could not be established unambiguously and/or when its meaning was redundant, i.e., when this meaning was also expressed verbally and/or when its function was dispensable, i.e., when it did not carry out an act. With respect to the communicative adequacy of emoticons, we had two questions:

- Are the facial emoticons communicatively adequate in the sense that their referents are clear and that they are not redundant?
- Is there a relationship between the form of the emoticons and their communicative adequacy?

Second, when we found a relationship between the forms of emoticons, their functions, and their communicative adequacy, it was methodologically relevant to determine whether this relationship was robust, i.e., stable over time, circumstances, etc. Many variables might influence the relationship – if found – such as the topic of the exchange, or whether the exchange is formal or informal. A question aimed at tracing the effects of such extralingual variables was also included in the study:

- Is the relationship between the forms of the emoticons, their functions, and their communicative adequacy influenced by extralingual variables such as the topic of discussion or the formal character of the chat?

5 Data collection

As a setting for communication, the Internet offers much variety. Crystal (2001) identifies five broad Internet-using situations, which are sufficiently different to give rise to distinctive language varieties, i.e., systems of linguistic expression that differ from each other in graphic, orthographic, grammatical, lexical, and discourse features:

- Electronic mail.
- Synchronous chat groups.
- Asynchronous chat groups (discussion lists or forums).
- Virtual worlds (MUDs).
- World Wide Web (WWW).

We might have aimed to investigate emoticon use in all these situations and collected data correspondingly, but – given that a limited amount of time was available – it would not have been possible to analyze a large sample in the same number of aspects as a small one.
Similarly, the Internet and its communicative settings are open to participants that vary in many respects: age, gender, culture, experience, etc. A data collection that varies in all these respects cannot be analyzed as thoroughly as a sample from a more homogeneous group.
It will be clear that it was necessary to choose between investigating a relatively large sample in relatively few aspects and investigating a relatively small sample in relatively many aspects. Whatever the final choice, complementary research starting with different options was needed.
Our focus on forms and functions was decisive in taking a middle course. Questions concerning the representativeness of the sample for large categories of users and situations were put aside or postponed. Knowing that the semantic decomposition and discourse analysis of natural interaction is time-consuming, we examined forms, functions, and effects of a number of extralingual variables in a restricted and relatively homogeneous sample. We collected 200 emoticons, embedded in messages and exchanges and produced in naturally occurring chats of young women. 'Naturally occurring' means here that the chats and emoticons were not produced in the context of the investigation.
Why 200 emoticons? Such a data set is sufficiently large to detect variations and apply quantitative tools, while it is not too large for the relatively time-consuming linguistic analysis and the study of the effects of the diverse extralingual variables that might play a role in spontaneously produced communicative data.
Why women? The only reason that we can mention here is that the person who collected the data was female and that it seemed easier for her to gain access to women's chats. It definitely plays a role here that the presentation of the self in a chat falls somewhere between showing a public and a private face.
Finally, why young? We chose young people because they insert emoticons regularly in their messages.

First, we asked fifty young (18-25 yrs.) female subjects to save their chats and put them at the researcher's disposal. However, this was a rather laborious procedure for the subjects. It did not result in enough chat fragments containing emoticons. We then decided to collect emoticons and chat fragments on publicly accessible forums and discussion lists. The following forums and discussion lists were used as sources:
1 www.vrouwenpraat.nl 'Vrouwenpraat' is Dutch for 'women's chat'. Participants displayed themselves as female. We did not know their ages, but inspected only discussions on topics interesting to young women.
2 www.bnn.nl This website belongs to the broadcasting company BNN, which is oriented towards young adults and adolescents. The website is visited by both boys and girls. Topics of discussion are related to programs on TV.
3 www.fok.nl This is the largest forum in the Netherlands. Mainly young people take part in it. It has many male contributors, although there are also chat rooms especially for women. We collected data in the female chat rooms.
4 www.kvswift.nl This website belongs to a korfball club. All participants have a connection with korfball and all belong to the age group we were looking for. Some are male, some female. Participants use their real names.

