"LOL what?": Empirical study of laughter in chat based dialogues.

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Abstract

We propose a method for investigation of laughter in incremental text-based dialogues. We report a proof-of-concept pilot study which inserts spoof contributions into ongoing text based dialogues. These take the form of additional laughs and laughter clarification requests which appear to come from one's dialogue partner. This pilot shows that this is a useful way to investigate laughter in dialogue.

1 Introduction

Laughter is extremely frequent in our daily interactions (Ginzburg et al., 2015). It is crucial for managing relationships and conversational flow and clarifying interlocutors' intentions and meanings (Glenn and Holt, 2013). Unsurprisingly, in text-based chat, we observe written laughter ("haha"), acronyms ("LOL"), and emoticons (":D") aimed at fulfilling the role of laughter in text-based chat.

There is extensive work on the contribution of laughter to our utterances (Cosentino et al., 2016; Shaw et al., 2013; Jefferson, 1984, a.o.). In particular, following Mazzocconi (2019) we conceive of laughter as a predicate relating to an *argument* in the context (which can follow, precede or co-occur with the laughter Tian et al., 2016). Following conversational analysis (Glenn and Holt, 2017), we use the term *laughable* to refer to what the laughter is related to (the argument), without making any claims about its possible humorous content.

We list below 4 different properties that can be associated with laughables (Mazzocconi, 2019).

1. **Pleasant incongruity** is a clash between the laughable and certain background information perceived as witty, rewarding and/or somehow pleasant. Common examples are jokes, goofy behaviour and conversational humour.
2. **Social incongruity** is a clash between social norms and/or comfort and the laughable, such as social discomfort (e.g. embarrassment), violation of social norms (e.g., invasion of another's space), or clashes with behavioural expectations (e.g., criticism).
3. **Pragmatic incongruity** is a clash between what is said and what is intended, as in the case of irony, scare-quoting, hyperbole etc. Laughter is used by the speaker to signal a change of meaning within their own utterance.
4. **Closeness/Pleasure** is where no incongruity can be identified. In many of these cases a sense of closeness towards the interlocutor is associated with the laughable, e.g., while thanking or receiving a pat on the shoulder.

Recent work shows that as with almost all aspects of utterances in interaction, laughter (particularly for pleasant incongruity laughables) can be the object of clarification requests (CRs) (Mazzocconi et al., 2018). As with verb CRs (0.09%) (Purver, 2004), laughter CRs are rare (0.04% of laughs).

Besides laughter's contribution to the semantics of dialogues, laughter has social effects. Its acoustics can positively influence the speaker, who often laughs back (antiphonal laughter), depending on familiarity (Smoski and Bachorowski, 2003), contexts and the pragmatic function of the laughter (Mazzocconi et al., 2016). Moreover, in natural dialogue laughter offers a special opportunity for joint vocalization with an important bonding effect (Laskowski and Burger, 2007), which can be interpreted as a signal of affiliation (Bryant et al., 2016). Trouvain and Truong (2012) found a tendency to align in the number and length of laughter production in the course of the conversation and alignment also occurs for phonetic form (Truong and Trouvain, 2012) and voicing of laughter (Ludusan and Wagner, 2019).

Laughter elements in text based dialogues are used in similar ways to face-to-face interactions, in

terms of turn-taking, topic management, and laughter's relation to the non-seriousness of previous talk and presence of upcoming assessment (Petitjean and Morel, 2017).

2 Aims and objectives

This paper describes a proof-of-concept pilot study using the DiET chat tool (section 3.1) to systematically investigate the effects of upgrading and downgrading laughter in text based dialogues (analogously to feedback in Healey et al., 2018). Ultimately, we aim to address three primary questions:

General characteristics of dialogue How can laughter or laughter CRs influence general characteristics of dialogue, such as enjoyment?

We hypothesise that automatic insertion of laughs in appropriate places can make a conversation more enjoyable. On the other hand, adding extra clarification requests about existing laughs might make the dialogue more serious and less fun.

The role of laughter CRs Which features of laughter and laughables are addressed by CRs?

Given the scarcity of laughter CRs in dialogue, our experimental approach offers a unique way to probe the understanding dialogue participants have of their own laughters. We aim to: (1) learn more about laughables and their idiosyncratic features; (2) assess which kinds of attitudes expressed by laughter can be interpreted as the subject of CRs.

We also hypothesise that CRs related to social incongruity laughter might be harder to address, compared to CRs related to pleasant incongruity laughs, since very often we are not even aware of producing laughter to smooth social incongruities.

Laughter alignment and antiphony How are laughs aligned in text-based dialogue? We hypothesise that adding extra laughs ought to increase the total number of laughs produced by participants, as they respond antiphonally to the 'extra' laughs.

3 Method

In this proof of concept pilot study, spoof contributions were added to ongoing text based dialogue in real time at experimentally manipulated points, using the DiET chat tool.

3.1 The DiET chat tool

The Dialogue Experimental Toolkit (DiET) chat tool (Healey et al., 2003) is a text-based chat interface into which interventions, such as adding fake turns, can be introduced into a dialogue in real time. As these interventions occur as the dialogue progresses, they cause a minimum of disruption to the 'flow' of the conversation. The DiET chat tool is a custom built Java application, consisting of two main components: the server console and the user interface. The server time-stamps and stores each key press, and acts as an intermediary between what participants type and what they see. Each turn is passed to the server, from where it is relayed to the other participant(s).

