

## **Prosodic contrast in non-scripted humorous communication**

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**Resumen:** *En el presente artículo se recogen los resultados de un análisis prosódico de enunciados humorísticos semiespontáneos, extraídos de una muestra de 14 entrevistas del programa The Late Show with Stephen Colbert. También se seleccionaron enunciados no humorísticos con fines comparativos y de control (Bryant, 2010). Los archivos de audio se importaron a Praat para obtener los valores de F0 e intensidad de cada enunciado y analizar posteriormente su desviación estándar de la mediana. No se ha detectado contraste prosódico en estos valores entre los enunciados humorísticos y no humorísticos de la muestra.*

**Palabras clave:** *humor, multimodalidad, contraste prosódico, comunicación semiespontánea, lingüística cognitiva, marcadores.*

**Abstract:** *This article presents the results of a prosodic analysis of non-scripted humorous utterances. Humorous utterances have been extracted from a sample of 14 interviews in The Late Show with Stephen Colbert. Non-humorous utterances were also selected in order to compare humorous and non-humorous utterances, as well as to conduct a control study on contrast between non-humorous utterances (Bryant, 2010). The sound files were imported to Praat, where mean pitch and mean intensity values were obtained for every utterance to later analyse standard deviation. No prosodic contrast has been found between humorous and non-humorous utterances in the sample with regards to intensity and pitch (F0).*

**Key words:** *humour, multimodality, prosodic contrast, non-scripted communication, cognitive linguistics, markers.*

## 1. Introduction

One of the major tenets of Cognitive Linguistics is that meaning is conceptualisation, and that conceptualisation stems from our experience of the world, which is necessarily embodied (Johnson, 1987; Croft and Cruse, 2004; Geraeerts, 2008). McNeill (2013: 29) claimed that it is possible to “see someone’s thought in gesture”. Gestures (face and body movements), along with prosody and speech, conform the various modalities that interplay in face-to-face interaction, and that we can resort to in order to try to ensure successful communication (Stivers and Sidnell, 2005; Poggi, 2013). Communication is inherently multimodal, as information is conveyed through different modalities or semiotic resources with meaning potential (Adami, 2016), such as gesture, gaze, prosody, posture, etc. (Kress and van Leeuwen, 2001; Norris, 2004; Forceville, 2014; Adami and Kress, 2014; Adami, 2016). All these modalities contribute to communication (Kress and van Leeuwen, 2001; Norris, 2004).

Humour is an inherently human quality (Morreal, 1983; Moran, et al. 2004) and an extremely complex phenomenon (Veale, Brône and Feyaerts, 2015). Despite being an intuitive notion, as most people could recognise humour even when they do not find it funny, humour has proved difficult to be scientifically defined and explained (Raskin, 1985; Attardo, 1994). The social function of humour is widely acknowledged in the literature (Morreal, 1983; Raskin, 1985; Attardo, 2001; Dynel, 2009), as well as its interactional value (Holmes, 2000; Hay, 2001; Baxter, 2002; Holmes and Marra, 2002; Veale, Feyaerts and Brône, 2006; Brône, 2008; Archakis, et al. 2010; Feyaerts, 2013; Tabacaru and Lemmens, 2014; etc.). Whenever interaction takes place among interlocutors, a negotiation process is entailed whereby turn-taking is organised and each speaker’s discourse is structured in order for communication to be successful. Humorous communication is no exception, all the more so as for humour to be successful, it must be acknowledged by the counterpart in the conversation, through humour support strategies (Hay, 2001). Multimodal cues, i.e. gestures or prosody, can help to signal humorous intent (Attardo, Pickering and Baker, 2011; Attardo, et al., 2013). As a result, research has taken an interest in studying how —or if— humour is multimodally marked (Pickering, et al., 2009; Attardo, Pickering and Baker, 2011; Urios-Aparisi and Wagner, 2011; Attardo, et al., 2013; Buján, 2019; etc.). The aim of these

studies was to determine whether there are certain gestures, face expressions, head movements, changes in gaze, intonation or prosody patterns invariably associated with humour. In addition, research has focused on establishing whether multimodal cues co-occurring with humour can be considered markers. That is, if they are produced intentionally and help to predict humour, or if they are simply used as metamesages, as in other forms of non-humorous communication (Attardo, Pickering and Baker, 2011).