On these forums and discussion lists, we looked for chat fragments containing emoticons and containing one or more of the following clues of female authorship:

1 The signature. Dutch surnames are overwhelmingly marked with respect to gender. Many nicknames also give a clue to gender, e.g., *little bee* and *Miss Dynastie.*

2 The profile. On some forums, information can be found about the gender of the participants in their profiles.

3 The character statement, such as *Pure Angelic Evilness Inside*

4 The identifying picture, such as 

5 The content of the message. Messages with a content such as *At such times I come across a bit bitchy and arrogant...nose in the air and tits straight ahead* (example (1)) and *Am single and am looking for a fun guy who can handle me* (6) probably have a female author.

6 The surrounding messages in a thread of discussion, which indicate that the thread is female-only (for example, this cue was apparent when the discussion concerned body aspects such as breast reduction, pointers on how to get a firmer butt, or self-inflicted injuries).

We are aware that one can never be sure that Internet gender and age converge with gender and age in real life. It is safe to say, however, that we collected emoticons produced by authors who displayed young female online personae.

The emoticons that we collected were overwhelmingly used in same-gender exchanges. A small proportion of 1.5% was addressed to persons we judged to display a male online persona.

Topics of discussion – with the corresponding number of emoticons between parentheses – in the data collection were the following: love and relationships (40), health (34), leisure (25), radio and TV (25), fashion and looks (21), sports (12), news (10), culture (9), household (9), chat (9), work (3), and school and education (3).

Many discussions have the following structure. A person asks a question or makes a statement, for example:

- *How do you deal with the fact that you earn more than your partner?*
- *This year a Christmas tree again? A real one or an imitation?*
- *Coming Wednesday, I have to visit the dentist* ☹ *Does someone know a procedure to get whiter teeth without aggressive bleaching methods?*

Others either react to the question/statement, or specifically address follow-up reactions. It is possible, although not common, to create a two-party exchange. Such tête-à-têtes never last long.

Minor portions of the data collection show a paired structure (for example, a directive followed by an acceptance or a question followed by an answer).

The contributions to the discussions are loosely structured, which means that they contain words and constructions that are characteristic of (informal) speech (Crystal, 2001), and socially interactive, i.e., the language use is suited to social or 'phatic' functions, such as passing the time of the day, or any situation where casual and unplanned discourse is desirable (Crystal, 2001), and not often revised, i.e., one does not rethink an utterance in order to eliminate errors and other perceived inadequacies (Crystal, 2001). Furthermore, they are short, i.e., a length of one to three lines of 10 words is common, while a length of 100 words is exceptional.

The data collection was not controlled for variables such as the mood of the interactants (they can show friendliness or tension), the context (either personal or business), the level of acquaintance of the chatters (they can be unacquainted or know each other), and the time of production (in the morning vs. in the evening; during

weekdays or at weekends). However, we coded these extralingual variables and evaluated their relevance at a later stage of analysis.
The 200 facial emoticons that we collected varied in form. Table 4 gives a description of our data collection with respect to the forms and their frequency.

Table 4: The emoticon forms in the data collection, their absolute frequency (numbers), and their relative frequency (percentages based on total emoticon use)

Facial form	Absolute frequency	Relative frequency
	11	5.5
	39	19.5
	21	10.5
	58	29.0
	20	10.0
	12	6.0
	15	7.5
	2	1.0
	3	1.5
	1	0.5
	1	0.5
	1	0.5
	3	1.5
	10	5.0
	2	1.0
	1	0.5
Total	200	100%

This collection was further analyzed with respect to meaning and function.

6 Analysis

6.1 Linguistic analysis

An analysis of the communicative functions of emoticons must be based upon assumptions about their meaning. As described in section 2.1, we made these assumptions using Wierzbicka's Natural Semantic Metalanguage (NSM) (1996). The first step in the analysis amounted to making a 'dictionary' of the emoticons using the semantically primitive terms listed in section 2.1. Three facial emoticons ( ,  , and ) were described as 'I feel good', three as 'I feel very good' ( ,  , and ), six as 'I feel bad' ( , , , , , and), and three as 'I feel very bad' (,, and). As argued in section 2.1, in some types of contexts (for example, in the context of performing a request, or asking and showing support), the empty argument of the inserted emoticon is not the mental predicate 'feel', but an action or movement in the direction of the addressee. We assumed this in the case of three emoticons particularly:


Meaning 1: 'I feel good'
Meaning 2: 'I move something good near you'


Meaning 1: 'I feel very good'
Meaning 2: 'I move something very good near you'


Meaning 1: 'I feel very good'
Meaning 2: 'I move something very good near you'

In the case of one emoticon,  , we assumed both movement and a reciprocal aspect, resulting in the meaning ‘I want you to know like I think’ or ‘if you understand what I mean’.
Using these minimalist assumptions about meaning, we were able to analyze the functions of emoticons. We are aware that we disregarded subtle shades of meaning, but it was our aim to capture a basic layer of meaning in a relatively systematic and verifiable way rather than to attribute meaning in a context-specific and partly subjective way.