Incremental interface In the incremental version, the user interface consists of a single chat window in which both participants' text appears from the right hand edge of the window as they type, and gradually fades out (see Figure 1). For each participant, their own text appears at the bottom of the window in black font, with their interlocutor's contributions appearing in blue above. Each character is displayed at the time it is entered, enforcing the sequential linearity of the dialogue – unlike standard chat interfaces where interlocutors only transmit their turns when they are complete. We use this interface since it maintains the sequentiality and incrementality of dialogue in similar ways to spoken dialogue.

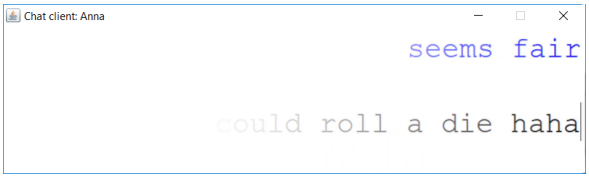

Figure 1: Incremental DiET chat interface at as seen by Anna, showing contributions produced simultaneously

3.2 Interventions

We introduce two different types of intervention (in a between participants design so that pairs of participants receive only one type of intervention); i) laughter CRs; ii) additional laughters. The interventions, in the form of additional "spoof" turns appear to the participants as if they originate from their dialogue partner.

Laughter CRs The intervention is triggered by laughter in different forms. For the pilot study we chose the most common types of written laughter from a sample of DiET chat tool 'balloon task' dialogues: (1) *haha* and *hehe*; (2) acronyms, e.g. LOL, ROFL, ROTFL; (3) smileys denoting laughter: `:D` and `xD`. On encountering one of the triggers, the

server randomly generates one of three forms of CRs: (1) "What's funny?"; (2) Reprise with a question mark, e.g. "lol?" and "haha?"; (3) Reprise with a question, e.g. "lol what?" and "haha what?". These spoof CRs (see figure 2 for an example) were only seen by the speaker who produced the laughter, and appeared to come from their partner.

Additional laughters The trigger was an exclamation mark, after which a spoof laughter token in the form of "haha", "lol" or ":D" was generated immediately, as if it also came from the person who produced the exclamation mark (see e.g. figure 3). Laughs were only seen by their partner.

3.3 Participants

Four pairs of fluent (not native) English speakers chatted for approximately 30 minutes each. One pair was assigned to the spoof CRs condition, one pair to the additional laughs condition. The other two pairs received no interventions. We informed participants that we were studying how people interact via this innovative chat tool.

3.4 Task

The *balloon task* is an ethical dilemma requiring agreement on which of four passengers should jump out of a hot air balloon, which will crash into some mountains killing all on board unless one of them jumps to their death to save the others.

Dr. Nick Rivers – a cancer research scientist who believes he is on the brink of discovering a cure for most common types of cancer.
Mrs. Susie Derkins – a primary school teacher who is 7 months pregnant with her second child.
Mr. Tom Derkins – the balloon pilot, Susie's husband and the only one with any balloon flying experience.
Miss Heather Sloane – a 9 year-old music prodigy, considered by many to be a "twenty first century Mozart".

Participants were instructed to debate the reasons for and against each person, and reach agreement about who should jump. This task is highly conductive for antiphonal laughter: the interactions are good-natured, and cooperative and require participants to agree (Banning and Nelson, 1987; Vinton, 1989). Following the task, participants were debriefed. No-one reported noticing any interventions. This is particularly interesting in the 'additional laughter' pair, as there were 32 interventions.

4 Results

This exploratory study acts as a proof-of-concept for further investigations. Qualitative observations are reported here.

The sequential patterns of laughter and laughables observed in text dialogue are similar to face-to-face: laughter occurs both after and before the laughable. Moreover, we observe the same range of laughable types observed in multi-modal dialogue: laughables constituted by pleasant, social and pragmatic incongruities.

As can be seen in figure 2 the spoof CR[1] ("lol what?", on line 3) was addressed by A who rephrased (l. 5) the laughable (l. 3) and provided a resolution for the attitude expressed by the laughter (l. 7). What they meant is that if the pilot is thrown out then everyone dies, which would be an incongruous solution ("a plot twist") to the moral dilemma.

In the additional laughter condition we observed 8 antiphonal laughter responses in the next turn. The participants also reported enjoying the interaction (and had to be stopped by the experimenter).

5 Discussion

Participants use laughter in text-based chat in similar ways to in face-to-face dialogues. The DiET chat tool offers a unique tool to investigate the nature of laughter in a controlled way which is not possible through other means. Our preliminary investigations show that these experimental manipulations work and our next steps are to scale up to full experiments explicitly addressing our hypotheses regarding the influence of laughter on general characteristics of dialogue, the role of laughter CRs and laughter alignment.

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[1]For this condition only one spoof CR was introduced, nevertheless it makes up 0.11% of all laughs in that dialogue (cf. 0.04% in the BNC).

```
1  A: wel[l that] alters the questin a bit
2  V:    [out   ]
3  A: "if you kick TOm aeveryoned ie  dies" lol
4  V*: lol what?
5  A: [if tom is kicked of everyone dies that would be aploit]
6  V: [Yup Probability         is quite    high     isnt it  ]
7  A: stiw A PLOT TWIST
8  A: but ok
```

Figure 2: Example of CR insertion: Line 4 (seen only by A) was produced by the server.

```
1 N: maybe swe should kill someone else?
2 A: we could roll a die haha
3 N: seems fair!
4 N*:  hahaha
5 A: :D
6 N: look, the balloon is about to curush/crush!
7 N*:  hahaha
8 N:  so if we kill the poilor(pilot)it does not matter right?
9 A: well, i dunno if there's a pilot there
```

Figure 3: Example of laughter insertions. Lines 4 and 7 (seen only by A) were produced by the server.

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