Chiaroscuro for Emotions: A Contrastive Emotion Benchmark Grounded in Appraisal Theory

Anonymous ACL submission

Abstract

Emotion recognition benchmarks predict one emotion per text, missing many real-world scenarios where two people arrive at opposing emotions from a single shared trigger. For example, a child kicks her seat in excitement while the passenger ahead feels mounting irritation. We introduce CHIARO, a 1,000 human-annotated sentence benchmark for contrastive emotion inference grounded in appraisal theory. Each scene describes one causal trigger eliciting a positive emotion in one person and a negative emotion in the other, drawn from a ten-class taxonomy. We benchmark seven frontier LLMs and four off-the-shelf emotion classifiers where the strongest LLM reaches 67.3 macro-F_1, well below human agreement, while existing emotion classifiers score near chance. Beyond evaluation, CHIARO also serves as a training signal: combined with an existing emotion corpus, the resulting downstream classifier improves on CHIARO itself and on six of ten external emotion benchmarks, positioning CHIARO as a complementary signal for emotion recognition.[1]

1 Introduction

When two people share a single event, they can often arrive at opposing emotions. The trigger is one, but the affective response is two: it diverges in valence, anchors to different aspects of the same situation, and rarely surfaces in explicit affect words. A surprise promotion announced in front of the whole team may fill one engineer with pride at the recognition, while the colleague who had been quietly competing for the same role feels their stomach drop as the news lands; neither emotion is stated, yet both are inferable from the situation alone. Comprehending both is the unit of analysis that various tasks ultimately need: from conversational systems that mediate interpersonal disputes

Figure 1: Contrastive emotions in a shared scene. A child seated behind gleefully kicks the seat while playing on a tablet, whereas the man in front turns back with visible annoyance.

(Yeo and Jaidka, 2025), to character-grounded story generation that must render plausible mixed reactions across secondary characters within a single scene. This extends to multi-party dialogue analysis where per-agent emotional traces routinely diverge within a single shared event (Poria et al., 2019).

Current emotion benchmarks, however, assess a narrower construct. From GoEmotions (Demszky et al., 2020) to its recent multilingual and culturally-grounded successors (Muhammad et al., 2025; Belay et al., 2025), fine-grained labeled corpora have grown substantially in scale and coverage, yet the prediction target remains the emotion of a single agent in isolation, and a strong baseline can often be built from a single affective keyword (Sabour et al., 2024). The Implicit Emotion Shared Task (Klinger et al., 2018) partially addresses this limitation by removing the explicit affect word and requiring context-driven inference, but it still asks for a single emotion held by a single individual experiencing it. EmpatheticDialogues (Rashkin et al., 2019) pairs a speaker reporting an emotion with a listener expected to respond in kind, rather than two individuals diverging from the same trigger. Multi-

[1] Dataset will be released upon acceptance.

party dialogue corpora label per-utterance emotions across speakers (Poria et al., 2019; Li et al., 2017), but each labeled utterance is itself a single-speaker classification problem, not a joint reading of two individuals in the same scene. None of these resources tests the case our example demands: two agents in a shared scene, with contrasting emotions tied to a shared cause. A pop-quiz announcement, for instance, delights the students who studied and panics those who did not, yet existing benchmarks would label such a sentence with a single emotion based solely on which target agent it focuses on.

This case is also backed by appraisal theory. Appraisal theory states that emotions are not produced by events directly but by an agent's evaluation of events along dimensions such as goal congruence, agency, and certainty (Smith et al., 1990; Smith and Ellsworth, 1985; Roseman et al., 1996; Ortony et al., 1988; Ellsworth and Scherer, 2002; Moors et al., 2013). Two individuals witnessing the same event under different goals or different agency can arrive at opposed emotions: an unannounced snow day delights the kids and dismays the working parents scrambling for last-minute childcare. This is exactly the framing needed to structure a contrastive sentence. We introduce **CHIARO**,[2] a benchmark dataset of 1,000 sentences where each sentence describes a single causal trigger eliciting a positive emotion in one agent and a negative emotion in the other, drawn from a balanced ten-class taxonomy. We avoid explicit use of affect words, and emotion must be inferred from situational context alone, with human annotations for both agents in each scene. As an overview, our contributions are threefold:

1. We introduce CHIARO, a 1,000-sentence benchmark for two-agent contrastive emotion inference in a single shared event, grounded in appraisal theory.

2. We benchmark seven frontier LLMs and four off-the-shelf emotion classifiers on CHIARO, showing that even the strongest frontier model leaves substantial headroom from the human inter-annotator ceiling and that existing single-agent emotion classifiers transfer to the task only at chance level.

3. We establish CHIARO as a complementary training resource for existing emotion classifiers: a RoBERTa-large fine-tuned on the union of CHIARO and a matched-size slice of an existing emotion dataset like GoEmotions beats either source alone on CHIARO and on six of ten external emotion benchmarks.

2 Related Works

The study of emotions in NLP developed from early affective text classification and sentiment polarity benchmarks (Strapparava and Mihalcea, 2007; Pang and Lee, 2008; Mohammad et al., 2018) into a broad research program spanning lexical resources (Mohammad and Turney, 2013), dimensional annotation frameworks (Buechel and Hahn, 2017), and large-scale multi-label corpora (Demszky et al., 2020; Muhammad et al., 2025). Compositional approaches show that sentiment is not monolithic within a passage and that conflicting polarities can attach to distinct targets (Socher et al., 2013; Pontiki et al., 2014), while implicit emotion tasks established that surface affect words are neither necessary nor sufficient for inference (Klinger et al., 2018). Emotion recognition in conversations extended this framework to multi-speaker settings, where models must track the affective state across turns and infer emotion from social context (Li et al., 2017; Poria et al., 2019; Rashkin et al., 2019; Ghosal et al., 2020). Causal reasoning over emotion extends this to emotion-cause pair extraction (Xia and Ding, 2019; Poria et al., 2020) and shared tasks on conversation-level cause analysis (Wang et al., 2024), which require models to jointly identify an emotion and the event that triggered it, motivating the cause-span objective we adopt. Recent benchmarks probe whether LLMs genuinely reason about emotion or merely match surface patterns (Sabour et al., 2024; Zhao et al., 2024). However, most evaluations in the emotion recognition space retain only the single-agent framing. The core aspect examined is which label applies to a single speaker, not how opposing valence is distributed between two agents who share a causal trigger.

Appraisal theories (Smith et al., 1990; Scherer, 2001; Ortony et al., 1988) accounts for the mechanism by which the same external event elicits different emotions in different agents, because each agent evaluates that event against their own goals and concerns. This formalizes the contrastive emotion setup as to why a single visible action yields

[2] From *chiaroscuro*, the painterly technique of rendering strong light–dark contrast on a single canvas (Caravaggio, Rembrandt, Vermeer); a metaphor for opposing emotions arising from one shared event.

delight in one agent and irritation in another. The research on co-occurring and mixed emotions confirms that opposite-valence states are not mutually exclusive and resist reliable recovery from surface form (Berrios et al., 2015; Larsen et al., 2001). This validates the non-trivial inference challenge our dataset poses.