Analysing multimodal markers of irony and sarcasm, Attardo (2000b) first established a difference between factors, as necessary constituents of irony the lack of which implies there is not irony, e.g. contextual inappropriateness, the presence of two distinct meanings, etc. (Attardo, 2000a; Attardo et al., 2003), and markers, which can help to signal irony and facilitate its understanding, but that are not essential to the phenomenon. In other words, irony will still occur even if those markers are removed. Markers mainly serve to communicate the metamesage that a certain utterance or turn is intended as ironical, or humorous (Attardo, Pickering and Baker, 2011). Multimodal cues can only be considered as markers if they are intentional, which does not necessarily mean that they are made consciously. Attardo, Wagner, and Urios-Aparisi (2011) argued that markers need to be “at least implicitly intended by the speaker to facilitate the recognition of the humorous/ironical intention” (p. 196). That is, a signal can be made unconsciously to mark humour as a result of deeply entrenched conventionalisation, but it would still be considered intentional in the weak sense just described, as its use as a marker of humour has precisely been conventionalised and embedded in our behaviour.

Unintentional cues, such as spontaneous laughter, are named indicators (Attardo, Wagner and Urios-Aparisi., 2011: 197). The authors considered that this is a very significant difference, as indicators would not fall within ostensive communication from a pragmatic point of view. A further distinction is drawn between indices, as unintentional leaks (Ekman, 1979) of humour, and indicators, the difference being that the latter would always co-occur with humour (Gironzetti, 2017). No indicators have been found in the literature so far (Gironzetti, 2017), so their existence is not warranted empirically. Furthermore, the line between intended but unconscious markers and unintentional indices on the basis of deeply entrenched conventionalisation is too thin. No criteria to differentiate what is the product of embedded culture from what is fully spontaneous, to the extent that is unintended, are provided. Fi-

nally, if a certain multimodal behaviour to signal humour had become entrenched and conventionalised precisely for that particular purpose, one could expect to find such behaviour recurrently associated with humour. The fact that no multimodal cue has to date been consistently and unequivocally linked to humour leaves this premise open to question. As a matter of fact, I endorse Ekman (1979) when, in his study on eyebrow movements, he claimed that the intended/unintended distinction was irrelevant. Unintentional signs do not need to be excluded from the study of communication. Regardless of whether multimodal signs are intended or unintended, they contribute to facilitating communication and comprehension of the message by the hearer, i.e. meaning is attributed to these signals whether they have been intentionally produced or not (Flecha-García, 2010).

Many studies have been conducted on the markers of irony or sarcasm, with conflicting results (Rockwell, 2000; Attardo, et al., 2003; Bryant, 2010; Attardo, Pickering and Baker, 2011; Attardo, Wagner and Urios-Aparisi, 2011; Tabacaru, 2014; etc.). For the purposes of this research, irony and sarcasm are considered types of humour, although this is contested by some authors (Dynel, 2009). Irony has traditionally been defined as the opposite of what is literally expressed, whereas sarcasm is considered to be a more aggressive form of irony, with a clear target criticised (Attardo, 2000a). These studies have yielded a wide range of at-times incompatible results, whereby irony is associated with flat intonation (Haiman, 1998), rising intonation (Schaffer, 1982), higher (Rockwell, 2000) and lower pitch (Haiman, 1998; Anolli, Ciceri and Infantino, 2000), heavy exaggerated pitch (Adachi, 1996) and relatively monotonous intonation (Haiman, 1998), etc. Given this varied array of results, the question arises as to what extent we can consider any of those intonation patterns to be a marker of irony. In fact, Attardo et al. (2003) claimed that there is no such thing as an ironic intonation, but rather that pitch and changes in prosody are just contrastive markers.

Fewer studies, however, focus on non-ironical humour. Furthermore, most of the literature is limited to staged humour, with just fewer studies focusing on non-scripted humour (Archakis and Tsakona, 2005; Attardo, Pickering and Baker, 2011; Feyaerts, 2013, etc.). However, given that humour is largely related to familiarity and shared knowledge (Raskin, 1985; Attardo, 1994; Veale, Feyaerts and Brône, 2006; Feyaerts, 2013), staged humour may resort to exaggerated or more ostentatious features in order to reach a wider audi-

ence (Flamson, Bryant and Barrett, 2011). Therefore, its validity as a proxy for everyday spontaneous communication could be questioned. Further studies are needed to explore non-scripted humorous communication, as opposed to staged humour, from a multimodal perspective, in order to gain an insight into how humour is multimodally signalled. The analysis reported in this article aims at taking one step towards filling that gap, focusing on prosody and trying to answer the following question: Are humorous utterances at large (not only irony and sarcasm) produced in non-scripted face-to-face interaction prosodically marked?

## **2. Prosody**

Prosody can be defined as a set of suprasegmental oral features stretching over one or more than one consecutive utterances (Cruttenden, 1986). All suprasegmental phenomena that are constituted by the interplay of vocal features such as pitch, loudness, pause, stress, tempo, duration, rhythm, and voice quality can be understood as prosodic (Wennerstrom, 2001). The stream of speech is perceptibly broken up into units which can be interpreted (Brazil, 1997: 5), with speech-prosody interaction occurring at different levels. Hirst and Di Cristo (1999) consider prosody as the most universal, yet language-specific, feature of human language, whose functions seem to be roughly the same across a wide spectrum of very different languages.