In section 2.2, we developed an instrument for the analysis of emoticons using exhaustive and mutually exclusive categories. In sum, pragmatically, either emoticons can stand on their own, fulfilling a function as an independent speech act, or they can function in the context of a verbalized act as a kind of ‘embellishment’ or ‘strategy’. In principle, emoticons can fulfill different speech-act functions (e.g., they can carry out a representative, a directive, and an expressive speech act). In our data, however, all stand-alone emoticons appeared to function as expressive speech acts.
When emoticons are used in the context of a verbalized act, they function as a part of the presentation of that act and can be regarded as a politeness strategy. There are many possibilities here (see Table 3), but the emoticons in our data collection appeared to function strategically in three different ways:

1 S7 Presuppose/raise/assert common ground
2 S8 Joke
3 S15 Give gifts to the addressee (goods, sympathy, understanding, cooperation).

In addition to analyzing the pragmatic function, we analyzed every emoticon in the data collection with respect to its function as a contextualization cue. We described what was going on in the verbal part of the exchange (the event that was created and the action that was performed) and decided whether the emoticon changed this description. For example,

(18) Huh?? Well, how can this be read 100 times in one day! That cannot be right??
(and no reactions, sob )

The action in the final part of this message, based on the verbal elements and neglecting the emoticon, may be described as the chatter expressing that she is deeply disappointed. When the emoticon is considered, the description has to be changed: the chatter is joking about her disappointment.

In order to be able to assess the communicative adequacy of the emoticons, we also coded them with respect to ‘redundancy’ and ‘vagueness’. We considered an emoticon redundant when its meaning in NSM was also explicit in the textual part of the message; we considered it vague when there was more than one possible referent. Based on these codings, we made a new variable, called ‘communicative adequacy’. An emoticon is communicatively adequate when the following three conditions are met:

1 it functions as an expressive speech act and/or as a contextualization cue
2 it is not redundant
3 its referent is clear.

We did not include the strategically used emoticons in the category ‘communicatively adequate’ because they are dispensable: they can be removed without fundamentally damaging the exchange. Of course, this is a matter of choice.

Three points can be raised that were relevant for the reliability of the analysis.

1 The linguistic coding of the emoticons was a task with a judgmental and an analytical aspect. We aimed to minimize the judgmental and potentially subjective aspect by analyzing forms, i.e., entities with observable characteristics, using insights from discourse analysis and by basing decisions on explicit criteria and procedures. Some examples may clarify this. If the NSM meaning of the emoticon is 'I feel (very) good/bad', the psychological state of the sender is in accordance with the value given by the evaluator (i.e., if the psychological state is '(very) good/bad'), and this 'literal' meaning is relevant, then the emoticon functions as an expressive speech act and not as a strategy. When S's psychological state is not in line with the value given by the evaluator (for example, when it is 'bad' while the evaluator denotes 'good'), it is a strategy.
When an emoticon functioned as a strategy, we used Brown & Levinson's (1987) extensive treatment of all strategies as an aid in deciding which one in particular was appropriate. When in doubt, we favored a more direct and lower-numbered strategy. This means that, in case of doubt between S7, S15, and I3, we chose S7. This corresponds to a sensible rule for analyses of social behaviour: the analyst should not infer more give-and-take and indirectness than necessary.
The decision whether an emoticon functioned as a contextualization cue was – as indicated above – based on two descriptions of the message: one neglecting the emoticon and the other considering it.
The application of such criteria and procedures diminished the judgmental aspect of the analysis considerably. For example,

