

Analysis of laughables: a preliminary perception study

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Abstract

This paper presents an exploratory scheme, which aims at investigating perceptual features that characterise laughables (the arguments laughter is related to) in dialogue context. We present the results of a preliminary study and sketch an updated questionnaire on laughables types and laughter functions aimed to be used for Amazon Mechanical Turk experiments.

1 Introduction

Laughter is a crucial element in our daily interactions, being very frequent in our dialogues (the dialogue part of British National Corpus contains approximately one laughter token every 14 turns) regardless of gender and age. It is produced in many different contexts being associated with very different emotional states and intentions to affect the interlocutors (Poyatos, 1993; Glenn, 2003; Mazzocconi et al., 2016). In all of its use, laughter has propositional content that needs to be integrated with linguistic import since it is able to enrich and affect the meaning conveyed by our utterances (Ginzburg et al., 2015). Following Ginzburg et al. (2015), Mazzocconi et al. (2016) and Mazzocconi et al. (subm), we consider laughter as involving a predication $P(l)$, where P is a predicate that relates to either incongruity or closeness (see following section for explanation) and l is the laughable, an event or state referred to by an utterance or exophorically.

Understanding the role of laughter in our interactions involves several levels of analysis. In the current work we will be mainly concerned with the resolving its argument, the laughable, which, importantly, needs to be distinguished from the *function* the laughter is performing (see Mazzoc-

coni et al. (2016) and Mazzocconi et al. (subm) for more detailed argumentation).

Much research has been focusing on the instances in which laughter refers to a humorous incongruity (e.g., Hempelmann and Attardo (2011) and Raskin (1985), but this is not always the case. The types of predicates one can associate with laughter are quite a bit wider. An attempt to classify different kinds of arguments has been proposed in Mazzocconi et al. (subm), a summary of which is given in section 2. In section 3 we present some results obtained from a preliminary study on the classification of laughables and its relation to Gricean maxims violations. In section 4 we present our proposal for a new and more detailed questionnaire that we intend to administer to naive coders via the Amazon Mechanical Turk platform. This aims to obtain a more detailed characterisation of laughables by integrating data from linguistic and psychological research.

2 Background

2.1 Categorising incongruity

Most scholars interested in the study of laughter, would agree that most of its occurrences are related to the perception of an incongruity, i.e., an inconsistency between the expectations of the conversational participants and some event. This hypothesis has been studied extensively in theories of humour (Hempelmann and Attardo, 2011; Raskin, 1985), since it is easily applicable and able to account for the laughter in response to humorous stimuli (e.g., jokes). However, although the notion of incongruity seems intuitive and offers an explanation for (some) causes of laughter, it cannot be consistently identified in all cases in which laughter occurs. Also, incongruity, as it has often been used, is a vague and general notion, with incongruities being available at all levels of linguis-

tic interaction (e.g., phonology, semantics, pragmatics). It is therefore difficult to build a computational account of incongruity as it is currently conceived. In order to offer a more fine-grained account, we are planning to assess (i) which of the types of incongruity proposed in [Mazzocconi et al. \(2016\)](#) can be recognised by naive coders, and (ii) whether it can be subdivided into categories that correspond to Grice's conversational maxims ([Grice, 1975](#)).

Following the account of ([Mazzocconi et al., 2016](#)) we will distinguish two major classes of laughter arguments: the ones in which an incongruity can be identified and the ones which do not involve incongruity. When incongruity is present, we distinguish three different categories: i) pleasant incongruity, ii) social incongruity, iii) pragmatic incongruity.

With the term *Pleasant* incongruity we refer to any cases in which a clash between the laughable and certain background information is perceived as witty, rewarding and/or somehow pleasant ([Goel and Dolan, 2001](#); [Shibata and Zhong, 2001](#); [Iwase et al., 2002](#); [Moran et al., 2004](#)). Common examples are jokes, puns, goofy behaviour and conversational humour, therefore closely connected with the definitions offered in humour research (e.g. [Raskin \(1985\)](#)).

We identify as a *Social* incongruity all instances in which a clash between social norms and/or comfort and the laughable can be identified. Examples might be, a moment of social discomfort (e.g. embarrassment or awkwardness), a violation of social norms (e.g., invasion of another's space, the asking of a favour), or an utterance that clashes with the interlocutors' expectations concerning one's behaviour (e.g., criticism) ([Owren and Bachorowski, 2003](#); [Caron, 2002](#); [Fry Jr, 2013](#)).

With the term *Pragmatic* incongruity we classify incongruity that arises when there is a clash between what is said and what is intended. This kind of incongruity can be identified, for example, in the case of irony, scare-quoting, hyperbole etc. Typically in such cases laughter is used by the speaker herself in order to signal changes of meaning within his/her own utterance to the listener. But as already mentioned, laughter can also predicate about laughable where no incongruity can be identified. In these cases what is associated with the laughable is a sense of *closeness* that is ei-

ther felt or displayed towards the interlocutor, e.g., while thanking or receiving a pat on the shoulder.

- (1) (*Pleasant incongruity, enjoyment of incongruity*)

Lecturer: The other announcement erm is er Dr *** has asked me to address some delinquents, no that's not fair, some er hard working but misguided students

Audience: **[laughter]**

Lecturer: erm... (BNC,JSM)

- (2) (*Social incongruity, smoothing*)

Interviewer: ... [cough] Right, you seem pretty well qualified.

John: I hope so **[laughter yes]** erm (BNC, JNV)

- (3) (*Pragmatic incongruity, marking irony*)

Lecturer: ... And then of course you've got Ronald Reagan ... and **[laughter]** history ends with Ronald Reagan. (BNC, JSM)

- (4) (*Closeness, affiliation*)

Richard: Right, thanks Fred. You're on holiday after today?

