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Multimodal markers of irony and sarcasm*

SALVATORE ATTARDO, JODI EISTERHOLD,
JENNIFER HAY, and ISABELLA POGGI

Abstract

Two studies using multimodal stimuli collected from television situation comedies show that there exist markers of irony and sarcasm which involve intonational and visual clues. Our first conclusion is that there exists no “ironical intonation” per se, but rather that pitch is a contrastive marker for irony or sarcasm. Our second conclusion is that there exists a facial expression, characterized as a “blank face,” which is a visual marker of irony or sarcasm. We further discuss paracommunicative and metacommunicative alerts to ironical/sarcastic intent.

Keywords: irony; sarcasm; facial expression; blank face.

There exists a small but significant literature on the markers of irony and sarcasm. In this paper, we will briefly review some of the literature on the markers of irony and, more significantly, add to it in two respects: we introduce a contrastive view of pitch as a marker of irony and we propose a facial marker for irony (the “blank face”) which has not been considered in the literature, to the best of our knowledge. This is an early report of a work-in-progress multidisciplinary intercontinental collaborative research program on irony/sarcasm. We will use the two terms “irony” and “sarcasm” interchangeably in this paper, in part, because there seems to be no way of differentiating reliably between the two phenomena, and in part because a shift in meaning for the word irony seems to be taking place with “sarcasm” occupying what was previously the semantic space of “irony” (Nunberg 2001: 91–93).

Markers of irony and sarcasm

An important distinction, which needs to be kept very clear, is between the markers of irony/sarcasm and the actual phenomenon. The distinction boils down to the fact that an ironical utterance would still be ironical without any markers, but would cease to be such if we remove all its constituent factors, i.e., the copresence of (at least) two distinct meanings, their antiphrastic nature (or at least their difference), the contextual inappropriateness of the utterance, etc., according to one's theory of irony. There exists the so-called "deadpan" delivery of humor/irony which consists precisely in delivering irony, sarcasm or other forms of humor without any overt marker of ironical, sarcastic, or humorous intent. Conversely, if we remove the constituent factors of irony, it ceases to exist. We will begin listing and discussing the markers of irony below. We will not address the issue of the constituent factors of irony (see Attardo 2000a for one theory and a review of many others and references therein). Interestingly, the above distinction has not always been heeded (see Attardo 2000b, for discussion).

We will primarily concern ourselves with phonological (specifically, pitch) markers and with facial ones. However, there exist morphological, syntactic, lexical, and typographical markers as well (Haiman 1998: 28–60; Attardo 2000b). We will not treat those in this paper.

Phonological markers

The literature on the markers of irony and sarcasm includes several studies on phonological markers of sarcasm. The most frequently quoted are discussed below.

The most commonly noted index of ironical intent is intonation. The ironical intonation has been described as a flat (i.e., neither rising, nor falling) contour (Milosky and Wroblewski 1994; Shapely 1987; Fonagy 1976; Myers Roy 1978: 58, qt. in Barbe 1995; Haiman 1998: 35–36). Schaffer (1982: 45) reports question intonation (i.e., rising) as a marker of irony. Anolli et al. (2000) found that lower pitch indicated irony. Similarly, Haiman discusses "inverse pitch obtrusion" (i.e., the utterance of the stressed syllable "at a *lower* pitch than the surrounding material" (1998: 31) in English and German. Conversely, Rockwell (2000) found that a higher pitch was a marker of irony. Adachi (1996) reports that an exaggerated pitch marks irony; this is similar to Schaffer's (1981) finding that extremes of pitch

were used as markers of irony. The use of a marked succession of prominent syllables is analyzed as “beat clash” by Uhmman (1996), and is argued to provide a cue to irony.

Haiman (1998: 30–41) discusses several other intonational patterns that can be used to indicate sarcasm: exaggerated intonational patterns (cf. also Muecke 1978: 370–371), singsong melody, falsetto, “heavy exaggerated stress and relatively monotonous intonation”, (Haiman 1998: 39) and separation by “heavy” (i.e., long) pauses between the words. Muecke (1978: 370) reports the use of “softened voice.” Bolinger (1985, 1989) points to the use of rise-fall contours with ironical statements such as “is that so,” or “you don’t say,” and low tones with statements such as “a likely story,” or “I’ll bet.”