(1) `Me, I'm a fun, at times somewhat shy, bigmouth 

The NSM meaning 'I feel bad' is relevant here and corresponds with S's psychological state. As a result, this emoticon was coded as an expressive speech act.
A description of the activity in (1) – neglecting the emoticon – is as follows: the chatter is describing herself in certain terms. Considering the emoticon does not result in an alternative description. Accordingly, this emoticon does not function as a contextualization cue.
2 The analysis was a collaborative process. One researcher prepared the analytical decisions. Problematic cases were discussed with another researcher. Guidelines and criteria were provided and sharpened. A second and a third version of the analysis were made and checked by both researchers. In principle, this was a never-ending process. However, we regarded the analysis as final when we could not improve it in important respects, while we could defend the decisions that were taken.
3 It will be clear that an analysis such as the one described is a process of incremental insight: it has to be learned and every subsequent analysis can be better defended than the one before. It also means that a person who uses a different body of knowledge and different guidelines and criteria may reach a different outcome. Emoticons are complicated communicative phenomena that we aimed to make accessible to empirical study, without claiming that the perspective that we offer is the only valid one.

We did not check the inter- and intra-rater reliability of the analysis by computing measures such as Cohen's (1960) Kappa, but instead minimized the judgmental aspect of the analytical task and dealt with it as carefully as possible.

6.2 Contextual variables

Many contextual variables might influence the functions of emoticons. We coded the following *extralingual* variables in order to be able to evaluate their relevance to our data:

1 Mood of the chat. We used categories from Bales' (1951) Interaction Process Analysis to decide whether the mood of the chat was positive or negative. We considered the mood positive when the interactants showed friendliness, were relaxed, and agreed; the mood was negative when the interactants disagreed, showed tension, and were unfriendly.
2 Context of the chat. The context can be either personal or business. A context is personal when the chatters exchange evaluations, feelings, and opinions. In a business context, facts and practical matters such as studies and work dominate the exchange.
3 Level of acquaintance of the chatters. This variable concerns whether the chatters know each other. There were two possibilities: high (when they knew each other) or low (when they did not know each other).
4 Topic of the chat. We distinguished between serious topics and small talk. Serious topics were school and education, current affairs and news, love and relationships, health and nutrition, and work. Small talk concerned leisure, sports, culture, housekeeping, clothing, appearance, chatting, and radio or TV.
5 Monitoring. Monitoring was defined here as (Hagen, 1981) a cognitive strategy which ensures that the language production is focused on optimal communication. It concerned caution during language production. We distinguished two degrees: 'monitored' (i.e., cautious) and 'non-monitored' (i.e., uninhibited).
6 Time of production of the emoticon. There were two possibilities: during weekdays or at weekends.
7 Togetherness. This variable touched upon a slightly different aspect of the interaction than the variable 'mood'. It concerned the interactants on the dimension of belonging together vs. being separate; of showing solidarity vs. keeping a distance. There were two possibilities: the chatters were together in their activity or they were not.

We also coded variables in the *lingual* context of the emoticon:
1 Spontaneity of the emoticon. Some emoticons were produced in return for an emoticon of the interactional partner. If so, this was coded.
2 Clarification of the emoticon. When one does not understand what is meant by an emoticon, one can ask for clarification. When an emoticon was used as part of such a clarification sequence, this was coded.

Table 5 shows the distributions of these contextual variables in our collection of emoticons.

Table 5: A description of the data collection in terms of contextual variables

Contextual variables		Percentage
Concerning the extralingual context		
	Mood	
	Positive	85.5
	Negative	14.5
	Context	
	Personal	58.0
	Business	42.0
	Level of acquaintance	
	acquainted	99.5
	unacquainted	0.5
	Topic	
	Small talk	55.0
	Serious	45.0
	Monitoring	
	Monitored	0.0
	Non-monitored	100.0

	Time of production	
	Weekdays	67.5
	Weekends	32.5
	Togetherness	
	Yes	92.0
	No	5.0
Concerning the lingual context		
	Spontaneity	
	Yes	95.0
	No	5.0
	Part of clarification	
	Yes	0.0
	No	100.0

As Table 5 shows, our data collection was not varied with respect to three potentially relevant variables: the level of acquaintance of the chatters, monitoring, and the clarification aspect. These variables were not analyzed further. The effects of the other variables on the functions of emoticons were evaluated.

6.3 Quantitative analysis

The data lent themselves mainly to cross-tabulation. The relationships between the forms of the facial emoticons, their functions, and their communicative adequacy were evaluated statistically using χ^2 –tests. The effects of the contextual variables on the functions of the emoticons, as well as on their communicative adequacy, were analyzed using a multinomial logistic regression.