B: mh mh

Richard: Lovely. **[laughter]** (BNC, KDP)

2.2 Gricean Maxims in laughables

There is extensive literature accounting for laughter occurrences in terms of violation of gricean maxims (e.g. [Attardo \(1990, 1993\)](#); [Yus \(2003\)](#); [Kotthoff \(2006\)](#)). Those has been defined by [Grice \(1975\)](#) as part of the cooperative principle of conversation which directs the interpretation of utterances in dialogue and are listed below.

Maxim of Quantity "Be exactly as informative as is required"

Maxim of Quality "Try to make your contribution one that is true"

Maxim of Relevance "Be relevant"

Maxim of Manner "Be perspicuous"

2.3 Laughter functions

In our analysis it is important to distinguish between the laughable (the laughter predicate's argument) and the function this predication serves in the dialogical interaction ([Mazzocconi et al., 2016, 2016](#)). A laughter predicating a pragmatic incongruity can, for example, have the function of marking irony, scare quoting, invite enrichment, editing

phrase, seriousness cancellation and marking hyperbole. Each of those functions interacts differently with the linguistically generated content and affect in a different way the meaning conveyed.

3 Our study

In the current work we will analyse how coders perceive laughter and its laughable from different perspectives: (a) presence/type of incongruity and (b) Gricean maxims. Furthermore we will check how judgements about the functions of laughter correlate with our previous studies. We also intend to figure out the commonalities between these judgements and personal psychological traits of the participants.

3.1 Annotation for causes of laughter: a preliminary investigation

For our preliminary study, we randomly selected one full dialogue from The Switchboard Dialog Act Corpus (SWDA) (Jurafsky et al., 1997), 5 excerpts from other conversations in SWDA (provided with a brief context) and 5 from part of the British National Corpus (BNC), previously analysed for laughter (Mazzocconi et al., *subm*), and presented them in textual form.

Our questionnaire contained: i) four questions related to general understanding of given excerpt and positioning of laughter and laughable, ii) four questions reflecting violations of Gricean maxims, iii) one question reflecting presence of incongruity, and iv) two free-form questions: about the cause of laughter and its function.

The results that we report here are from a pilot study with 3 annotators¹. While there is not enough data to calculate inter-annotator agreement, the free-form answers to the question about the cause of laughter suggest that, at least in some cases, coders understand and agree on the cause of the laughter.

Some of the presented excerpts show that it can be hard to describe the cause and function of laughter even when they understood the laughers quite well. Example 5 shows disagreement between the coders regarding the position of the laughable (whether it occurred before or after the laughter); the cause of the laughter (e.g. “Saying something sad about another person” vs “Being

¹The annotators were not native English speakers, however some examples in BNC were not produced by native speakers either. We are planning to involve native speakers in our study.

depressed of other peoples’ problems, and at the same time bringing them their problems”); and its function (“Softening” vs “Marking incongruity”).

- (5) A: We have a boy living with us who works for a credit card, uh, company that,
A: and he makes calls to people who have problems, you know, credit problems,
B: Huh-uh.
A: that are trying to work out
A: and, uh, [laughter] . Poor thing he comes home very depressed every night [laughter],
B: Oh. (SWDA, sw2883, 451–481)

Preliminary experiments have also shown that the prosody and phonetic form of laughter are crucial in identifying its causes and functions and we are going to explore its role further in our study.

The full report on the preliminary study was presented in Maraev and Howes (2018).

3.2 Integrated questionnaire

In the present study we will carry out an Amazon Mechanical Turk experiment consisting of the following:

1. 80 audio recordings of fragments containing laughter.
2. The questionnaire consisting of 18 questions (see Appendix A) regarding both the laughable type and the laughter function classification, which is presented after each audio fragment.
3. Randomly embedded syntactically complex catch questions in audio form requiring attentiveness and native language proficiency.
4. A final questionnaire on people’s experiences of their own laughter production and perception (Müller, 2017).

Our aim is to explore the evaluation of laughable and laughter functions as perceived by naive coders completely unfamiliar with our framework (different from the agreement obtained for example in Mazzocconi et al. (2016, *subm*), where coders, even if naive, had been introduced to the authors’ framework and exposed to examples of annotations). It will therefore provide us of a broader perspective on a more ecological perceptual features classification. We will conduct the

experiment using Chinese materials, by means of dialogues from the DUEL corpus (Hough et al., 2016), and using English materials by means of data from the BNC and the SWDA². All annotators will be native speakers of the languages investigated. Such data will then be compared to the annotations already available from the work of Mazzocconi et al. (2016, *subm*), conducted by the authors of the framework and naive coders provided of explanations before the laughter analysis. We will also attempt to conduct some correlation between the data collected and the results of the “Questionnaire on peoples experiences of their own laughter production and perception” (Müller, 2017) and explore for the first time differences in laughable and laughter function classification with respect to specific laughter perception profiles.

3.3 Analysis of results

Considering the shortcomings of agreement calculation using chance-adjusted metrics, e.g. Krippendorff’s α , for tasks such as ours, we will use a probabilistic annotation model (Dawid and Skene, 1979) that has been successfully applied to crowdsourced NLP data collection tasks, such as word sense annotation (Passonneau and Carpenter, 2014). In such tasks, where there is no gold standard, as in our study, these methods are more reliable for inducing the ground truth from the population of annotators.

4 Results

The results will be presented in a potential extended version of the paper.

Acknowledgements

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²We will ask to classify both laughable types and function also in order to have a means of checking whether the participants are actually paying attention and verify that the functions selected could actually be compatible with the ticked laughable type.

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A Supplemental Material