

S1: Codebook for scoring Other-initiated repairs in Reddit dialogues

1 Introduction

This codebook details the process used for scoring Other-initiated repairs in Reddit threads in the paper titled:

Conversational repairs are universal but not inevitable: Reddit dialogues usually end before misunderstandings can be resolved

A conversational repair has three components. First, a trouble source involves a problem of miscommunication – hearing, reading, writing, speaking, etc. – and misunderstanding that arises in the dialogue [1]. Second, an initiation involves a participant alerting other speakers to the trouble source. Third, a completion involves a participant addressing the misunderstanding or miscommunication. The initiation and completion can be within the same turn (produced by one speaker) or distributed across two turns (produced by two speakers). A repair can be initiated by either the person whose statement caused trouble in the dialogue (Self) or another person who noticed the trouble (Other).

In the present coding scheme, Other-initiations of repair refer to Other-initiated Self-completed repairs and Other-initiated Other-completed repair, where the latter is completed by a second Other (i.e., a third party). The manual coding scheme adapts the Dingemanse and colleagues' [2] typology, aimed at synchronous communication, for online text-based communications. The codebook details how different types of initiations (Section 3.2) and completions (Section 3.3) were identified and scored.

The coding of repairs were guided by four principles:

1. Next turn proof [3]. A turn was considered a repair initiation if another speaker treats it as such. This enables ambiguous or unintended cases of repair initiations (e.g., rhetorical questions, a joke) to become initiations based on the completer's interpretation.
2. Unambiguous repair initiations. A turn was considered a repair initiation if it unambiguously addresses a problem of misunderstanding (e.g., "What did you mean by that?"). These instances violate the next turn proof principle but enable the tracking of uncompleted repairs (see Section 3.2.4).
3. Conservatism in coding [2]. Some turns *resemble* repair initiations but are not actually performing that function, such as an exclamation (e.g., "WHAT?"). As such, we took a conservative approach to scoring repairs, defaulting to *no repair* if there were hesitations regarding the certainty of the repair.
4. Iterative adjustment of measurement protocols. The data was coded multiple times, with each iteration making fewer adjustments to the coding. This repeated measurement process combines inductive and deductive approaches.

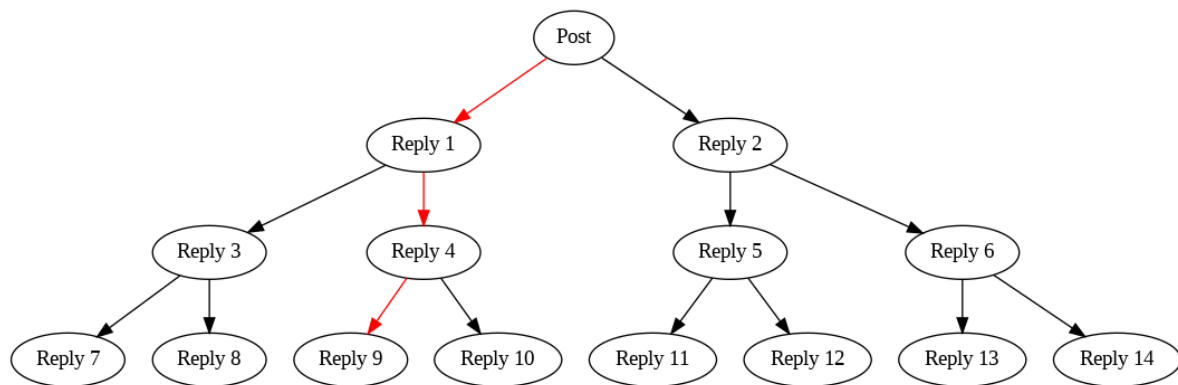
2 Data structure

This codebook was designed for scoring text-based interactions conducted on Reddit. Reddit is a social media platform comprised of smaller "subreddits" with their own sets of rules, norms, and topics of discussion [4]. Subreddits are structured around posts and comments. Posts can involve sharing external media content (e.g., YouTube videos, memes,

images, etc.) or simply pure text. Commenters then “reply” to the post (and subsequently to each other) in a reply tree.

A reply tree is so-called as posts and comments can have multiple direct replies that branch off into different conversation threads. Figure 1 shows a graphical representation of a Reddit reply tree. There are eight conversation threads contained within the reply tree, each of four turns in length. Each of these threads begins at the post and ends at the final reply of a branch. In the highlighted thread, the first turn is the post, the second reply 1, the third reply 4, and the fourth reply 9. In this codebook, we consider a single branch as a “dialogue” because it involves a linear turn-taking process between participants. This is a limitation as a thread is only a sample of the wider reply tree that is the self-contained interaction space. However, scoring threads is much more straightforward due to their similarity to face-to-face dialogues.