Our collection of emoticons was spontaneously produced, i.e., the emoticons were not produced with the aim of investigation. This was a definite advantage for the ecological validity of the study, although it made it necessary to join categories in cases of uneven distribution. Two variables met this condition: the form of the emoticon and its function. With respect to the form of the emoticon, we made a new variable named 'sort' of the emoticon. It had three categories: (1) we joined the 'good' and 'very good' faces as 'good' faces, (2)  was kept apart as 'maybe good, maybe bad', and (3) the 'bad' and 'very bad' ones were combined as 'bad'.

With respect to the functions of the emoticons, we joined the politeness strategies, S7 – Presuppose/raise/assert common ground, S8 – Joke, and S15 – Give gifts to A, under the heading 'solidarity strategy'.

As a result of the above, the analysis was no longer impeded by uneven distributions and the requirements for valid χ^2 –testing were fulfilled.

7 Results

The results are presented in six sections:

7.1 The frequency of use of the different forms of emoticons
7.2 The pragmatic function
7.3 The function as a contextualization cue
7.4 The communicative adequacy
7.5 The effects of contextual variables
7.6 The communicative adequacy in a personal vs. a business context

7.1 The frequency of use of the different forms of emoticons

The subjects used 16 different emoticon forms from the total of 200 tokens that they had at their disposal. These 16 forms – and their absolute and relative frequencies – can be found in Table 4. The 'top five' is displayed in Table 6.

Table 6: 'Top five' of emoticon forms (absolute frequency in numbers and relative frequencies in percentages of the total emoticon use)

Top five	Absolute frequency	Relative frequency
	58	29.0
	39	19.5
	21	10.5
	20	10.0
	15	7.5
Total	153	76.5

Five forms from a range of 200 alternatives account for 76.5% of the total in our data.

7.2 The pragmatic function

Table 7 presents the pragmatic functions of the different sorts of facial emoticons.

Table 7: The pragmatic functions of the sorts of emoticons

	Expressive speech act	Solidarity strategy
'Good' (n = 83)	77.1	22.9
'Bad' (n = 78)	100.0	00.0
'Maybe good, maybe bad' (n = 39)	00.0	100.0
Total (n = 200)	71.0	29.0

Sorts and pragmatic functions: χ^2 (2) = 128.85, p<. 001.
Comparison of 'good' and 'bad': χ^2 (1) = 20.25, p<. 001.
Comparison of 'good' and 'maybe good, maybe bad': χ^2 (1) = 63.25, p<. 001.
Comparison of 'bad' and 'maybe good, maybe bad': χ^2 (1) = 117.00, p<. 001.

Most emoticons perform an expressive speech act (71.0%), although many (29%) are used strategically. The sorts differ in function: the 'bad' category is always used for performing expressive speech acts (see example (15)); the 'maybe good, maybe bad' sort never has this function and is only used to show solidarity (see example (10)); and the 'good' sort fulfils both functions (see example (1) for expressive speech acts; see examples (2) and (4) for solidarity strategies).
Here follows another example of a negative emoticon performing an expressive speech act:

(19) (Chatters 1 and 2 are busy preparing for an examination)
Chatter 1: But I better go on with reading, reading, reading, reading, reading, reading, reading
Chatter 2: yeah, me too
Chatter 1: 

We can conclude from Table 7 that emoticons not only convey feelings and emotions of S. This depends on their sort. A substantial number is used in the context of another act, as an appeal to the addressee, or to get something done by the addressee.

7.3 The function as a contextualization cue

Table 8 shows the different sorts of emoticons with regard to their function as contextualization cues.

Table 8: The function of the sorts of emoticons as contextualization cues

	Contextualization cue	No contextualization cue
'Good' (n = 83)	18.1	81.9
'Bad' (n = 78)	1.3	98.7
'Maybe good, maybe bad' (n = 39)	51.3	48.7
Total (n = 200)	18.0	82.0

Sorts and function as contextualization cues: χ^2 (2) = 44.03, p<. 001.
Comparison of 'good' and 'bad': χ^2 (1) = 12.67, p<. 001.
Comparison of 'good' and 'maybe good, maybe bad': χ^2 (1) = 14.30, p<. 001.
Comparison of 'bad' and 'maybe good, maybe bad': χ^2 (1) = 44.14, p<. 001.