Work on interpersonal emotion regulation (Hatfield et al., 1993) formalizes the directional influence from one agent's expressive behavior to another's affective response. We employ a similar framework while designing the shared space between our agents in each scenario. Research in contrastive affect is sparse and has primarily appeared in aspect-based sentiment analysis (Pontiki et al., 2014; Schouten and Frasincar, 2015), where conflicting polarities attach to distinct opinion targets within a single document's meaning. No existing dataset jointly requires a model to detect that two agents hold opposing valence and attribute the correct polarity to each agent by role. CHIARO targets this conjunction directly, providing paired physical and non-physical scenario variants for causal grounding and role-aware polarity attribution in the settings where current models most consistently fail.

3 Task and Dataset Creation

Task definition. We formalize the task of contrastive emotion inference as follows. Given a sentence describing a shared event involving two agents (A and B) together with the agents' role, predict one emotion per agent from a ten-class taxonomy. The taxonomy is uniformly partitioned into five positive and five negative classes. Each scene is constructed so that exactly one agent's emotion is positive and the other's is negative; the prediction for a scene is therefore a paired assignment over the two agents. The input contains no explicit affect words, so emotion must be inferred from situational context alone.

Motivation. Contrastive Emotion Inference is a novel evaluation target for emotion modeling: the joint prediction of two opposed emotions held by two co-agents experiencing an emotion, diverging from a single shared trigger. Single-agent corpora such as GoEmotions (Demszky et al., 2020), ISEAR (Scherer and Wallbott, 1994), and EmpatheticDialogues (Rashkin et al., 2019) treat each text segment as one emotion held by one writer or speaker; multi-party dialogue corpora such as MELD (Poria et al., 2019) and DailyDialog (Li et al., 2017) label one emotion per utterance per speaker. Neither captures the joint, opposed-valence reading our task demands. Appraisal theory directly predicts this case: two agents witnessing the same event with different goals or different agencies can arrive at opposite emotions. CHIARO operationalizes the prediction as both a benchmark dataset and an evaluation task.

CHIARO is constructed by converting short subreddit narratives into controlled, two-agent scenes that (i) exhibit opposing emotional valence across agents and (ii) require emotion inference from situational context rather than explicit affect vocabulary. The construction pipeline has three stages: source-narrative selection, two-stage scene generation, and automated validation with targeted repair.

3.1 Emotion Taxonomy

We label each agent with one of ten emotions, partitioned into five positive (joy, pride, relief, gratitude, excitement) and five negative classes (anger, sadness, fear, disgust, embarrassment).

The taxonomy is derived from GoEmotions (Demszky et al., 2020). We select the five *most distinct* emotions per polarity, applying defined criteria to GoEmotions' positive and negative subsets. First, hierarchical clustering analysis shows that several emotions form intensity pairs or near-synonym clusters (e.g., anger/annoyance, fear/nervousness, sadness/grief); we retain the more reliable representative for each cluster based on arousal. We also discard overlapping appraisal structure (e.g., *love*, *caring*, and *admiration* as they all share *gratitude*'s other-directed-positive cell). Second, each retained emotion occupies a distinct cell along the agency, certainty, and control dimensions of appraisal-theoretic models (Smith and Ellsworth, 1985; Roseman et al., 1996; Ortony et al., 1988).

Each retained emotion is then paired with a mandatory trigger: a situational feature the generated sentence must instantiate so the emotion is recoverable from the sourced text (e.g., *gratitude* requires an identifiable helper; *relief* requires a prior threat that is then avoided). The full discard mapping from GoEmotions to CHIARO and the per-emotion mandatory triggers are listed in Appendix G.

Sentence	Agent A	Agent B
At a quiet corner table in the coffee shop, Maya's laptop shows an early acceptance email, and she reaches for her phone to call her mom, while Jordan, who thought they were applying as a pair, sees it and confronts her for submitting without him.	Jordan: *anger*	Maya: *excitement*
After the pan fire is extinguished and the kitchen smoke alarm goes quiet, the tenant steps into the hallway as the immediate danger passes, but the neighbor across the hall keeps close to the exit as smoke under the door suggests it could still spread.	the tenant: *relief*	the neighbor: *fear*
At the store raffle board, the posted results list Maya as the winner and Lena as the runner-up, so Maya takes the prize voucher while Lena argues with the event staff about the listing.	Maya: *joy*	Lena: *anger*

Table 1: Three example CHIARO scenes spanning different emotion pairs. Each sentence describes a single shared event from which two agents arrive at opposed emotions; no explicit affect words appear in the sentence text.

3.2 Source Narratives

We draw narrative inspiration from the *r/AmItheAsshole* (AITA) subreddit, a long-running community where users post first-person accounts of interpersonal conflicts and seek moral judgment. We collect AITA posts via the Reddit API; each post presents a self-contained interaction involving multiple participants mentioned in the story, a sequence of events, and implicit questions about the morality of the situation. We chose AITA over neutral story corpora (e.g., ROCStories) for two reasons. First, AITA posts are organized around interpersonal events with opposing affective stakes between participants, which is the structure required to generate contrastive emotion scenes. Second, AITA posts are dense in implicit appraisal cues (fairness, agency, harm, benefit) without naming the emotions themselves; the genre itself models appraisal-based reasoning over situational evidence. Appendix A describes the keyword-based post selection procedure.

3.3 Two-Stage Generation

Given a target emotion pair and an AITA reddit post, we generate a CHIARO instance in two stages: DRAFT and RENDER. All generations are performed with OpenAI's `gpt-5.2`; decoding hyperparameters are reported in Appendix B.

Stage 1: Draft scene. The model produces a short draft scene with a one-sentence `setting`, two `agent_roles`, and a 1–2-sentence `draft_story` describing a concrete event that plausibly elicits opposing-valence emotions in the two agents. Each draft must satisfy five requirements: (i) the two agents must hold opposed valence; (ii) the scene must make clear *why* each agent feels the way they do with coherent framing of the story; (iii) the scene must avoid villain framings (e.g., theft, punishment); (iv) each agent's emotion must instantiate the corresponding mandatory trigger; and (v) the draft must conform to one of six contrastive scenario types. Each type should encode a distinct causal structure linking the two agents' outcomes. The full list of the scenario types is given in Appendix C.

Stage 2: Paired render. From the draft scene, we generate two versions: a *physical* and a *non-physical*. The two versions share the agents and the underlying contrast but differ in the *causal mode* of the triggering event:

- **Physical:** the trigger involves contact, force, or object manipulation that directly changes one agent's situation (spilling, bumping, taking, breaking).
- **Non-physical:** the trigger is grounded in social or environmental cues without direct physical impact (overhearing, witnessing, knowing, announcing).

The two modes impose qualitatively different inferential demands: physical triggers are concrete and immediately observable, whereas non-physical triggers require theory-of-mind reasoning about what each agent knows, perceives, or expects (Stein, 1989; Zahavi, 2011). Pairing both modes in the corpus lets us test whether a model's emotion-attribution capacity transfers across causal modes or is biased toward one.

This split is grounded in the contrast between mechanical and experiential modes of causation.