Several authors report that nasalization is a marker of ironical intent, e.g., Cutler (1974: 117), Muecke (1978: 370, “a mycterism”), Myers Roy (1977, qt. in Barbe 1995), Schaffer (1982: 45), Chen (1990: 28), and Haiman (1998: 30–31). Stress patterns broader than usual are also reported by several authors: Cutler (1974: 117), Myers Roy (1977: 58, qt. in Barbe 1995), Schaffer (1982: 45), and Barbe (1995: 76).

Speech rate may also be a factor, with Cutler (1974: 117) and Fónagy (1971: 42) suggesting a slowed speech rate may be indicative of irony and several authors pointing to syllable lengthening as a possible cue (Myers Roy 1977: 58, qt. in Barbe 1995; Schaffer 1982: 45; Haiman 1998: 34, in Chinese and several other languages; Adachi 1996: 8, for Japanese). Extra-long pauses have also been reported as marking irony. (Schaffer 1982: 45; Haiman 1998: 39, for Japanese and German).

Laughter syllables scattered in the utterance (or preceding or following it) have also been reported as markers of irony (Schaffer 1982: 45; Haiman 1998: 31). The literature on the use of laughter to mark humorous (in general) intention on the speaker’s part is ample (Jefferson 1984; 1985).

Facial markers

Among the facial signals of ironical intent the following have been quoted in the literature, or emerged from our analysis of the sitcom material (see below):

- Eyebrows: raised, lowered
- Eyes: wide open, squinting, rolling
- Winking (cf. Muecke 1978: 368–369)

- Nodding
- Smiling
- Blank face

We may add as a curiosity the codified tongue-in-cheek gesture (Almansi 1984: 14–15). Let us also add that Winner and Gallagher (1983, qt. in Kreuz and Roberts 1995) “found that behavioral clues, such as pointing or laughing, were more informative than intonational clues” (Kreuz and Roberts 1995: 23). De Groot (1949; qt. in Haiman 1998: 33) claims that intonational clues overrule the meaning of the sentence uttered. Thus, we seem to be faced with a hierarchy:

behavioral cues > intonational clues > semantic clues

Needless to say, further research needs to confirm this idea. Contrary to the classical claim (Mehrabian and Wiener 1967; Argyle and Trower 1979) that intonational clues override semantic ones, some research has shown that the semantics of the utterances overrides visual and intonational clues (Krauss et al. 1981; Beattie 1981; Noller 1985: 44).

The data-set

Our data consisted of 41 ironical utterances collected from American situation comedies aired in 1999. These had been recorded sequentially on VHS tape off a normal commercially available cable feed. The utterances were in context, ranging from a few seconds before and after the utterance to several non-ironical turns. All ironical utterances occurred in enough context that their ironical or sarcastic nature was obvious to the five trained judges who evaluated the data. We have subjected these data to two types of analysis: a broad analysis of the pitch-range patterns in the data-set, and a study designed to elicit information about facial expressions from untrained observers.

One obvious objection to our methodology is that in analyzing scripted data (i.e., rehearsed, acted) as opposed to authentic, naturally occurring data, we are cutting ourselves off from the true nature of the phenomena we seek to describe. While there is some obvious truth to the fact that naturally occurring conversational data and television situation-comedy footage are different, we believe that they are not incompatible. As has been pointed out before (e.g., Tannen and Lakoff 1984), literary, non-casual data may very

well be as revealing as naturally occurring data. After all, the rehearsed data have to be interpreted and understood by a non-trained, naïve audience. Therefore they have to be compatible if perhaps different, e.g., in intensity: actors may exaggerate the ironical markers to “get the message across” to the audience. Given the preliminary nature of our study, this might actually be a good thing, as it would make locating kinesic/facial clues more easy.

Pitch as a marker of irony

We return now to the use of pitch as a marker of irony. We have seen above the numerous (and at times discordant) claims that have been made about this topic. In order to determine what intonational markers were used in our sample of 41 utterances we produced pitch-tracks for the utterances using *esps/xwaves*.