The literature widely acknowledges prosody as having discursive value, and as primarily conveying the speaker's feelings (Bolinger, 1986; Brazil, 1997; Wennerstrom, 2001, etc.). Prosody may also have a syntactic function, albeit subordinate to the emotional one (Bolinger, 1986, 1989; Wennerstrom, 2001). Brown, Currie and Kenworthy (1980), however, pointed to the difficulty to systematically attribute affect-meaning to prosody, when attitude is expressed by means of lexical words as well.

### **2.1 Prosody and humour**

Prosody can also be used for humorous effects. For example, using changes in key and paratones, or using lower pitch to play down the importance of certain elements to later maximise the humorous effect. (Wennerstrom, 2001, 2011; Wennerstrom and Siegel, 2003). Wennerstrom (2011) posited that the

intonation of contrast and the intonation of given information contribute to the humorous effect of jokes, as cohesive devices of discourse which enable the listener to track down cohesive links that may not be obvious in the purely linguistic form of the utterance. Punch lines (puns) are funnier when there is a mismatch between linguistic and intonational cohesion signals, which contributes to heightening the incongruity underlying humour.

Various studies have been conducted on the prosody of humour and irony or sarcasm, without conclusive results. Attardo, Pickering and Baker (2011) found that punch lines at the end of a conversational joke were delivered in a lower pitch. However, they concluded it was because punchlines occur —at the end of a paratone end of narrative—, not because humour was prosodically marked. Archakis, et al. (2010) found systematic differences in the occurrence of jab lines, which are one-liners occurring any time in conversation, not preceded by a narrative, as opposed to punch lines (Attardo, Pickering and Baker, 2011). In Archakis et al.'s study, jab lines were preceded by significant pauses, and delivered at a different speech rate and intensity. Cheang and Pell (2009) studied prosodic markers of sarcasm in Cantonese and English. They found differences in speech rate, voice quality, frequency and resonance between sincere and sarcastic utterances. However, prosodic patterns were not the same in both languages, which led the authors to claim that prosody is key to show non-literal intention in speech, but conventions vary among languages. They also argued that certain sarcastic expressions were so entrenched in the language/culture —what Haiman (1998) refers to as enanti-osemantic expressions— that they became markers of sarcasm themselves without the need of any underlying prosodic cue. González-Fuente, Escandell-Vidal and Prieto (2015) found that some ironic utterances are punctuated by audiovisual cues they called “gestural codas”, which greatly facilitate the comprehension of the utterance by the hearer as ironic. Their study bore out former claims made by Attardo et al. (2013) pointing to the lack of markers of irony, which can be signalled by speakers relying on different verbal and non-verbal clues, not just specific to irony. González-Fuente et al. (2015) frame the use of these cues, and in particular of gestural codas, within a Relevance Theory account of humour (Yus, 2003, 2016), as tools to reduce the cognitive effort required from the hearer to interpret the ironic nature of the utterance. Prosody and gesture, according to them, are just pragmatic facilitators. Along this line, Tabacaru (2014) found a correlation of prosodic patterns with hu-

morous, mostly sarcastic, utterances, whereby words allowing for a number of implicatures are stressed.

Haiman (1998) listed a series of indices to signal that the utterance has to be interpreted as sarcastic, although these are not exclusive to sarcasm; they simply point to the fact that the utterance is not to be taken at face value. Rockwell (2000) found out that sarcastic utterances are delivered at lower pitch, slower tempo and higher intensity than non-sarcastic utterances. It is interesting to note, though, that while in her study participants were able to recognise posed sarcasm just by means of vocal cues, they were unable to tell spontaneous sarcasm apart from non-sarcasm. Attardo et al. (2003: 247) established three broad categories of prosodic patterns in ironic utterances. Bryant (2010), however, rejected the existence of consistent prosodic patterns for ironic utterances. He argued that as different subtypes of irony convey different affective states: sarcasm – negative; jocularly – playful, etc., it is only to be expected that prosodic features will be different for each of these types. He linked irony utterances to prosodic contrast. Prosodic contrast was defined as “a statistically reliable shift between adjacent phrasal units in at least 1 of 5 acoustic dimensions (mean fundamental frequency, fundamental frequency variability, mean amplitude, amplitude variability, and mean syllable duration)” (Bryant, 2010: 545). According to his data, ironic utterances were delivered with greater contrast from adjacent phrases, but that contrast was varied with regards to the parameters changed and the direction of those changes. The only consistent feature linked to ironic utterances in his analysis is that they are delivered at a significantly slower rate, which may be explained as a way to facilitate processing by the listener, as more cognitive effort is needed to interpret this type of utterances (Wilson and Sperber, 2004).