Stein (2000), as characterized by Szanto and Moran (2025), distinguishes *mechanical* from *experiential* causation: mechanical causation is a tripartite chain of a *verursachendes* (causing event), a *verursachtes Geschehen* (caused event), and a mediating *Ursache* (proper cause); experiential causation (*Erlebniskausalität*) is one in which two experiences jointly effectuate affective change without a separable mediating element. Physical scenes in CHIARO instantiate the former (the spilled coffee mechanically changes B's situation), while non-physical scenes instantiate the latter (the overheard remark changes B's experience only via its meaning). Table 1 shows three example CHIARO scenes spanning different emotion pairs and causal modes.

3.4 Validation of the Dataset

A core design goal of CHIARO is to discourage trivial inference from explicit affect words. We enforce this through (a) lexical constraints applied to all natural-language fields and (b) a suite of programmatic validators applied to every generated instance. For example, instead of *"Maya felt nervous as she waited for her exam result,"* a CHIARO-compliant rendering would describe the scene without naming the emotion: *"Maya kept refreshing the portal every few seconds while the result loaded."*

Lexical constraints. We exclude approximately sixty affect-bearing words and phrases from the natural-language sentence generation. The list covers explicit emotion adjectives (*happy, sad, proud, angry, etc.*), and their morphological variants, stereotyped facial-expression descriptors (*smiles, frowns, grins, glares, etc*), and other high-leakage phrases (*slumped shoulders, tight jaw, welling eyes, visibly upset*). The complete list is given in Appendix D.

Validators and repair. Six programmatic checks are applied to each generated version, covering *valence contrast*, *lexical constraints*, *text length*, *person-reference count* (to avoid scene crowding), *span consistency*, and *role-head collision* (the two agents must be distinguishable from their role prefixes alone). Versions that fail one or more checks are returned to the model together with an explicit list of violations and a correction request; the repair loop is bounded by a small number of retries, and instances that repeatedly fail are discarded. Appendix E gives full validator specifications and acceptance/rejection statistics.

Positive		Negative	
gratitude	22.4	anger	25.4
relief	21.9	embarrassment	20.9
joy	20.9	fear	19.9
excitement	18.6	sadness	17.4
pride	16.1	disgust	16.4

Table 2: Per-emotion ratio within polarity in CHIARO, measured over 1,000 adjudicated gold labels per polarity (one per scene). Perfect balance is 20% per class. Each scene contributes one positive and one negative slot.

3.5 Human Annotation and Statistics

Annotation and Adjudication. Two fluent English-speaking annotators *independently* labeled all 1,050 generated sentences through a web-based interface, selecting one emotion per agent from the ten-class taxonomy. Annotators could skip items they found underspecified, which led to 1,017 scenes forming the paired pool. We compute Cohen's κ separately for each polarity slot and obtain an average inter-annotator agreement of $\bar{\kappa} = 0.827$, with $\kappa_{\text{pos}} = 0.798$ (raw agreement 83.9%) and $\kappa_{\text{neg}} = 0.855$ (raw agreement 88.5%); these pre-adjudication agreements serve as the human-ceiling estimate.For items where the two annotators initially disagreed, they jointly re-read the text and discussed the appraisal cues, resolving disagreements within the same 1,017-sentence pool to produce a single gold label per agent. We randomly sample 1,000 as the final released dataset; all experiments are conducted on this set. The annotator instructions and interface are shown in Appendix I.

Dataset Statistics CHIARO contains 1,000 sentences (526 physical and 474 non-physical), each with adjudicated gold labels for both agents from two annotators. Although every scene is generated in two paired causal modes (a physical and a non-physical version), only one randomly chosen version per scene is annotated and released; the released corpus is therefore a per-scene random sample of the two.

Table 2 reports the per-emotion frequency within each polarity. The annotator-judgment distribution is approximately balanced within each polarity, with every class accounting for 16%–25%.

4 State-of-the-Art LLMs

We benchmark seven LLMs on CHIARO: OpenAI `gpt-5.5`, Alibaba `Qwen3.6-Plus`, DeepSeek `V4-Pro`, Meta `Llama-3.3-70B-Instruct`, Google

Positive					*Negative*				
Emotion	**Prec**	**Rec**	F_1	**Support**	**Emotion**	**Prec**	**Rec**	F_1	**Support**
joy	74.1	19.9	31.4	201	anger	67.8	71.5	69.6	253
gratitude	95.3	36.4	52.7	225	sadness	76.6	63.8	69.6	174
relief	42.2	95.9	58.6	221	disgust	88.6	61.6	72.7	164
pride	67.5	82.5	74.3	166	embarrassment	71.2	95.2	81.5	210
excitement	81.3	67.4	73.7	187	fear	90.7	87.9	89.3	199

Table 3: Per-emotion precision, recall, F_1, and support for GPT-5.5 on the full 1,000-sentence release of CHIARO against the adjudicated human gold. *Relief* and *embarrassment* are over-predicted, while *joy* and *gratitude* are under-predicted; the missed cases fall predominantly into *relief*.

`gemini-3.5-flash`, Alibaba `Qwen3.5-27B`, and Alibaba `Qwen3.5-9B`. The first five are closed-API models; `Qwen-3.5-27B` and `Qwen3.5-9B` are open-weights references at two scales, so that model size and weight access can be compared alongside the closed-API models. For every agent slot in every sentence, the model receives a polarity-filtered five-option choice set, the same form shown to human annotators in the CHIARO interface. All seven models use a *joint* prompt that presents both agent role descriptions and both five-option choice sets in a single call and asks for two-letter answers. Table 4 reports combined Agent-A and Agent-B macro-F_1 for the seven LLMs against the adjudicated human gold. GPT-5.5 leads with a macro-F_1 of 67.3, followed by Qwen 3.6 Plus at 66.9; the open-weights mid-scale Qwen3.5-27B sits at 66.3 (tied with Llama 3.3 70B), while the smaller open Qwen3.5-9B trails at 59.9. Inter-annotator agreement between the two annotators on the same paired pool is $\bar{\kappa} = 0.827$ ($\kappa_{\text{pos}} = 0.798$ on the positive slot, $\kappa_{\text{neg}} = 0.855$ on the negative), which equates to 93.0 macro-F_1 against the adjudicated gold, so even the strongest LLM sits roughly 26 points below the human ceiling. We next dissect this gap along two axes: per-emotion errors (§4.1) and the causal mode of the triggering event (§4.2).

Model	**Macro-F_1**
GPT-5.5	**67.3**
Qwen 3.6 Plus	66.9
DeepSeek V4-Pro	66.5
Qwen3.5-27B (open weights)	66.3
Llama 3.3 70B	66.3
Gemini 3.5 Flash	64.1
Qwen3.5-9B (open weights)	59.9
7-model mean	65.3

Table 4: Macro-F_1 of the seven LLMs on the full 1,000-sentence release, scored against the adjudicated human gold. All evaluations use the joint two-agent prompt. Best value in bold. Per-emotion precision, recall, and F_1 breakdowns for the other six LLMs are in Appendix J.