Figure 1: Reply tree conversation structure on Reddit



3 Coding scheme

3.1 Iterative coding procedure

Due to the contextual nature of repairs, the coding was done iteratively, adapting the codebook where necessary. The iterative process of coding began by scoring 500 Reddit threads using linguistic features. In total, we coded 500 threads, of which 250 were shared for estimating inter-rater reliability (Krippendorff's $\alpha = 0.80$). The coding scheme was then adjusted systematically based on inductive coding of the dialogues. This involved removing false positives based on the four principles and rectifying any false negatives. In total, 4,803 threads were manually coded for repair initiations, sampled from 500 Reddit post-comments sets.

3.2 Repair initiations

There are three categories of repair initiations coded for in the data, varying in their degree of specificity [2,5]. An initiation is more specific when it addresses an unambiguous aspect of the trouble source. From least to most specific, the three types of repair initiations are: *Open Requests*, *Restricted Requests*, and *Restricted Offers*. We describe the coding process below, providing empirical examples and inclusion and exclusion criteria used for their identification. In cases where multiple requests and offers were present, we coded for the most specific repair type.

3.2.1 Open requests

Open requests are the least specific form of repair. These signal trouble in communication without specifying what or where the issue is. Examples include interjections like "Huh?", question words like "What?", or formulaic expressions like "Sorry?". Example 1 provides an example of an Other-initiated Other-completed repair using a typical Open request. The first turn, in this case the original post, the Self gives an ambiguous title

accompanying a media file. The first Other initiates a repair without stating what aspect they do not understand. In the third turn, the second Other completes the repair by addressing what the original poster (Self) intended.

Example 1. Open request

Turn	Speaker	Empirical example	Repair components	Rationale
1 st	Self	Title: Even nature has communism	Trouble	Self posts ambiguous content.
2 nd	Other	I don't get it	Initiation	Other expresses confusion without specification of what they're confused about.
3 rd	Other (2)	OP tried to make hammer and sickle with two sticks.	Completion	A second Other attempts to explain the Self's (OP) intent .

We coded for open requests in cases where the apparent intent of the statement was confusion. This includes any singular statement of confusion (e.g., “huh?”), statements of misunderstanding without specificity (e.g., “I don't get it”) and other instances of unspecific questions where the next speaker treated it as an initiation. This last category relates to the excluded types of open requests, which were excluded unless treated as an initiation by the next speaker. These excluded types included *exclamations* (e.g., “Seriously?!”) which express surprise without indicating misunderstanding and *question-formatted news receipts* [6] where the speaker is reacting to news (e.g., “Really?”), and any *jokes or puns* which intentionally misunderstand for humorous purposes.

3.2.2 Restricted requests

A restricted request specifies the nature or location of the problem within the trouble source. In terms of linguistic markers, restricted requests are often characterized by question

markers (*who, what, where, which, why, when, how, and whose*) specifying part of the content of the trouble source (e.g., “who are you talking about?”). Example 2 illustrates an Other-initiated Self-completed repair containing a restricted request. In the first turn, the Self is replying to the Other on how they might post a video on a subreddit. The Other finds this answer dissatisfactory and asks *why* the Other cannot post the video. The Self then completes by providing context for the vagueness of the trouble source.

Example 2. Restricted request

Turn	Speaker	Example text	Repair components	Rationale
1 st	Self	Then I can't post a video	Trouble	Self makes a statement.
2 nd	Other	but why can't you?	Initiation	Other asks for a clarification about why the Self is unable to post a video.
3 rd	Self	The question, which you proposed, doesn't let me	Completion	Self's clarifies their statement by referring back to a previous constraint by the Other.

Restricted requests were only coded when a turn addresses a misunderstanding of the Self's perspective. Instances where a request is directed at a reported perspective in the trouble source were not considered repair initiations (e.g., “Why would Trump have done that?”). A question was not considered a restricted request if it was a *question-formatted news receipts* (e.g., “He did, did he?”), a *joke* or *sarcastic statement* (e.g., “I wonder why you would do that ;)), and a *rhetorical question* (e.g., “Who do you think?”). As with open requests, however, these were considered in cases where these questions were treated as initiations (e.g., “I actually don't know who”). External restricted requests – where they are aimed at something the Self said elsewhere to the dialogue (e.g., if they are a known person such as in r/IAmA) were also included (e.g., “In your tweet, what did you mean by ‘flabbergasted’?”), with an extra column delimiting whether it was external (binary).