Nevertheless, Bryant (2010) acknowledged that contrast is not exclusive to irony. It is a prosodic tool at the speaker disposal to help disambiguate meaning. The notion of contrast (Attardo et al., 2003; Bryant, 2010) was also advocated by Urios-Aparisi and Wagner (2011) as the motivation underlying the use of prosody for humorous purposes. They argued that there are not prosodic markers of humour as such, but rather that prosody is used for the performance of humour, as opposed to competence, and therefore cannot be dissociated from its pragmatic value. In the same vein, Flamson, Bryant and Barret (2011) stated that, as humour comprehension is influenced by context, the more background information is shared by the participants in the interaction,

the less marking would be necessary for humour to be interpreted. In other words, the larger the intended audience of the humorous utterance, the more salient this humour will need to be made in order to ensure it is successfully conveyed. This is precisely one of the reasons why I believe that humour production in sitcoms cannot always be taken as a reliable proxy of spontaneous communication. Humour will need to be marked ostentatiously to make sure the audience will not miss it.

This brief overview shows there is a lack of consistency in results regarding the prosodic analysis of humorous utterances (Attardo, et al., 2003; Pickering, et al., 2009; Attardo, Pickering and Baker, 2011, etc.). Urios-Aparisi and Wagner (2011) concluded that, with regards to humour marking, some prosodic components might be explained by the need of “contrasting utterances and their meaning, and ultimately, to highlight the ‘mention-factor’ value of an utterance” (p. 525). The idea of prosodic contrast contributing to the humorous effect of an utterance is present in various studies (Attardo, et al., 2003; Bryant, 2010; Bryant; 2011; Urios-Aparisi and Wagner, 2011; Wennerstrom, 2011). Variation in pitch (F0) and intensity has been found to accompany sarcasm (Cheang and Pell, 2009), whereas higher standard deviation (SD) in pitch and intensity was found to be characteristic of humorous turns as opposed to non-humorous turns (Purandare and Litman, 2006).

Drawing on previous research reported above, the study reported in this article delves into the idea of prosodic contrast as a possible marker of humour. It is novel insofar as it looks into prosodic contrast between semi-spontaneous (non-scripted, non-controlled laboratory conditions) humorous (not exclusively irony or sarcasm) and non-humorous utterances in English, trying to answer the question of whether prosodic contrast in F0 and intensity can be considered a multimodal cue consistently associated to humour, used to differentiate humorous from non-humorous utterances. To that end, F0 and intensity SD values in humorous and non-humorous utterances are analysed, as a proxy measure of contrast (Purandare and Litman, 2006; Bryant, 2010).

### **3. Methods and results**

The sample analysed includes 14 interviews from *The Late Show with Stephen Colbert* (Hoskin, 2015-). The choice of show has been determined by the fact that, typically, late night shows allow for humorous instances to occur



more frequently than other type of shows. Interviews have been selected as a source of live non-scripted speech in which humorous communication is likely to occur. In order to ensure that only non-scripted communication is accounted for, only utterances by interviewees have been analysed, avoiding mostly pre-scripted or rehearsed host's speech. Interviews were randomly selected with a view to having the same number of men and women. The fully spontaneous nature of the interviewees' speech could be questioned, as most of them are people used to speaking in public and may therefore be seen as merely acting out their public persona during the show. Having said that, the aim of the research conducted for this study aimed at confronting non-scripted humorous utterances to those taken from sitcoms, TV shows or stand-up comedies in previous literature. Hence, the sample can at least be considered semi-spontaneous to the extent that it has not been previously scripted.

Following Bryant (2010), three different kind of utterances were identified with regards to the prosodic analysis: a) Humorous utterances: to identify humour can be a highly subjective task. For the sake of objectivity, utterances were considered humorous when the audience reacted to them laughing, in order to avoid bias based on the coder's interpretation of humour and following standard practice in the literature (Morreal, 1983; Attardo, Pickering, & Baker, 2011; Archakis & Tsakona, 2005; Flamson et al., 2011; Tabacaru, 2014; Bryant & Gibbs, 2015). It can be argued that laughter and humour do not consistently go hand-in-hand, as the former can occur without the latter and vice-versa (Morreal 1983), but laughter remains a valid indicator of humour in the literature, given how frequently it co-occurs (Holt & Glenn 2013; Gironzetti 2017). b) Baseline and pre-base utterances were also selected to measure prosodic contrast between humorous and non-humorous instances. Baseline utterances were those said immediately before humorous utterances, whereas pre-base were those immediately preceding baseline utterances. A control analysis could thus be performed comparing pitch (F0) and intensity values not only between humorous and non-humorous (baseline) utterances, but also between non-humorous utterances (pre-base / baseline). Table 1 includes the total number and length of all types of utterances analysed.