4.1 Per-emotion error analysis

Table 3 reports per-emotion precision, recall, and F_1 for GPT-5.5, the highest-performing LLM. Errors concentrate on the positive side, where two emotions are predicted more than the others. *Relief* reaches 95.9% recall at only 42.2% precision, and *embarrassment* reaches 95.2% recall at 71.2% precision. The corresponding deficits fall on *joy* and *gratitude*, whose recall drops to 19.9% and 36.4%, respectively; most of the missed cases are mislabeled as *relief*. The negative polarity exhibits a similar imbalance, but more weakly: *embarrassment* absorbs a portion of true *anger*, *sadness*, *disgust*, and *fear*. Per-class F_1 ranges from 31.4 on *joy* to 89.3 on *fear*, and the three lowest-F_1 emotions all sit on the positive side. The positive subset, therefore, accounts for most of the gap between GPT-5.5 and human agreement, suggesting that current LLMs struggle most with fine-grained positive emotions when explicit affect cues are removed.

4.2 Physical vs non-physical causal modes

Table 5 splits the macro-F_1 panel by the causal mode of the triggering event. Every closed-API model scores 3–6 macro-F_1 points *higher* on non-physical scenes than on physical ones (e.g., GPT-5.5 reaches 64.9 points on physical vs 70.0 on non-physical), contrary to the intuition that physical scenes should be easier because their trigger is concrete and observable. The mid-scale open Qwen-3.5-27B follows the same direction (64.6 vs 68.0 points), while the smaller open Qwen-3.5-9B shows the opposite ordering (60.8 vs 58.6 points). The pattern across larger models suggests that LLMs are as good as, if not better at, theory-of-mind-style inference about what each agent knows or perceives than at direct physical contact triggers.

Model	Physical	Non-physical
Qwen 3.6 Plus	65.4	**68.5**
GPT-5.5	64.9	**70.0**
DeepSeek V4-Pro	64.4	**68.5**
Qwen3.5-27B (open weights)	64.6	**68.0**
Llama 3.3 70B	64.5	**68.3**
Gemini 3.5 Flash	61.6	**66.6**
Qwen3.5-9B (open weights)	**60.8**	58.6
7-model mean	63.7	**66.9**

Table 5: Macro-F_1 (%) of the seven LLMs on CHIARO split by causal mode of the triggering event (526 physical scenes vs 474 non-physical scenes), measured against the adjudicated human gold.

Model	Macro-F_1
Emo Pillars	11.8
ModernBERT-base (GoEmotions)	21.4
ModernBERT-large (GoEmotions)	29.0
Emollama-chat-7B	28.1*
7-LLM mean	65.3

Table 6: Macro-F_1 of off-the-shelf emotion classifiers on the full 1,000-sentence CHIARO release vs the adjudicated human gold. *Emollama-chat-7B is scored on 1,977 of 2,000 slots; 23 unparseable outputs are excluded.

5 Emotion Classifiers

Beyond frontier LLMs, we evaluate smaller dedicated emotion classifiers in two regimes. We first test whether four off-the-shelf encoder checkpoints trained on single-agent emotion corpora transfer to CHIARO's two-agent attribution setting. We then ask whether CHIARO works as a training signal on its own and when combined with an existing emotion corpus. To answer this, we fine-tune three RoBERTa-large checkpoints and evaluate each on CHIARO and ten external emotion benchmarks.

5.1 Off-the-shelf emotion classifiers

We evaluate four off-the-shelf encoder checkpoints on the full 1,000-sentence release. These are ModernBERT-large (Warner et al., 2024) and ModernBERT-base fine-tuned on GoEmotions (de Fortuny, 2025), the Emo Pillars contextless RoBERTa-large checkpoint (Shvets, 2025), and Emollama-chat-7B (Liu et al., 2024), an emotion-tuned chat model trained on an affective analysis instruction dataset. The first three are classifiers over the GoEmotions 28-class label space, and are scored with polarity-restricted argmax over the five CHIARO emotions in the gold's polarity bucket; no alias mappings are used, so the encoder must address each CHIARO emotion by its exact label. Emollama-chat-7B, a generative chat model without a classifier head, is queried with the same joint MCQ prompt as the LLMs (§4) and scored on the letter it returns for each slot.

Table 6 reports macro-F_1 against the adjudicated human gold. All four encoders score well below the LLMs, and the three GoEmotions-trained encoders span 11.8–29.0 macro-F_1, sitting 36–54 points below the LLM mean despite covering each CHIARO emotion as an exact label. Existing single-individual emotion classifiers therefore transfer to CHIARO's contrastive agent-attributed setting at chance levels.

To understand why the GoEmotions-trained encoders fall so far behind the LLMs, we compare their behavior on CHIARO against their behavior on the source task they were trained for. On the GoEmotions test split filtered to CHIARO's ten emotions, ModernBERT-large reaches 79.6 macro-F_1 and ModernBERT-base reaches 76.9 under identical scoring. They drop to 29.0 and 21.4 macro-F_1 on CHIARO, a 51–56 point gap with architecture, scoring, and label set held fixed. The relevant difference is per-agent attribution: single-agent classifiers measure emotion by *text expression*, while CHIARO requires the emotion *attributed to a referenced individual inside the text*, with one prediction per agent rather than one for the whole utterance.

5.2 CHIARO as a training signal

Our final study asks whether CHIARO is a usable training signal on its own and whether combining it with an existing emotion dataset, such as GoEmotions, yields a stronger classifier than either source alone. We train three RoBERTa-large checkpoints that differ only in their training corpus and evaluate all three on the CHIARO test split and ten external emotion benchmarks. *CHIARO-only* is fine-tuned on CHIARO under an 800/100/100 train/val/test split, with each sentence converted into two pair-input examples by pairing it with each agent's role so the model conditions on the target agent. *GoEm-only* is a same-architecture single-source baseline trained on 1,600 GoEmotions items soft-stratified across CHIARO's ten emotions, sampled with a 160/class soft cap and topped up from common-class items to hit 1,600 when rare classes such as *pride* and *relief* exhaust early; GoEmotions has no agent slot, so the input is the utterance alone.

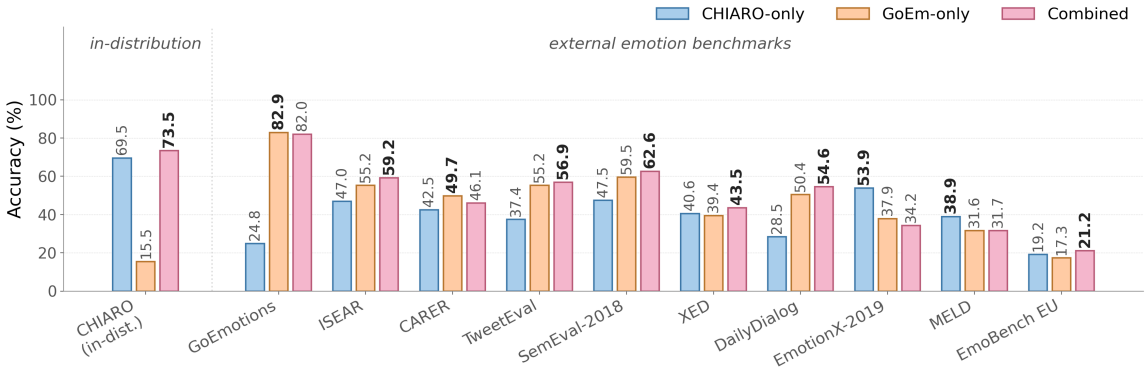

Figure 2: Transfer accuracy (%) of the three RoBERTa-large checkpoints (CHIARO-only, GoEm-only, Combined) on the CHIARO held-out test split and ten external emotion benchmarks. Best checkpoint per dataset is starred.