While we have not yet subjected the data-set to a detailed analysis of the types of contours present, the process of pitch-tracking the utterances revealed three characteristic general patterns present in the ironic utterances. The majority of the utterances could be grouped into one of the three following broad categories:

- Strong within-statement contrast
- Compressed pitch pattern
- Pronounced pitch accents

Strong within-statement contrast

Strong within-statement contrast, e.g., an initial phrase involving high pitch and extreme pitch range, followed a phrase with extremely low pitch range. An example is shown in Figure 1.

The examples falling into this category usually contain sharp within—speaker contrast—usually a large pitch range in the first part of the utterance, followed by a phrase with a highly compressed pitch range (though in several examples this pattern is reversed). In some examples, the first part of the utterance comes across as relatively genuine and consistent with what is said, and it is the switch to a compressed, flat intonation pattern which signals the ironic intent. In others, the first part of the

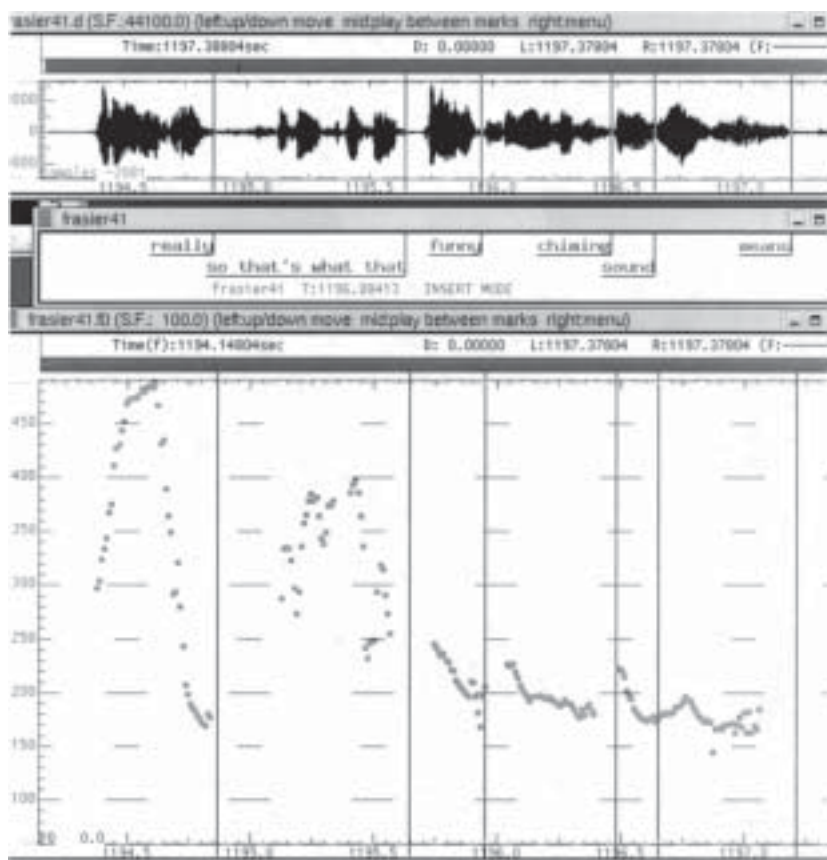


Figure 1. *Strong within-statement contrast*

utterance displays relatively extreme pitch movement. Examples are given in (1)—compressed pitch range shown in bold.

- (1) (a) you take it easy . **rest up for the big trek to the dinner table**
- (b) oh i'm sorry was that rude . you know more about etiquette
 than i do . **what is the proper length of time you should stay after
 someone announces to a bunch of strangers that you got knocked
 up**
- (c) really so that's what that **funny chiming sound means** (Figure 1)

In one instance the sharp contrast between the previous speaker's pitch range and the ironic speaker's range provides a clear indicator of ironic intent, as shown in Figure 2.