*Table 1.* Utterances studied

Interview	Interview (s.)	Number of humorous utterances	Length of humour instance (s.)	Number of pre-base utterances	Length of pre-base (s.)	Number of baseline utterances	Length of baseline (s.)
Alec Baldwin	432,030	13	43,055	8	21,524	8	20,114
Alison Janney	445,262	6	29,206	5	13,372	5	17,334
Amy Schumer	514,597	12	38,495	7	14,960	7	10,974
Condola Rashad	389,859	4	17,430	3	7,980	3	4,810
Cristela Alonzo	364,549	12	44,325	8	16,840	10	21,900
Daniel Kaluuya	404,488	13	45,859	9	20,276	13	22,845
Elon Musk	167,691	4	13,905	3	6,130	4	7,845
Michael Hayden	448,257	5	14,050	0	,000	3	4,410
Joe Biden	625,797	7	18,495	5	11,065	5	13,595
John McWhorter	412,383	7	31,120	5	13,210	5	11,910
Riz Ahmed	543,923	13	39,420	7	16,935	10	28,315
Sheryl Crow	290,501	3	9,535	1	1,160	1	,670
Sigourney Weaver	454,829	5	17,870	3	6,100	2	9,460
Susan Sarandon	676,788	5	11,560	2	3,260	3	5,560
<b>Sum</b>	<b>6170,954</b>	<b>109</b>	<b>374,325</b>	<b>66</b>	<b>152,812</b>	<b>79</b>	<b>179,742</b>

Humorous instances found in interviews vary in length, type and number. The sample contains 103.83 minutes of interviews, out of which 109 humorous utterances were found. Two different software applications were used to perform the multimodal analysis: ELAN, version 5.1 (2017), was used to upload and study videos, with annotations on five tiers, corresponding to transcription, construal mechanisms, gestures, and humour type. The results of the cognitive and gesture analysis are reported elsewhere (Author, 2019, forthcoming). Praat, version 6.0.32 (Boersma and Weenink, 2017) was used to perform the prosodic analysis, extracting audio files equivalent to the utterances selected in order to obtain measurements for pitch (fundamental frequency: F0), and intensity (measured in dB). Mean intensity and mean F0 values (pitch) were then included in the prosodic tier in Elan for each utterance identified. Finally, statistical data was processed with SPSS (version 20).

Given the constraints of the sample, in which a single audio track was available, including speech and sounds by interviewees, the host, the music band, and the audience, speech was segmented into utterances applying a usage-based approach. Utterance is equated to a usage event and defined as a unit-like instance of linguistic behaviour in which the speaker “attempts to achieve a particular interactional goal or set of goals using particular linguistic and non-linguistic strategies” (Evans and Green 2006: 130). Utterances are unit-like or “somewhat discrete” (Evans and Green 2006: 130) units to the extent that they convey a coherent idea. Nevertheless, it is highly difficult to provide a set of criteria to always precisely and unequivocally delimit utterance-units, due to the fact that utterance delimitation may simultaneously rely on grammar, semantics, phonological and pragmatic features which do not co-occur in fixed patterns. As a result, segmentation was made trying to delimit utterances as stand-alone units, prosodically, semantically and pragmatically meaningful.

Occasionally, the segmentation of utterances coincided with syntactic constituents or full sentences, as in example (1), in which Susan Sarandon is referring to the effects of Trump’s presidency on political involvement among citizens, among other things.

1) Susan Sarandon: They’re calling their senators. They’re donating to all of these groups. You’re funnier!

Pre-base: They’re calling their senators.

Baseline: They’re donating to all of these groups.

Humorous: You’re funnier!

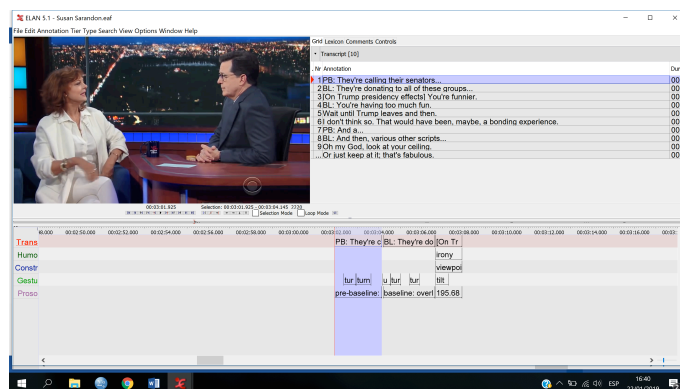


Figure 1. Utterance segmentation in Susan Sarandon's interview

However, most of the time utterance segmentation was not so clear-cut and straightforward. Let's consider example (2) below, from Cristela Alonzo's interview. She is explaining that she got into stand-up comedy watching TV as a kid. She was the daughter of a single immigrant Mexican mother, who hardly spoke any English. As a result, Cristela was often allowed to watch comedy programmes with inappropriate content, not intended for children.