Eighteen percent of the total number of emoticons functioned as contextualization cues, i.e., they appealed for a change of activity type and were aimed at preventing misunderstanding. The sorts of emoticons differed with respect to this function: the 'maybe good, maybe bad' sort fulfilled it most frequently (see example (10)); the 'good' sort could have this function (as in example (7)), but overwhelmingly did not function in this way; the 'bad' sort almost never had this function.

We can conclude from Table 8 that a substantial number of emoticons were used to prevent misunderstanding. This also depended on their sort. This function was most frequent for the 'maybe good, maybe bad' sort; the 'good' sort occupied second position; it was exceptional for the 'bad' sort.

7.4 The communicative adequacy

Table 9 gives an overview of the communicative adequacy of the different sorts of emoticons. More than 75% of the emoticons in our data collection were used in a communicatively adequate way, which is the same as stating that nearly 25% were not. We found a difference in the communicative adequacy of the sorts. The 'bad' sort achieved the highest percentage (92.3%), the 'good' sort occupied second position (75.9%), and the 'maybe good, maybe bad' sort was slightly more often inadequate than adequate.

Table 9: The communicative adequacy of the sorts of emoticons

	Communicatively adequate	Not communicatively adequate
'Good' (n = 83)	75.9	24.1
'Bad' (n = 78)	92.3	7.7
'Maybe good, maybe bad' (n = 39)	48.7	51.3
Total (n = 200)	77.0	23.0

Sorts and communicative adequacy: χ^2 (2) = 27.99, p<. 001.
Comparison of 'good' and 'bad': χ^2 (1) = 7.99, p<. 01.
Comparison of 'good' and 'maybe good, maybe bad': χ^2 (1) = 8.90, p<. 005.
Comparison of 'bad' and 'maybe good, maybe bad': χ^2 (1) = 28.58, p<. 001.

An example of a redundant and, as a consequence, communicatively inadequate emoticon is the following:

(20) Hello I'm George W Bush and me and those good friends of mine Balkenende and Blair gonna destroy the world! HAHAHAHA (and I eat pizza all the time) 😎

7.5 The effects of contextual variables

We evaluated the effects of the contextual variables using multinomial logistic regressions. 'Pragmatic function', 'function as a contextualization cue', and 'communicative adequacy' were the dependent variables. The following contextual variables were included as factors: mood of the chat, context of the chat, topic of the chat, time of production of the emoticon, togetherness, and spontaneity.
The models were not significant. The explained variances were low. Moreover, the factors in the model overwhelmingly showed no significant relationship with the functions. There was one exception, however: the communicative adequacy was related to the context of the chat. The distributions of the communicative adequacy in a business context differed from those in a personal context. We decided to analyze this further.

7.6 The communicative adequacy of sorts of emoticons in a business vs. a personal context

Table 10 shows the communicative adequacy of the different sorts of emoticons in a business vs. a personal context.

Table 10: The communicative adequacy of the sorts of emoticons in a business vs. a personal context

	Business context			Personal context		
	N	Adequate	Not adequate	*N*	Adequate	Not adequate
'Good'	*34*	58.8	41.2	*49*	87.8	12.1
'Bad'	*36*	91.7	8.3	*42*	92.9	7.1
'Good/bad'	*14*	35.7	64.3	*25*	56.0	44.0
Total	*84*	69.0	31.0	*116*	82.8	17.2

Business context:
Sorts and communicative adequacy: test not valid because 1 cell has an expected count less than 5.
'Good' and 'bad': χ^2 (1) = 10.26, p<. 001.
'Good' and 'maybe good, maybe bad': not significant.

'Bad' and 'maybe good, maybe bad': test not valid.

Personal context:
Sorts and communicative adequacy; test not valid because 1 cell has an expected count less than 5.
'Good' and 'bad': test not valid.
'Good' and 'maybe good, maybe bad': χ^2 (1) = 9.40, p<. 005.
'Bad' and 'maybe good, maybe bad': χ^2 (1) = 12.88, p<. 001.

Emoticons are less communicatively adequate in a business context than in a personal context (69.0% vs. 82.8%; $\chi^2(1) = 5.17$, p<. 05). Moreover, in a business context, the 'good' and 'bad' ones differ with respect to their adequacy: the 'bad' faces are more adequate (91.7%) than the 'good' faces (58.8%). The 'maybe good, maybe bad' form is the least adequate (35.7%), but does not differ significantly from the 'good' sort, while the test of 'maybe good, maybe bad' vs. 'bad' was not valid.
Two examples illustrate these findings. In example (2), the emoticon can be removed without changing the meaning and the function of the message in more than a superficial way. In (21), the emoticon expresses the same as the textual part of the message, and is, therefore, redundant.