Combined is trained on the union of both corpora (3,200 examples), keeping each source's native input shape. For each external item, we pair the utterance with "the speaker" and keep only items whose gold is one of CHIARO's ten emotions. The ten external benchmarks are GoEmotions (Demszky et al., 2020), ISEAR (Scherer and Wallbott, 1994), CARER (Saravia et al., 2018), TweetEval (Barbieri et al., 2020), SemEval-2018 Affect-in-Tweets (Mohammad et al., 2018), XED (Öhman et al., 2020), DailyDialog (Li et al., 2017), EmotionX-2019 (Shmueli and Ku, 2019), MELD (Poria et al., 2019), and EmoBench EU (Sabour et al., 2024); training hyperparameters are listed in Appendix F.

Figure 2 reports top-1 accuracy. The CHIARO-only checkpoint achieves 69.5% on the CHIARO held-out test split, whereas RoBERTa-base on the same training data achieves only 44.0%; the 25-percentage-point gap confirms that the task is learnable but capacity-dependent. *Combined* uniquely beats both single-source baselines on six of the ten external datasets and beats CHIARO-only in-distribution as well (73.5% vs 69.5%).

The remaining four splits factor cleanly. On EmotionX-2019 and MELD, the CHIARO-only checkpoint stays ahead by a wide margin, and adding GoEmotions data actively hurts; both benchmarks are dialogue-style and ask for the emotion attributed to a specific speaker, which is closer to CHIARO's task than to GoEmotions'. On GoEmotions and CARER, the GoEm-only checkpoint has a slightly higher accuracy; both are Reddit-style short-text classification tasks that GoEm-only sees during training. On EmoBench EU, *Combined* again leads the three, consistent with the overall pattern, though the small sample keeps that lead suggestive rather than decisive. Taken together, this gives a clean reading of when combining helps: CHIARO adds an attribution from an individual signal that GoEmotions lacks; GoEmotions adds a text-expressed-emotion signal that CHIARO lacks; and the union is the strongest source whenever the test benchmark mixes both demands. This pattern is consistent with CHIARO and GoEmotions being *complementary* training signals rather than redundant ones, with CHIARO capturing third-person individual-attributed emotion and GoEmotions capturing first-person text-expressed emotion.

6 Conclusion

We introduced CHIARO, a 1,000-sentence human-annotated benchmark for two-agent contrastive emotion inference. Each scene presents opposite-valence emotions tied to a single causal trigger, with inference grounded in appraisal theory rather than affect vocabulary. On the full release, seven frontier LLMs reach a 7-model mean of 65.3 macro-F_1 against a human ceiling of 93.0 macro-F_1 ($\bar{\kappa} = 0.827$ inter-annotator agreement), leaving a substantial gap concentrated on the positive subset and on physically-triggered scenes. Four off-the-shelf emotion classifiers transfer to CHIARO at near-chance level despite covering each of its ten labels exactly, isolating per-agent attribution as the missing piece. A RoBERTa-large fine-tuned on CHIARO alone reaches 69.5% in-distribution accuracy, and the union of CHIARO with a matched-size GoEmotions slice beats either source alone on CHIARO and on six of ten external emotion benchmarks. Together these findings position contrastive agent-attributed emotion as a distinct task family that current emotion resources do not cover and that CHIARO fills as a complementary training signal.

Limitations

CHIARO is English-only and its narrative grounding is drawn from a single online community (*r/AmItheAsshole*), so the situations, social norms, and interpersonal scripts it spans are skewed toward U.S. and Anglophone framings. Generation is performed by a single model (OpenAI `gpt-5.2`); even with lexical constraints, repair loops, and human adjudication, residual stylistic and topical biases of that generator are likely to be inherited by the dataset. The annotation pool could be strengthened (two fluent English annotators); a larger and demographically more diverse pool would tighten the human-agreement and reduce annotation biases. Finally, the task is restricted to a positive–negative valence pair, so the benchmark does not measure model behavior on same-polarity-but-different-emotion cases (e.g., two agents both feeling negative emotions for different reasons), nor on cases where one or both agents are emotionally neutral.

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A AITA Keyword-Based Post Selection

For each generated instance, we select an AITA post that contains keyword cues compatible with the target emotion pair (e.g., posts containing "thanked" or "helped me" for gratitude-targeted generation; posts containing "in front of" or "publicly" for embarrassment-targeted generation). Keyword filtering improves hit-rate during generation but is not enforced downstream; the language model is free to abstract the post into a different setting. Each AITA post is used at most once across the dataset.

B Generation Prompts and Decoding Hyperparameters

All generation is performed against OpenAI `gpt-5.2`. The Stage 1 draft call uses temperature 1.0; the Stage 2 render call uses temperature 0.8; JSON-schema enforcement is applied at both stages. Generation is parallelised with a 10-worker thread pool, and the repair loop (§3.4) is capped at four retries before a version is discarded.

Stage 1 draft prompt (`DRAFT_PROMPT_TEMPLATE`). Generates the backbone draft scene with two contrasting agents.

> You are writing a short draft scene involving exactly two human agents.
>
> **Constraints:**
>
> - Avoid stealing or creating villains.
> - The emotions of the two agents are OPPOSITE in valence (one positive, one negative).
> - Keep the language simple.
> - The sentence must make clear WHY each agent feels the way they do.
>
> **EMOTION TAXONOMY** — each emotion has a MANDATORY TRIGGER that MUST appear in the story (full per-emotion trigger list as in Appendix G).
>
> {emotion_guidance}
>
> **CONTRASTIVE SCENARIO TYPE:** {category_block}
>
> Return JSON with: `setting`, `agent_A_role`, `agent_B_role`, `draft_story`.

Stage 2 render core (`_RENDER_CORE`). Shared by both physical and non-physical renders. The key rules are:

- **Single-cause rule.** A single event must cause both agents' emotions. `cause_span` must be a phrase in the sentence that names this shared event; `evidence_A` and `evidence_B` must each be consequences of that same event, never two different triggers.
- **Neutral-cause rule.** The shared event must be a neutral external happening or third-party action whose fallout affects A and B differently. The cause must *not* be Agent A deliberately acting against Agent B to hurt, punish, or extract from them — adversarial framings turn A's "positive" emotion punitive.
- **Required emotion contrast.** Exactly one positive and one negative emotion per version; Agent A positive, Agent B negative.
- **Disambiguation rules.** The mandatory trigger from Appendix G for each agent's emotion must be visible in the sentence (e.g., *relief* must show a prior threat; *embarrassment* must show a public audience).
- **Self-check.** The generator is instructed to re-read its output and rewrite if (a) the two emotions do not share a trigger, (b) A's action directly targets B, or (c) a more specific emotion from the taxonomy fits better than the chosen one (e.g., *joy* when the trigger lacks a prior threat).
- **Agent-role rule.** Agent A and Agent B must have distinct role descriptions that reference the same identifier used in the sentence (name or distinguishing trait); no introducing a relationship label ("Fiancé," "Roommate") that does not appear in the sentence.
- **Natural-language rules.** Present tense, self-contained, no emotion words or behavioural cues, no dialogue or text on screens.