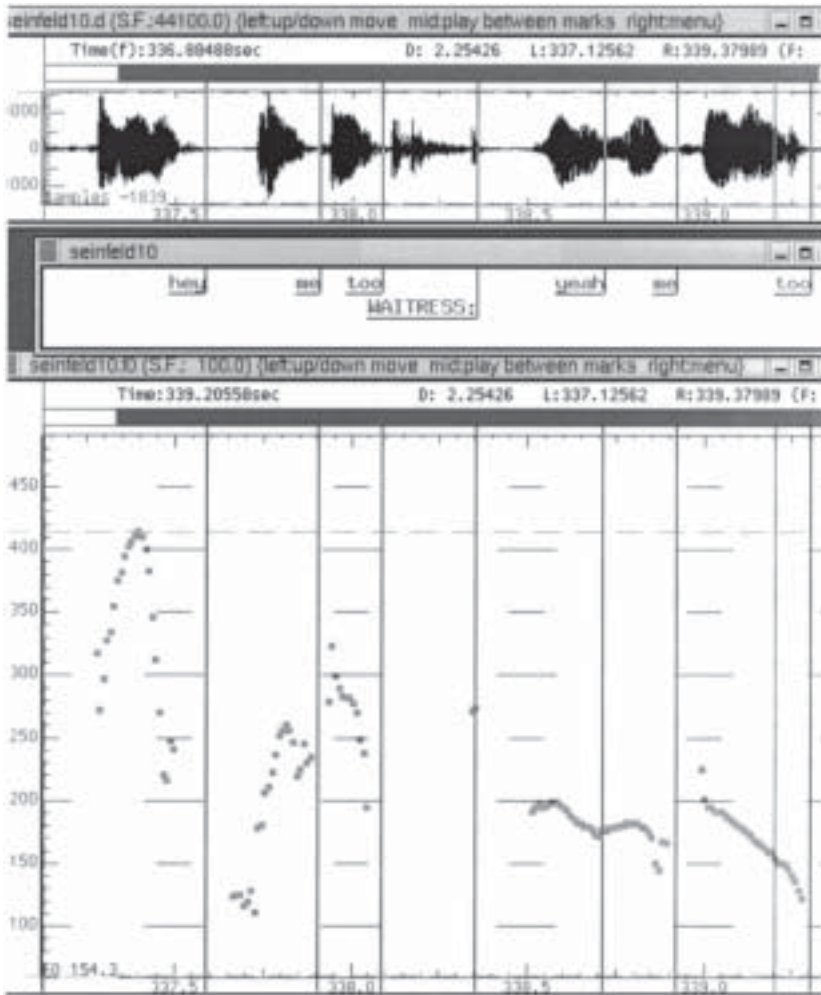


Figure 2. Contrast across different speakers' utterances

Compressed pitch pattern

This pattern shows very little pitch movement. It corresponds to the “flat” intonation commonly noted in the literature. (Milosky and Wroblewski 1994; Shapely 1987; Fónagy 1976; Myers Roy 1978: 58, qt. in Barbe 1995; Haiman 1998: 35–36). An example is given in Figure 3, some other examples are listed in (2).

- (2) (a) yeah right
 (b) you know if we ever go to war and you're captured you're in for a big surprise.
 (c) oh that was so sweet (Figure 3)

Pronounced pitch accents

A final common pattern in our corpus of ironic statements is a series of pronounced pitch accents placed throughout the entire utterance, on all content words, and often on multiple syllables of the same word (cf. Haiman's "exaggerated stress"). This pattern is sometimes also associated with artificial elongation of syllables, and emphatic use of pauses (cf. Schaffer 1982: 45; Haiman 1998: 39; Rockwell 2000; Anolli et al. 2000), and equates with Uhmman's beat clashes: "highly marked rhythmical structures in which the phonologically unmarked alternation between prominent and non-prominent syllables is cancelled in favour of a succession of prominent syllables." (Uhmman 1996: 303). Uhmman discusses examples in which she claims beat clashes are the "decisive cue to contextualize an ironical assessment" (1996: 336). While they may not be the decisive cue in the data set under analysis, there is no doubt that there are a number of examples which contain series of unusually pronounced pitch accents. Figure 4 shows one example, and some other examples are listed in (3).

- (3) (a) oh forty big boys
 (b) oh and what a fine influence you are on others
 (c) well aren't you something
 (d) yes madam . where to miss daisy (Figure 4)

Many examples with this pattern contain an ironically-intended positive statement, in which the exaggerated pitch patterns serve to indicate clearly fake enthusiasm.