(21) (Two chatters have just passed an exam)
Chatter 1: I'm happy for us too 

In a personal context, the test of the difference between the 'good' and 'bad' sorts was not valid because one cell had an expected count less than five. The 'maybe good, maybe bad' sort differed from the other sorts and yielded a relatively low percentage here, too (56.0%).
A comparison of the 'good' sort in the two contexts shows a difference: they function significantly less adequately in a business context than in a personal one ($\chi^2(1) = 9.19$, p<. 01). The 'bad' sort does not differ as regards context. The same is true for the 'maybe good, maybe bad' form.
We conclude that the context-specific patterns in Table 10 are not completely in keeping with the overall pattern in Table 9. Most remarkable is the decline in adequacy of the 'good' faces in a business context. Taking the low adequacy (35.7%) of the 'maybe good, maybe bad' sort in this context into consideration also, our conclusion is that one should be careful with the use of emoticons in a business context.

8 Conclusions

The *main questions* of this study were presented in section 1:
1 What communicative functions do emoticons fulfil? Are they used simply to embellish a message, do they give relevant information, and/or do they prevent or create misunderstandings?
2 Is there a relationship between the form of the emoticon used (for example, the smiley vs. the winkey face) and its communicative functions (for example, expressing emotions vs. creating a common ground for understanding of the message)?
With respect to the first question, we found that the emoticons in our data collection fulfilled different functions: the majority (71.0%) were used to perform an expressive speech act, while a substantial part (29.0) was used strategically to embellish the message and to show solidarity. In addition, we found that 18.0% of the emoticons were used as contextualization cues.
With respect to the second question, we found relationships between form categories or 'sorts' of emoticons and their pragmatic functions. The 'bad' category was always used to perform expressive speech acts, the 'maybe good, maybe bad' sort never had this function and was only used to show solidarity, and the 'good' sort fulfilled both functions. Moreover, there was a relationship between the sorts and their function as a contextualization cue. The 'maybe good, maybe bad' sort was most frequently used as a contextualization cue (51.3%); the 'good' and the 'bad' sorts fulfilled this function, too, although less frequently (18.1% and 1.3%, respectively).
Additional questions concerned the communicative adequacy of inserting emoticons in messages and the robustness of the form-function relationship, i.e., its variability in relation to circumstantial factors (see section 4):

1. Are the facial emoticons communicatively adequate in the sense that their referents are clear and that they are not redundant?
2. Is there a relationship between the form of the emoticons and their communicative adequacy?
3. Is the relationship between the forms of the emoticons, their functions, and their communicative adequacy influenced by extralingual variables such as the topic of discussion or the formal character of the chat?

With respect to the first of these additional questions, we found that 23.0% of the emoticons were not communicatively adequate, i.e., either their referents were not clear or they were redundant.
The next question has to be answered with 'yes': the emoticon sorts differed with respect to their communicative adequacy. The 'bad' sort was used most adequately (92.3%), followed by the 'good' sort (which was adequate in 75.9% of the cases) and the 'maybe good, maybe bad' sort (adequate in 48.7% of the total).
With respect to the final question, we found that most of the contextual variables that were included in the analysis had no effect. There was one exception, however: the emoticons were communicatively less adequate in a business than in a personal context. Especially the 'good' sort showed a difference: 41.2% were not adequate in a business context vs. 12.1% in a personal context.

These findings are not completely new; the functions that we found have been mentioned previously. Huffaker & Calvert (2005), for example, suggest three functions. Their first function (emoticons help to accentuate or emphasize a tone or meaning during message creation and interpretation) is similar to our function of contextualization cue. Their second function (they help establish a current mood or impression of the author) corresponds to our function of expressive speech act. Their third function (emoticons are a creative and visually salient way to add expression to an otherwise completely textual form) can be interpreted as 'embellishment'. Previously, however, these functions were mentioned without insight into their value for describing a reality. Moreover, they were not related to each other in a theoretical framework or

overarching set of concepts. Now we know that they are empirically adequate. In addition, we know that emoticons can fulfil at least two kinds of function:
1 On the pragmatic level they function either independently as speech acts, more specifically as expressive speech acts, or they function in the context of textually expressed speech acts as 'embellishments' or as politeness strategies.
2 In addition to this pragmatic function, which every emoticon fulfils, they can function as contextualization cues.
Also new in our study is the empirical description of form-function relationships. Although it has been suggested before (see section 3) that not all forms serve the same functions equally, empirical insight based on the analysis of a collection of spontaneously produced emoticons and confirming this suggestion was lacking.