3.2.3 Restricted offers

A restricted offer is the most specific type of repair initiation as it provides a choice of completion for the Self to choose from. In terms of linguistic markers, restricted offers can be indicated by an “or” question (e.g., “Did you think it was red or black?”), a suggestion (e.g., “Did you mean 2023?”), or a partial repetition with a replacement (e.g., “You mean ‘going out in *London*’?”). Example 3 provides an empirical example of a restricted offer. In the first turn, the Self refers to “advantages” without specifying what they are. In the second turn, the Other makes a restricted offer that could be considered a joke. The Self completes by clarifying that they do not accept the offer.

Example 3. Restricted offer

Turn	Speaker	Example text	Repair components	Rationale
1 st	Self	Hey , I married a woman that is much taller than me. It has definite advantages.	Trouble	Self states that there are “advantages” but not what these are.
2 nd	Other	Like she can carry you to bed when you fall asleep on the couch?	Initiation	Other offers a possible advantage.
3 rd	Self	No but slow dances are fun	Completion	Self completes by stating that the Other’s suggestion isn’t an advantage.

Excluded restricted offers include when they refer to a *reported perspective* in the trouble source (e.g., “Did Trump think he could win this”), when it is a *joke* or *sarcastic* statement (e.g., “You mean you *don’t* want to get hurt?”), a *personal insult* (e.g., “Are you dumb or just stupid?”), and a *rhetorical question* (e.g., “Do you REALLY believe that would

work?”). As with the other initiation types, all excluded could be considered offers where these questions were treated as initiations (e.g., “I think he really does believe that”; “I actually do believe that”). External restricted offers were also included (e.g., “In your tweet, did you mean 2023?”).

3.2.4 Uncompleted initiations

There are cases where unambiguous attempts at repair may not have completions. Open requests are generally considered unambiguous as their own unambiguity renders them explicit indications of misunderstanding. For instance, there is evidence that the word “huh?” is found universally across cultures and languages [7], indicating it has the same pragmatic intent (repair) regardless of context. Restricted requests are considered unambiguous when they make specific reference to the Self’s perspective (e.g., “Why are you confused?”) and when they repeat (e.g., “Why “confused”?) or rephrase/refer to (e.g., “Why are you struggling with the idea?”) the trouble source. Similarly, restricted offers are unambiguous when they refer to the Self’s perspective (e.g., “You mean 2023?”), when they repeat (e.g., “Is it actually 2024?”), or rephrase/refer to (e.g., “Wasn’t that the year after?”) the trouble source.

Example 4 demonstrates a typical non completion without response. An uncompleted initiation does not necessarily mean that no one has replied. It can also be when the next speakers do not attend to the clarification request and, instead, choose to ignore it. For instance, this ignoring of initiation has previously been associated with trolling in online interactions [8] and therefore justifies the coding of non-completions. We do not explicitly code for these as they are self-evident from the statement of non-completion with a preceding turn.

3.3 Repair completions

Repair completions were coded as binary (completed or not completed). Who completed is determined by whether the completer is the source of the trouble source (Self) or not (Other). At the core for coding completions is whether they address the initiation in question. These initiations are produced and concern the Self, but they are not

For Self-completions, Table 1 provides an overview of six possible indicators of completion. The Self may completely repeat the trouble source or partially repeat it or rephrase it to double down on their original statement. The Self can also argue for their original statement through reframing it with a different perspective. The

Table 1. Completion types. Trouble and initiation examples in the first row are designed to apply across the completion examples. Initiation 1 always relates to disconfirming and initiation 2 conforming completions.

Completion type	Description	Example and conformity
	Conformity refers to whether the completion agrees with the premise of the initiation.	Trouble = “The year was 2022” Initiation (I1) = “Was it not later?” Initiation (I2) = “It’s this year then?”
Full repetition	The content of the trouble source is repeated precisely.	Completion = “The year was 2022.”
Partial repetition	Part of the content is referenced verbatim.	Completion = “It <u>was 2022</u> ”
Rephrasing	The trouble source is rephrased without significant modification.	Completion = “It was before 2023”
Reframing	The trouble source is framed in a different perspective (modified).	Completion = “I was in Dubai, so it had to be then”

Explicit marker	The Self overtly refers to the intended meaning of the trouble source.	Completion = “I really did mean 2022”
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