Physical render (`PHYS_RENDER_PROMPT`).

> Convert a DRAFT scene into the PHYSICAL VERSION only.
>
> VERSION: `physical_version` — a concrete physical action or object change is the shared cause (e.g., last item grabbed from a shelf, door closed, pan pulled from oven, key handed over). The action need not be Agent A acting against Agent B — a neutral party, a mechanism, or even Agent B can be the one performing it. What matters is that the physical event produces different outcomes for both agents.
>
> *[followed by* `_RENDER_CORE`*]*

Non-physical render (`NONPHYS_RENDER_PROMPT`).

> Convert a DRAFT scene into the NON-PHYSICAL VERSION only.
>
> VERSION: `non_physical_version` — the cause is a situational or contextual cue, not direct physical impact (e.g., a closed sign, an announcement, an empty shelf).
>
> *[followed by* `_RENDER_CORE`*]*

Mandatory-emotions extension. For the balanced-sampling driver (`generate_stories_balanced.py`), the per-class quota is enforced by prepending a forced-target block to the draft prompt that names the exact (e_+, e_-) pair the next scene must instantiate. This is the mechanism that produces the Round 3 distribution in Appendix H.

Repair prompt (`_REPAIR_SYSTEM`). Triggered when any validator from Appendix E fails. Instructs the generator to rewrite the sentence so that (i) the shared event is neutral and not A acting against B; (ii) a single event causes both emotions; (iii) exactly one positive and one negative emotion are present; (iv) Agent A is positive, Agent B negative; (v) no banned words or behavioural cues appear; (vi) Agent A and B have distinct role descriptions that uniquely identify each person and use the same identifier as the sentence; (vii) the literal strings "Agent A" and "Agent B" do not appear in the sentence text.

C Contrastive Scenario Types

Each generated scene is drafted under one of six contrastive scenario types, encoding different structural forms of the cause–effect relation linking the two agents. The closest existing umbrella taxonomy is the *fortunes-of-others* branch of the OCC model (Ortony et al., 1988), which classifies emotions about other agents' outcomes along a 2×2 of (event desirable / undesirable for the other) $\times$ (rater's pleasure / displeasure). Our six types refine that grid by additionally specifying the *causal structure* linking the two agents' outcomes; each type is anchored below in a distinct literature.

Zero-sum gain/loss (Festinger, 1954; Smith and Kim, 2007). A single scarce resource is split such that one agent gains it and the other is denied; the two outcomes are mutually exclusive by construction. The emotional contrast is grounded in social-comparison theory: an agent's gain becomes affectively charged for a comparable other who is denied the same good, producing envy or schadenfreude rather than parallel independent reactions.

- One person gets the last ticket; the other arrives at an empty counter.
- One student sees an A on their paper; the other sees an F on theirs.

Side-effect spillover (Knobe, 2003; "Coase, "2000"). One agent's positively-motivated activity is the source of a negative byproduct for the second agent. The first agent's emotion is justified on its own terms; the second agent's emotion arises from an unintended overflow. The structure mirrors the externality formalism in welfare economics, and recruits the lay-psychological asymmetry documented by the Knobe effect, namely that observers reliably treat negative side-effects as intentional even when foreseen but not pursued.

- A child bounces in their airplane seat from excitement and keeps kicking the seat-back, bothering the passenger in front.
- A musician practices a new song in their apartment while the neighbor cannot concentrate.

Asymmetric information (Akerlof, 1970; Lazarus, 1991). The same event is experienced differently because the agents possess different knowledge or stakes. The contrast arises from the appraisal context, not from the physical event itself: each agent's goal-relevance and core relational theme differs, yielding divergent emotions over the same world-state.

- A student learns they got early admission while their friend has not heard back.
- A worker finds out they passed probation while the colleague's contract will not be renewed.

Unintended consequence (Merton, 1936; Williams, 1981). The first agent acts with positive purpose, but an unintended downstream effect harms the second agent. Distinguished from *side-effect spillover* by the requirement that the harm arises through a chain of events rather than as a direct byproduct of the action. The structure foregrounds the moral-luck asymmetry between A's appraisal ("I meant well") and B's appraisal ("I was harmed"), where resultant luck drives the affective contrast.

- A gardener waters flowers and the runoff floods the neighbor's mulch.
- A teacher rearranges seating for a reading corner, but one student loses their window seat.

Competing preferences (Deutsch, 1973). The two agents share an environment but have opposing needs along the same dimension; satisfying one preference automatically works against the other. The structure is the classical *negative goal interdependence* of interdependence theory: pairs in which one agent's preferred environmental state precludes the other's.

- A parent turns on the AC but their child was already cold.
- One roommate opens the window for a breeze while the other's papers blow off the desk.

Success vs. failure (Weiner, 1985; Wills, 1981). Both agents independently attempt the same challenge; one succeeds while the other fails. The contrast is comparative rather than causally entangled (the two outcomes are produced by parallel, not interacting, paths), but the failure is affectively salient *for the partner* via downward comparison, and attribution-theoretic appraisal of locus and controllability shapes the discrete emotions (pride, shame, pity) the two agents end up holding.

- One runner finishes the marathon while another drops out from a cramp.
- One baker's soufflé rises perfectly while the other's collapses.

Type selection and final distribution. During the DRAFT stage, the scenario type is sampled uniformly at random from the six categories and inserted into the prompt as a structural constraint. The same scene draft is then rendered in both physical and non-physical versions, inheriting the sampled type. We do not enforce strict balance during sampling; small imbalances in the final corpus arise from variation in repair-loop retry counts across types. The realized distribution is: competing preferences 18.4%, zero-sum gain/loss 17.5%, side-effect spillover 17.0%, unintended consequence 16.9%, success vs. failure 15.1%, asymmetric information 15.0%.

D Lexical Constraint List

The validator at §3.4 rejects any generated sentence containing a case-insensitive whole-word match against the list below ($n = 63$). The list combines explicit emotion adjectives and their morphological variants, stereotyped facial-expression descriptors, and body-language phrases that frequently leak the target emotion:

Affect adjectives and noun variants (forty terms). *happy, happily, joy, joyful, delighted; proud, pride, prideful; relieved, relief; grateful, gratitude, thankful; excited, excitement, eager, eagerly; sad, sadly, sorrow, sorrowful; angry, anger, furious, mad, enraged; fear, fearful, afraid, scared, terrified; guilty, guilt, regret, regretful; disgust, disgusted, disgusting, revolting, repulsed; embarrassed, embarrassment, ashamed, humiliated, shame; upset, annoyed, frustrated, dismayed.*

Facial / body-language descriptors and bridging phrases (twenty-three terms). *slumped shoulders, tight jaw, teary eyes, welling eyes; visibly, clearly, nervously; nods, smiles, frowns, glares, cries, screams, laughs, grins, claps; snatches, pumps, yanks; raises a fist, jumps for joy; throws up his hands.*

Per-emotion leakage extensions (e.g., *cheers* for joy, *sobs* for sadness) are applied on top of this base list during the validator's per-agent emotion-leakage check.