2) Cristela Alonzo: The Specials came out and she's like "Ay, it's the guy from SNL; you can watch this" [laughter in the audience; pause]. And then he starts talking and I'm like "Oh, damn. I can watch this" [laughter in the audience].

In this particular instance, two utterances have been identified, as there are two distinct bouts of laughter in the audience (indicated in square brackets in the example). The utterance immediately preceding laughter is taken as humorous, and segmentation is done backwards to establish baseline and pre-baseline utterances, when possible. In this example neither of the humorous turns includes pre-baseline utterances:

Baseline 1: /The Specials came out/  
Humorous 1: /and she's like "Ay, it's the guy from SNL; you can watch this."/

Baseline 2: /And then he starts talking and I'm like/  
 Humorous 2: /“Oh, damn. I can watch this.”/

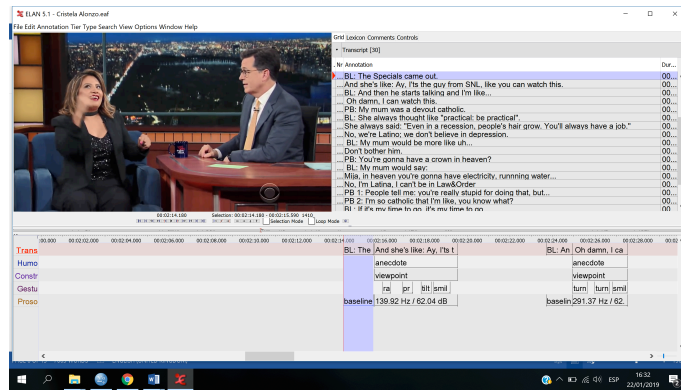


Figure 2. Utterance segmentation in Cristela Alonzo’s interview

The segmentation in the first set of utterances is based on a noticeable pause after “came out”, along with a shift in body posture and gaze before the Humorous 1 utterance. Pragmatically, Baseline 1 is setting the scene, whereas Humorous 1 reports Cristela’s mother reaction to the show on TV. In the second group of utterances, however, the emphasis is placed on Cristela’s reaction, reported in Humorous 2, which again is set apart from Baseline 1 by a noticeable pause and body shift. Pauses were the main driver for segmentation in this case, along with a pragmatic interpretation which divided the statement in fully meaningful units, regardless of the syntactic composition of the constituents. Pause-based units, however, were not always appropriate for segmentation, as in example (3), a humorous utterance from Daniel Kaluuya’s interview, in which the young British actor is talking about how overwhelming being at The Globes for the first time was:

3) Daniel Kaluuya: I don’t know, I was...I was in a daze, man, I was like...

The sentence is left unfinished, as he was interrupted by the audience's laughter. Although there is a noticeable pause after the first "I was", this whole chunk of speech was annotated as a single utterance as it is a whole pragmatically meaningful unit, and the pause in this case is associated with lexical retrieval.

In total, 254 utterances were selected and annotated in ELAN: 109 humorous utterances, and 149 non-humorous utterances, divided into 66 pre-base utterances and 79 baseline utterances. As mentioned before, humorous utterances were those immediately delivered before laughter in the audience. Although laughter and humour are not always and necessarily linked, (Attardo, 1994; Attardo, 2003), the idea of laughter as an outcome of humour is widely acknowledged in the literature (Attardo, 1994; Hay, 2001; Kotthoff, 2007; etc.) and has extensively been used as a parameter associated to humour in humour studies (Archakis and Tsakona, 2005; Tabacaru, 2014; Flamson, Bryant and Barret, 2011; etc.). Baseline utterances were those said immediately before humorous utterances, whereas pre-base were those immediately preceding baseline utterances (Bryant, 2010). Only humorous utterances were annotated on all 5 tiers. Both pre-base and baseline utterances were used for the purposes of prosodic analysis exclusively. The selection of baseline and/or pre-baseline utterances was not always possible because of overlapping sounds or the fact that no utterance had been said before the humorous one, hence the smaller number of these types of utterances as compared to humorous ones.

Following Bryant (2010), baseline and pre-base utterances were used to measure prosodic contrast between humorous and non-humorous instances. A control analysis was performed comparing mean pitch (F0) and intensity SD values also between non-humorous utterances (pre-base / baseline). As mentioned before, it was not always possible to pair pre-base and baseline utterances for each humorous utterance identified. Also, the fact that, as reported above, there was only a single audio track including both the host's and guest's speech, as well as sounds coming from the audience, background noise and music, made it impossible to analyse the prosodic features of all utterances selected due to overlaps. When overlaps affected just a small part of the beginning or end of the utterance (overlaps under 10% of total utterance time), that part was excluded from the analysis and values on the remainder of the utterance were obtained. On the contrary, when overlaps were significant-

ly longer (over 10% of total utterance time) or occurred in the middle of the utterance, the whole utterance was discarded for the prosodic analysis.