Conclusion: Pitch as a contrastive marker

A number of conclusions can be outlined from the patterns noted above. First, we come to a methodological conclusion: one cannot study the pitch of

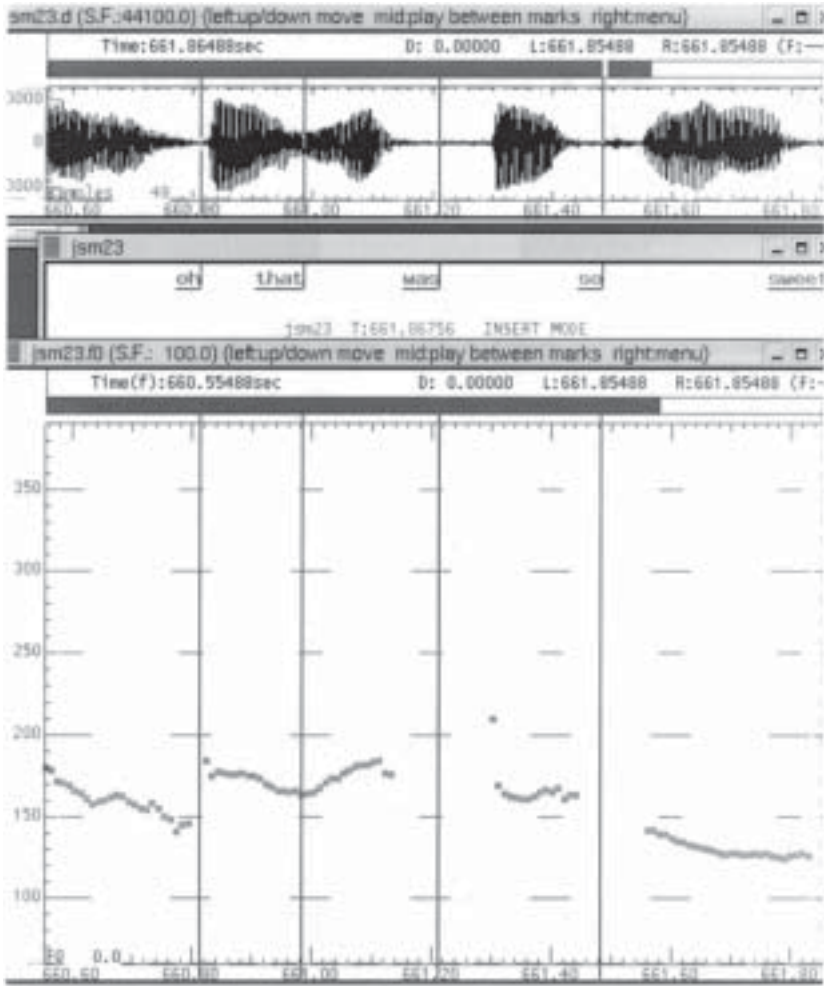


Figure 3. *Flat intonation*

ironical utterances in isolation, as our examples indicate that the contrast between pitch patterns may go beyond the sentence boundary.

Second, the conflicting reports in the literature (e.g., Anolli et al.'s 2000 claim that lower pitch indicates irony, versus Rockwell's 2000 report that higher pitch is a marker of irony) likely reflect that fact that it makes little sense to talk of a single intonational cue of irony/sarcasm. It seems clear that intonation and pitch range patterns cannot be divorced from the pragmatics of the particular utterance with which they are associated. Both extreme and