Although the study was not designed primarily to serve *practical* purposes, some findings are relevant to the practice of writing. Emoticons can be exploited to carry out expressive speech acts and to supply the context necessary for adequate understanding. When used as such, facial emoticons are an enrichment of the communicative repertoire. However, we also found that they are often used in a communicatively inadequate way in a business context. Overall, they are not adequate in a business context in 31.0% of cases; the 'good' sort yields a higher percentage (41.2%) and the 'maybe good, maybe bad' sort is most often not adequate (64.3%). These figures mean that one should be careful in using emoticons in the context of business communication.
A closer look at the figures for the 'maybe good, maybe bad' sort is also relevant to the practice of writing. It is clear that this form in particular fulfils the function of contextualization cue – i.e., it *might* prevent misunderstanding -, but in doing so it is relatively often redundant or vague. This applies to the business (64.3%) as well as the personal (44.0%) context. Users of this form should realize that it might create as well as prevent communicative problems in all contexts.

Theoretically, the study was embedded in three strands in discourse analysis: speech act theory (Searle, 1976), politeness theory (Brown & Levinson, 1987), and Gumperz' work on contextualization cues (1982). Use was also made of Wierzbicka's (1996) Natural Semantic Metalanguage. The value of this theoretical framework was two-fold:
1 It made such a 'slippery' object as emoticons amenable to analysis and helped us to gain more insight into how emoticons work. Knowledge of this framework was indispensable in the linguistic description of the corpus.
2 It underpinned the classification of functions of emoticons that we developed and brought the different functions in relation to each other.
With its aid, we were able to tackle the methodological problems that researchers come across when aiming to develop an instrument for the analysis of the functions of facial emoticons (see also section 2).

Methodologically, some options were used that –though well considered – limited the validity of the study.
In *collecting the data*, we opted for a middle course: a restricted and relatively homogenous sample of emoticons was analyzed (see section 5). It was large enough to make questions concerning the communicative functions of emoticons - questions that were not open to empirical research hitherto - answerable. It was also large enough to gain insight into relationships between forms and functions. However, it was too small to allow conclusions to be drawn about broad groups of subjects such as adolescents or young people. Similar studies with different groups of subjects (e.g., young men or secondary school children) can reveal interesting patterns of social variation. They can also reveal potential sources of misunderstanding between social groups.

With respect to the *reliability* of the codings, we did not check this by computing measures such as Cohen's (1960) Kappa. We approached the analysis of the emoticons as a task with a judgmental and an analytical aspect and aimed to minimize the judgmental and potentially subjective aspect by following procedures and explicating guidelines (see section 6.1). Future research that includes inter- and intra-rater reliability tests can show to what degree our attempt to minimize the judgmental aspect was successful.

These methodological options are relevant for the appraisal of the descriptive value of the study as well as its practical relevance. However, they do not invalidate a basic aspect, which is that the study contributes to a more detailed insight into what people at least *do* and *can do* when they insert those tiny entities called emoticons in their computer-mediated communication. It contains a classification of their functions, based upon insights from pragmatics and discourse analysis, which can be a starting point for future research. This classification of functions can be extended in several directions, for example:

1 On the level of the speech act, an emoticon can also function as a representative (i.e., a description of a state of affairs in the world), and as a directive (i.e., an attempt to steer the behavior of the addressee). Future research can give insight into these additional functions.
2 On the strategic level, an emoticon can also be used as a code switch and, accordingly, as an in-group identity marker (S4 in Table 3). Moreover, it can be used to give a hint (I1 in Table 3), to give an association clue (I2), or to be vague (I12). Future research might reveal more alternatives.

In sum, this study can be used as a discourse-analytic stepping-stone on the road to an incremental insight into the intricate communicative functions of a new and easily inserted entity in computer-mediated communication, the emoticon.

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