Although prosodic contrast can be noticeable even between relatively distant utterances (e.g. over 10s.) (Bryant, 2010), for this analysis only utterances immediately preceding the humorous or baseline utterances (as baseline and pre-baseline utterances, respectively) were taken into account, so that we could safely consider that all utterances belonged to the same discursive and thematic unit.

Mean pitch (F0 in Hz) and mean intensity (in dB) were obtained for each utterance. Then, all data was recorded in SPSS in order to estimate the standard deviation (SD) in mean intensity and mean pitch, for each type of utterance per speaker, as a proxy measure of variability and prosodic contrast (Purandare and Litman, 2006; Bryant, 2010). SD values per type of utterance were compared only within speakers through t-tests (independent variables) to determine whether there was a statistically significant difference in SD, which would lead to conclude that prosodic contrast in F0 and intensity was in turn significant. SD values in mean intensity and mean pitch were compared and analysed for the following pairs of utterances: humorous / baseline utterances and baseline / pre-baseline utterances within speakers. No statistically significant differences in SD values for F0 and intensity were found in the sample ( $p = 0.05$ ), neither between baseline and humorous utterances, nor between baseline and pre-baseline utterances. An additional one-way ANOVA analysis of variance, along with a post-hoc LSD test, was conducted in order to corroborate the results obtained through independent-variable t-tests. Table 2 show the results per type of utterances for each interview.

*Table 2.* Prosodic data per type of utterance in each interview

<b>Interview</b>	<b>Type of utterance</b>	<b>Number of utterances</b>	<b>Mean intensity (dB)</b>	<b>SD intensity</b>	<b>Mean pitch: F0 (Hz)</b>	<b>SD pitch</b>
Alec Baldwin	pre-base	7	61,62	2,97	137,57	19,94
	baseline	8	64,19	1,81	140,21	19,70
	humour	10	66,46	4,43	185,97	70,30
Alison Janney	Pre-base	4	62,50	5,27	165,56	37,04
	Baseline	5	61,50	3,85	147,53	45,79
	humour	5	58,23	2,99	156,20	34,64
Amy Schumer	Pre-base	6	63,38	3,40	219,19	29,02

	baseline	6	67,97	9,04	225,54	32,33
	humour	11	62,04	2,45	196,42	26,40
Condola Rashad	Pre-base	3	63,57	2,27	232,68	38,19
	baseline	3	66,34	2,22	241,44	22,06
	humour	4	62,66	2,26	224,99	19,05
Cristela Alonso	Pre-base	7	63,99	2,12	258,94	26,44
	baseline	9	64,29	2,89	260,02	43,63
	humour	12	62,25	2,82	260,07	58,89
Daniel Kaluuya	Pre-base	9	68,37	3,83	188,94	66,54
	baseline	11	67,94	3,46	170,05	49,67
	humour	12	65,33	3,93	162,33	48,20
Elon Musk	Pre-base	2	64,91	2,43	165,99	43,10
	baseline	3	64,92	2,67	179,17	75,22
	humour	4	65,48	3,81	144,43	5,19
Joseph Biden	Pre-base	5	60,04	1,59	146,21	18,35
	baseline	5	59,88	3,54	137,66	33,02
	humour	6	60,57	6,06	137,40	29,69
John McWorth- er	Pre-base	5	62,13	2,77	142,59	35,65
	baseline	5	51,66	25,26	134,14	27,36
	humour	6	67,10	6,83	151,27	53,27
Michael Haydn	baseline	3	64,01	1,79	182,21	6,87
	humour	5	62,16	2,21	174,10	11,49
Riz Ahmed	Pre-base	6	63,33	1,07	161,61	9,73
	baseline	9	64,13	2,56	167,72	21,54
	humour	8	62,69	2,31	158,59	11,97
Sheryl Crow	Pre-base	1	61,53	n/a	205,99	n/a
	baseline	1	65,69	n/a	185,92	n/a
	humour	1*	61,53	n/a	192,53	n/a
Sigourney Weaver	Pre-base	2	62,20	1,45	177,14	11,87
	baseline	2	63,39	0,14	186,04	32,00
	humour	4	63,99	1,39	182,23	15,34
Susan Sarandon	Pre-base	1	64,33	n/a	177,63	n/a
	baseline	2	63,87	2,62	180,74	26,56
	humour	4	60,29	5,62	189,11	41,67