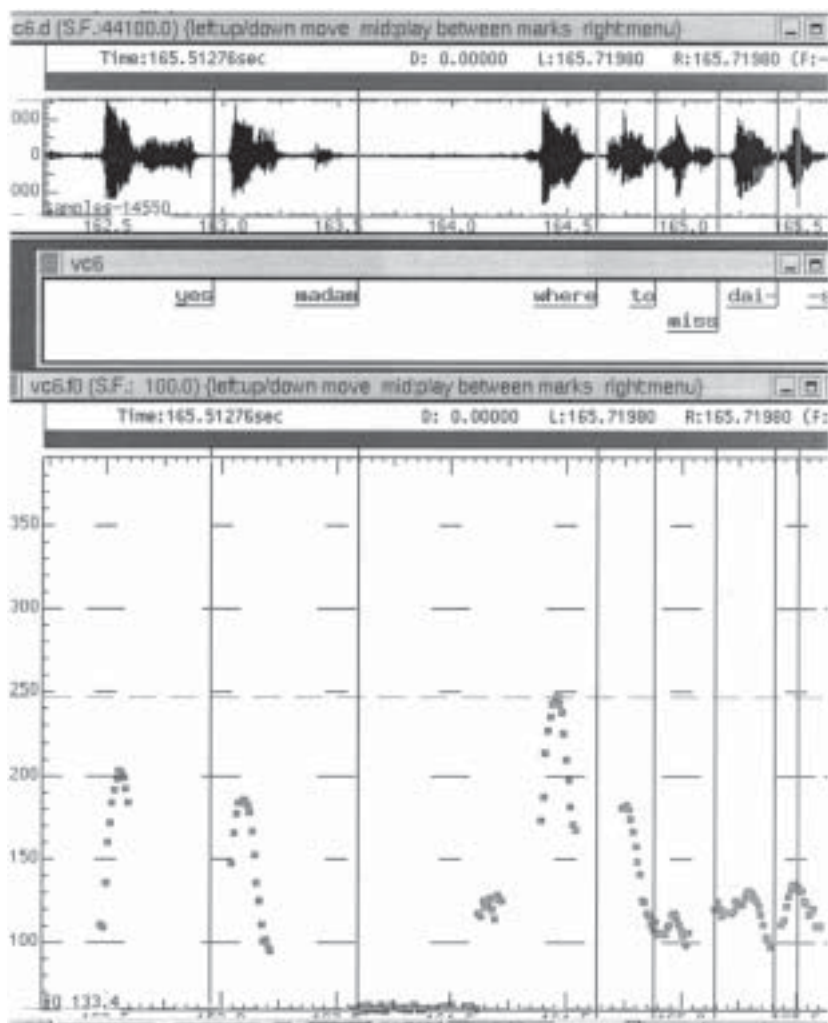


Figure 4. *Exaggerated pitch patterns*

minimal pitch movement may be associated with ironic intent, and may be differently appropriate depending on the pragmatic force of the utterance involved.

No pitch pattern functions as an absolute marker of irony/sarcasm. Intonational cues to irony exist as a contrastive, not a substantive feature. In other words, there isn't a particular ironical intonation, *per se*, but rather, intonational patterns that contrast with the surrounding

(particularly, preceding) or expected/relevant intonational pattern of utterances will signal that “something is the matter” with the utterance and trigger the inferential process whereby irony is recognized and interpreted. Thus in an utterance like (4) where what is said is a positive assessment, and what is meant is a negative one, there are several intonational patterns which would signal ironic intent. One is the flat intonational contour, which is clearly incongruous with what is said, signalling something “is up.” Another is a series of beat-clashing pronounced pitch accents on each of the words—if the accents are exaggerated enough, then no matter what intonational tune they may be associated with, they signal that something unusual is happening.

(4) oh that’s just great

This is not far from Schaffer’s claim that acoustic clues to irony share “a degree of exaggeration or unusualness that draws special attention to the speaker’s attitudes and intentions” (1981: 209), or from Cruttenden’s “intonational misfits” i.e., the undermining of a segmental message by its suprasegmentals, which are incongruous or inappropriate: “a mismatch between tone and context may reinforce an ironical effect already present in the co-occurring grammar and lexis” (1986: 114; 1984). Note however, that Cruttenden speaks only of “reinforcing” a pre-existing ironical intention. Nor does our proposal differ extremely from Anolli et al.’s claim that a “determined caricatural declination of the suprasegmental profile is essential” (2000: 297) but we think that our definition can account for this element of “caricature” by drawing attention on the purely contrastive nature of the ironical clues, doing away with the idea that there exists an “ironical intonation.”