E Validation Checks

Every generated version (one per causal mode) is passed through six validators in sequence. A version that fails any check is returned to the generator with the explicit list of violations and asked to repair; the loop is bounded at four retries, after which the version is discarded. The validators are:

1. **Valence contrast.** Agent A's emotion must lie in the positive subset (*joy, pride, relief, gratitude, excitement*) and Agent B's in the negative subset (*anger, sadness, fear, disgust, embarrassment*); exactly one positive and one negative emotion per scene.
2. **Lexical constraints.** The sentence is rejected if it contains any case-insensitive whole-word match against the banned list of Appendix D, or against the per-emotion leakage extension specific to either agent's gold emotion (e.g., *cheers* leaks joy; *sobs* leaks sadness).
3. **Length.** The sentence must be at most 300 characters. Longer sentences are returned with a request to simplify while keeping both agents' outcomes clear.
4. **Person-reference count.** The sentence must reference no more than two distinct named or descriptively-identified people (Agents A and B). Crowded scenes with bystanders, additional named characters, or referential ambiguity are rejected.
5. **Span consistency.** The `cause_span`, `evidence_A`, and `evidence_B` fields produced by the generator must each be exact substrings of the final sentence, so that a single triggering event is grounded in the text.
6. **Role-head collision.** The two `agent_role` strings must be distinguishable from their role prefixes alone (excluding common stopwords like "the," "who"). Identical roles or substantial token overlap is rejected, since the annotator

must be able to tell A and B apart from the role description without re-reading the sentence.

A separate single-cause heuristic, applied alongside the six validators, rejects scenes whose `cause_effect_relation` field describes two independent triggers (e.g., contains a "while B's ... comes from ..." construction, or two distinct *because*-clauses) — a single event must produce both agents' outcomes.

F Training Hyperparameters

For all three RoBERTa-large checkpoints in §5.2 (*CHIARO-only*, *GoEm-only*, *Combined*), we use AdamW with learning rate 2×10^{-5}, weight decay 0.01, batch size 16, bf16 mixed precision, and 5 epochs with best-on-validation-accuracy checkpoint selection. All three checkpoints are trained with seed 42. RoBERTa-large has approximately 355M parameters. Training was performed on a single NVIDIA A100 GPU; each checkpoint completed in approximately 2–3 hours wall-clock.

G Taxonomy: Discard Mapping and Mandatory Triggers

Table 7 maps each of the eighteen non-retained GoEmotions categories (*neutral* included) to either a retained CHIARO emotion or to an outright drop, with the criterion that drove the decision. Table 8 gives the mandatory situational trigger paired with each of the ten retained emotions; the trigger is inserted into the Stage 1 draft prompt so the generated sentence has a recoverable disambiguation cue even under the lexical constraints of §3.4.

H Per-Round Dataset Statistics

CHIARO was built in three generation rounds before the final adjudicated release. Round 2 used loose sampling: a target emotion pair was drawn uniformly but the generator was not forced to respect the per-class budget, so the realized distribution was strongly skewed (*disgust* 20.0%, *gratitude* 17.0% on the positive side; *sadness* 3.4% on the negative side). Round 3 added a per-class quota and a balanced-sampling driver `generate_stories_balanced.py` that re-issues generation requests until each class hits its target, which brought every emotion within roughly ± 1.5 percentage points of the uniform 10% baseline. The final v3 release, adjudicated down to 1,000 scenes (Table 2), inherits the Round 3 balance with small drift from annotator skip and re-label decisions. Per-round overall emotion frequencies are shown in Table 9.

GoEm category	Mapped to	Criterion
admiration	gratitude	appraisal overlap
amusement	joy	cluster dedup.
annoyance	anger	intensity sibling
approval	gratitude	appraisal overlap
caring	gratitude	appraisal overlap
desire	excitement	appraisal overlap
disappointment	sadness	appraisal overlap
disapproval	disgust	appraisal overlap
grief	sadness	intensity sibling
love	gratitude	appraisal overlap
nervousness	fear	intensity sibling
optimism	excitement	appraisal overlap
remorse	embarrassment	appraisal overlap
surprise	*dropped*	no fixed valence
curiosity	*dropped*	no fixed valence
realization	*dropped*	no fixed valence
confusion	*dropped*	no fixed valence
neutral	*dropped*	not an emotion

Table 7: Discard mapping from GoEmotions to CHIARO. "Cluster dedup." removes a near-synonym; "intensity sibling" removes a lower-/higher-intensity variant; "appraisal overlap" removes a category that occupies the same appraisal-theoretic cell as a retained one. Four GoEmotions categories plus *neutral* are dropped outright for lacking a fixed valence.

I Annotator Instructions and Interface

Annotators were given the task description and labeling instructions through the web-based annotation interface described in §3.5. Figure 3 shows a screenshot of the interface as presented to the two annotators.

J Per-Emotion Breakdown for All LLMs

Table 3 in §4.1 reports per-emotion precision, recall, and F_1 for GPT-5.5, the highest-performing model. We extend that breakdown to the remaining six LLMs in Tables 10–15, all scored against the adjudicated human gold with predictions pooled across both agent slots. Across models, the positive subset (especially *joy* and *gratitude*) shows the widest variance and the lowest absolute F_1, while the negative subset is comparatively flat.

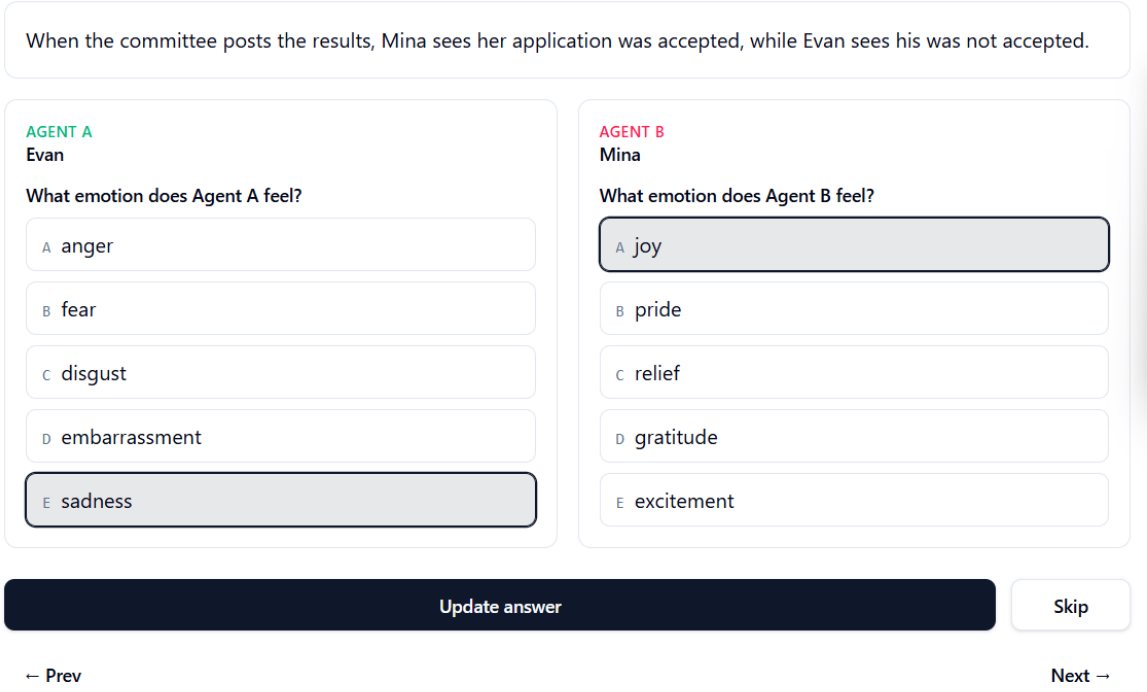

Figure 3: Screenshot of the CHIARO annotation interface.