*\*There are two additional humorous utterances, not included in the prosodic analysis as one is speechless and for the other the speech cannot be isolated from overlapping sound.*

#### 4. Discussion and further research

The results in the present study bear out previous research on spontaneous humour, i.e. no prosodic contrast has been found between humorous and non-humorous utterances, when it comes to F0 and intensity SD values. Prosody may be used to convey or stress linguistic and affective meaning (Wenner-



strom, 2001). But in any speaking context, the interplay between verbal and vocal communication is highly complex, and trade-offs may be needed, as the prosodic features necessary to mark linguistic and affective information may conflict with each other. Hence the difficulty in finding prosodic patterns consistently and univocally associated with a particular category of language use (Bryant, 2011). In addition, the setting and casual tone of the programme, prone to humour, would not require humour be made particularly salient through prosodic cues.

With regards to results on prosodic contrast or patterns previously found in irony and sarcasm in the literature, as opposed to none in non-ironical humour (Rockwell, 2000; Cheang and Pell, 2008, etc.), one possible explanation may be that prosodic cues are used only as metalanguage showing affect, that is, the position and feelings of the speaker with regards to the utterance. In the case of non-ironical humour, it can be argued that there is no such detachment between the speaker and the humorous text. Sarcastic/ironical utterances are manipulated to show what the speaker thinks about the utterance. Non-ironical humorous speech, on the other hand, is manipulated to mislead the hearer to a false interpretation to be subsequently proved wrong in order to achieve the humorous effect. If that is the case, we are confronted by two different phenomena and there would therefore be no reason to expect they would be conveyed resorting to the same kind of metalinguistic or multimodal mechanisms.

Although prosodic cues can be used to communicate humour more effectively (Attardo, Pickering and Baker, 2011; Attardo, Wagner and Urios-Aparisi, 2011; Urios-Aparisi and Wagner, 2011, Wennerstrom, 2011; Tabacaru, 2014), no evidence of consistent prosodic markers specific to humour has been found to date in the literature (Pickering, et al., 2009; Attardo, Pickering and Baker, 2011; Attardo, Wagner and Urios-Aparisi, 2011). In my view, the patterns and salience of the cues involved will eventually depend on the communicative context in which humour is conveyed, with less familiar settings and interactions requiring more multimodal cues (Flamson, Bryant and Barret, 2011). With regards to the question of whether those cues (not exclusive of humour) are markers (Attardo, Pickering and Baker, 2011), I find it extremely difficult —if not impossible— to differentiate between what is intentional and what is involuntary when it comes to prosody. We may intentionally decide to raise our voice to warn someone of danger, but I hold

doubts about the extent to which we can intentionally monitor and produce every element in our prosodic delivery to showcase a certain aspect of our spontaneous speech. Given the link between intonation, gestures and language, though, the question that arises is to what extent intonation patterns and gestures have become conventionalised. Since it is possible to mimic and fake intonation and gestures to resemble spontaneous communication, it seems clear that both gestures and intonation have also evolved into culture-bound conventions, at least in part (Bolinger, 1986).

I endorse Attardo, et al. (2003) view that multimodal cues have a meta-communicative (communicate about the utterance) or paracommunicative (communicate besides the utterance) value, in the sense that they alert the hearer about a certain non-regular interpretation of what is being said (ironic, humorous or any kind of marked communication). All communication is inherently multimodal and both the production and comprehension of utterances (humorous or otherwise) inevitably hinge on a wide range of multimodal cognitive and communicative tools at hand: language, prosody, gestures, background knowledge, and context. Both intonational cues and gestures can be elicited to signal irony or humour, but speakers do not always resort to these cues. The mere co-occurrence of gestures/prosodic patterns with humorous utterances is not enough to consider them markers, especially if they also co-occur with non-humorous communication. For example, Attardo, et al. (2013) conclude that laughter and smile are used to frame humorous turns or chunks of speech, but they cannot be considered markers as they are not consistently associated with humour nor do they integrate with the humorous part—namely, the punch line—. They are just used by the interlocutors as switches from non-humorous to humorous communication.

Therefore, rather than try to establish whether multimodal markers of humour exist, as they have yet to be found in the literature, an avenue for further research might be to look into why and when humour is multimodally marked, i.e. accompanied by multimodal cues (gestures and prosody). If we accept that prosody and gestures can occasionally serve as facilitators to reduce the cognitive effort required from the hearer to interpret the ironic nature of the utterance (Tabacaru 2014; González-Fuente, Escandell-Vidal and Prieto, 2015), further studies could look into the type of context in which interlocutors resort to the prosodic tools at their disposal to help disambiguate meaning in humour. That could shed light on the kind of communicative situ-

ations in which multimodal cues are more likely to be recruited to signal the humorous nature of an utterance.

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