Thus, we predict that when we extend this analysis to investigate specific intonational contours used (as opposed to the broad pitch patterns we have observed here), those findings will be consistent with this conjecture. No intonational contours will in themselves signal irony. Intonation-based ironic cues will surface as incongruity between the pitch contour and what is said, or the pitch contour and what is meant, or perhaps even both.

Facial features

As a preliminary investigation into whether specific facial features are associated with irony, we asked subjects to describe facial features of the ironic speakers. Among the facial markers, we have singled out for special

attention the “blank face,” primarily because, to the best of our knowledge, it has not been described as a marker of irony in the linguistic literature.

Blank face

By “blank face” we mean a facial expression that can be described intuitively as expressionless, emotionless, and motionless. Naturally, this characterization needs to be taken with a grain of salt, since some facial movements such as lip and jaw motion, blinking, etc., may occur if the speaker is talking or if normal involuntary blinking occurs.

Nonetheless, the perceptual impression to the observer is one of a motionless, emotionless, and inexpressive face. But what determines this perception, on the side of the facial muscular actions? All the muscles in our face may perform a small set of different muscular actions: in a smile, our lip corners are raised, in a frown, the inner parts of eyebrows come closer to each other. Now, each muscle has a “rest position,” a “default value” where it does not take any specific action and the case in which all facial muscles are in this “default position” is a base-line face (Ekman, 1979: 174) with respect to which any difference counts as “expressive.” The “blank face” can be then defined as a face where all muscles keep their default (“non expressive”) value. And this unexpressiveness is communicative.

The lack of movement that is felt (communicatively) as most inexpressive is probably that of mouth and eyebrows: no smile, no grimace, no eyebrow raising, no frown is what most typically we feel as “blank face.” Sometimes, in some examples from our data, also a neck particularly rigid seems to contribute to the impression of a blank face; but in other cases, the neck is in a relaxed, natural position, and yet the impression is one of an inexpressive face, although somehow a “tranquil face,” one, in fact, perturbed by no emotion. There seems to be an interesting, but so far unexplored, connection between our blank face and the so-called “poker face” used by players to avoid “leaking” information to their opponents about their game (Hayano 1979; 1980).

Our study

We performed a pilot study and a full-scale run of the study to see if special facial clues for irony existed. In the pilot study, we asked 36 native speakers participants to describe the facial expressions of the ironical speakers. The

participants were students in an undergraduate introduction to linguistics class. Participation was voluntary. Participants received credit for the course. The ironical utterances were indicated as such on the response sheet, so the participants did not have to identify the ironical utterance. No guidance was given to the participants beyond the instruction to “describe the facial expression of the speakers.” We then coded the participants’ responses for the targeted descriptions: for example, when looking for “blank face,” we accepted the following “paraphrases:” not much emotion, deadpan, no expression, stone-faced, stoic, straight faced, non-expression, lack of facial movement, motionless.

Results of the Pilot Study

From our analysis of the results of the pilot study, it appeared fairly clearly that the expressionless, emotionless “blank” face that we were interested in exploring was certainly a part of the folk-taxonomy of irony markers. Ten of our 41 utterances were described by at least five participants as *blank*. If we keep in mind that the participants had received no instructions as to what kind of descriptors we were interested in, this is a very strong positive result, strengthened by the fact that another ten utterances received no *blank* descriptors (i.e., none of the participants labelled them as *blank*). This indicates that our participants were not adopting a strategy of describing as *blank* any ironical utterance nor that they were distributing the markers randomly.

In fact, in one particularly unambiguous case of blank face, 61% of the participants used *blank* or synonyms in their description. Overall, whenever the trained judges classified the facial expression as blank, 10% of participants used *blank* in the description. Once more, considering the lack of instruction of the subjects, this was a positive clue that the blank face marker existed. Let us note, in passing, that a very large number of respondents used “ironical expression” or “sarcastic look” to describe the facial expressions, which, while accurate, was completely unhelpful for our purposes.

Full scale study

The full scale replication of the pilot study was based on the same materials (minus one utterance, removed due to a clerical error), with identical instructions, with one significant difference, namely that we divided the

participants in two groups, one group received no guidance on what to be looking for in the facial expressions, while the other group was given a short set of examples of descriptions of facial expressions that included the expression “blank face.”