Emotion	Mandatory trigger
joy	Agent receives or gains something good (the positive outcome has *already* happened).
pride	Agent accomplished something through their *own* effort, skill, or work; personal achievement is shown.
relief	A *prior* threat or worry was avoided or resolved (without the threat, it is just joy).
gratitude	Another person specifically helped, supported, or sacrificed for the agent; the helper is identifiable.
excitement	Something good is *about to* happen but has not yet; the agent looks forward to a future event.
anger	Another person treated the agent unfairly, unjustly, or selfishly; a clear wrongdoer exists.
sadness	Agent lost or was denied something, but *no one is to blame* — it is circumstance or bad luck.
fear	A bad outcome has *not yet* happened but might; the threat is still active and unresolved.
disgust	Someone did something morally revolting; the agent is repulsed by another person's behavior.
embarrassment	Agent was exposed, shamed, or failed with *other people watching*; a public audience is present.

Table 8: Mandatory situational triggers paired with each of CHIARO's ten emotions. Each trigger is inserted into the Stage 1 draft prompt and is enforced as a soft requirement during generation; the trigger is what lets a reader recover the intended emotion from a sentence that contains no affect vocabulary.

Emotion	R2	R3	v3
joy	10.0	10.5	10.5
pride	6.4	8.9	8.0
relief	6.4	9.8	11.0
gratitude	17.0	11.3	11.2
excitement	10.2	9.5	9.3
anger	10.2	10.8	12.7
sadness	3.4	9.4	8.7
fear	10.0	9.9	10.0
disgust	20.0	10.2	8.2
embarrassment	6.4	9.6	10.5
# stories	500	684	1,000

Table 9: Per-emotion frequency (%, across both agent slots) at each construction round. R2 = round 2 with loose sampling; R3 = round 3 with the per-class balancing driver; v3 = final adjudicated release. The uniform baseline is 10% per class.

Positive					*Negative*				
Emotion	**Prec**	**Rec**	F_1	**Support**	**Emotion**	**Prec**	**Rec**	F_1	**Support**
joy	60.3	40.8	48.7	201	anger	67.6	67.6	67.6	253
gratitude	92.6	28.0	43.0	225	sadness	70.1	70.1	70.1	174
relief	44.9	89.1	59.7	221	disgust	86.9	64.6	74.1	164
pride	66.1	75.3	70.4	166	embarrassment	70.5	92.4	80.0	210
excitement	73.2	65.8	69.3	187	fear	92.0	81.4	86.4	199

Table 10: Per-emotion precision, recall, F_1, and support for Qwen 3.6 Plus on the full 1,000-sentence release of CHIARO against the adjudicated human gold.

Positive					*Negative*				
Emotion	**Prec**	**Rec**	F_1	**Support**	**Emotion**	**Prec**	**Rec**	F_1	**Support**
joy	65.2	28.9	40.0	201	anger	68.0	69.6	68.8	253
gratitude	92.5	32.9	48.5	225	sadness	67.9	63.2	65.5	174
relief	42.6	95.0	58.8	221	disgust	86.7	63.8	73.5	164
pride	65.3	78.3	71.2	166	embarrassment	69.2	94.3	79.8	210
excitement	84.1	62.4	71.6	187	fear	94.2	81.4	87.3	199

Table 11: Per-emotion precision, recall, F_1, and support for DeepSeek V4-Pro on the full 1,000-sentence release of CHIARO against the adjudicated human gold.

Positive					*Negative*				
Emotion	**Prec**	**Rec**	F_1	**Support**	**Emotion**	**Prec**	**Rec**	F_1	**Support**
joy	68.5	31.3	43.0	201	anger	72.3	66.0	69.0	253
gratitude	87.2	36.4	51.4	225	sadness	67.6	67.2	67.4	174
relief	45.3	93.7	61.1	221	disgust	85.8	66.5	74.9	164
pride	63.2	69.3	66.1	166	embarrassment	65.8	93.3	77.2	210
excitement	68.0	63.6	65.7	187	fear	94.2	80.9	87.0	199

Table 12: Per-emotion precision, recall, F_1, and support for Qwen3.5-27B (open weights) on the full 1,000-sentence release of CHIARO against the adjudicated human gold.

Positive					*Negative*				
Emotion	**Prec**	**Rec**	F_1	**Support**	**Emotion**	**Prec**	**Rec**	F_1	**Support**
joy	62.3	37.8	47.1	201	anger	72.9	62.8	67.5	253
gratitude	77.8	40.4	53.2	225	sadness	57.6	74.1	64.8	174
relief	49.6	88.2	63.5	221	disgust	86.3	68.9	76.6	164
pride	65.9	72.3	69.0	166	embarrassment	67.8	89.0	77.0	210
excitement	62.4	62.0	62.2	187	fear	95.4	72.4	82.3	199

Table 13: Per-emotion precision, recall, F_1, and support for Llama 3.3 70B on the full 1,000-sentence release of CHIARO against the adjudicated human gold.

Positive					*Negative*				
Emotion	**Prec**	**Rec**	F_1	**Support**	**Emotion**	**Prec**	**Rec**	F_1	**Support**
joy	61.1	28.9	39.2	201	anger	66.4	71.1	68.7	253
gratitude	92.5	27.6	42.5	225	sadness	67.3	66.1	66.7	174
relief	37.7	95.5	54.1	221	disgust	87.2	57.9	69.6	164
pride	67.3	60.8	63.9	166	embarrassment	73.3	95.2	82.8	210
excitement	80.6	55.6	65.8	187	fear	93.8	82.9	88.0	199

Table 14: Per-emotion precision, recall, F_1, and support for Gemini 3.5 Flash on the full 1,000-sentence release of CHIARO against the adjudicated human gold.

Positive					*Negative*				
Emotion	**Prec**	**Rec**	$\boldsymbol{F_1}$	**Support**	**Emotion**	**Prec**	**Rec**	$\boldsymbol{F_1}$	**Support**
joy	47.1	27.9	35.0	201	anger	68.0	53.8	60.0	253
gratitude	63.2	42.7	50.9	225	sadness	59.7	52.9	56.1	174
relief	49.3	79.2	60.8	221	disgust	71.6	64.6	67.9	164
pride	49.8	75.3	60.0	166	embarrassment	57.7	89.0	70.0	210
excitement	76.4	50.3	60.6	187	fear	82.8	72.4	77.2	199

Table 15: Per-emotion precision, recall, F_1, and support for Qwen3.5-9B (open weights) on the full 1,000-sentence release of CHIARO against the adjudicated human gold.