The participants were 144 undergraduate students enrolled in either a linguistics course or psychology course and received credit for participating. Assignment to the guided or unguided group was randomized.

Results of the full scale study

In the non-guided sample, nine utterances received over 25 descriptions that were interpreted as synonymous to blank face, while for 21 utterances, the blank face descriptions were ten or less. In the guided sample, nine utterances received scores of 40 or higher. Seven utterances occur in both sets. Still in the guided elicitation, 14 utterances received less than 10 blank face descriptions. Similarly to the pilot study, a large number of responses were of the “ironical face” type.

The four highest scoring blank faces were “Where to, Miss Daisy? (52/59 = unguided/guided score, respectively; example 3d), and three more with scores of 47/64, 39/58, and 41/57.

Overall, we conclude that there is clear evidence that there exists a recognizable facial marker of ironical intent, significantly close enough to the folk-definition of “blank face” for the latter to be taken as a term of art.

Markers of irony?

In the so-called “deadpan delivery,” the presence of irony is not signaled at all, and it is left to be inferred by the hearer(s). However, in other cases, the speaker “alerts” the hearer to the presence of irony in a sentence or discourse. Among the different ways in which the Speaker may alert the Hearer to irony, we distinguish a *metacommunicative* and a *paracommunicative* alert.

The metacommunicative alert

We have a “metacommunicative alert” when the speaker produces a particular signal, either in the verbal or in other modalities, that informs

the hearer that the previous or concomitant utterance is to be interpreted as ironical. An example in the verbal modality typically occurs when after an ironic sentence the Speaker adds "*I'm being ironical*" or "*just kidding*." Examples in the facial modality are the "ironic smile" and the "tongue in cheek." The metacommunicative alert can then in its own right be called a "marker" of irony, since it is a specific signal that just bears this specific meaning; it is a "dedicated" signal of irony.

The paracommunicative alert

The "markers" of irony are then "metacommunicative" in that they communicate *about* the communicative intention to be attributed to another signal. Yet a speaker, in order to alert the hearer that his/her utterance has to be interpreted as ironical, can also use another strategy, which we may call "paracommunicative," in that it does not communicate *about* the ironical statement but, *beside* it; it communicates something else that, jointly with the ironical statement, leads the hearer to understand that the statement is ironical.

For example, a facial cue may be a blank face, unexpectedly inexpressive, or intense nodding or raising of the eyebrows that emphasizes excessively a statement, so as to induce suspicion of irony. A phonological cue may be uttering a statement of enthusiasm with a bored or depressed intonation, or else by the flat intonation characterized by very low variation in pitch (a parallel of the blank face among phonological cues).

In all of these cases, we do not have a signal that explicitly communicates an ironical intent but we have paracommunication that contrasts with another statement, thus disconfirming it and leading the hearer to take it as ironical (or in general, to interpret it non-literally).

Conclusions

We hope to have shown that consideration of the multimodal nature of the clues for ironical intention is essential for a proper evaluation of the clues used to signal irony. It seems that several interesting avenues of research are opening up and it is no rhetorical flourish to state that much further research is needed in this area. Some of it is already in the planning, and as we have

said, this is a report on an early stage of the research program we have undertaken.

Nonetheless, we think that we have already made some significant inroads: the contrastive intonational clues conjecture strikes us as a potentially very significant advance in the field. Similarly, the existence of the blank face kinesic marker, while significant in itself, seems also to indicate that a purely contrastive kinesic clue approach may also be warranted.

Regardless of whether these conjectures will be validated by further research, we think that they underscore the point made above that a multimodal analysis of ironical clues is inevitable. Furthermore, the issue of the relationship and hierarchical organization of the modes needs to be addressed.

While we have made valuable inroads into discerning how markers of irony operate in multiple modalities, an important next step will be to investigate how these factors work together. What co-occurrence patterns are there (if any) between certain types of irony, certain pitch patterns/intonational contours, and facial features? These factors (and others) are highly unlikely to operate independently of one another. The challenge for the future is to come to an understanding of how these multimodal markers operate together as a system.

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Notes

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