Tracing the Emotional Impact of Dark Humor: A Longitudinal Analysis of Reddit Users' Sentiment Before and After Commenting on Dark Memes

Adriana Shuaipaj
ashua2

Emerald (Nai-Syuan) Chang
nc47

Joey Chan
jchan51

Lanea Rohan
lanear2

Abstract

Dark humor memes, which use humor to address taboo or distressing topics, have become a distinctive form of online expression. Often combining irony and emotional vulnerability, these memes can function as both coping mechanisms and markers of online identity. This project examines how engagement with dark memes relates to users' behavioral activity and expressions of wellbeing over time. Using Reddit data, we compare dark and non-dark meme commenters to assess differences in activity patterns and emotional expression, and to test whether engagement with dark memes corresponds to shifts in sentiment before and after commenting. We also explore variation across dark humor categories such as company greed, artificial intelligence, social commentary, hopelessness, shower thoughts, and healthcare or drug-related memes. Sentiment and wellbeing are quantified using the Linguistic Inquiry and Word Count (LIWC) tool alongside behavioral measures of posting and commenting activity. Overall, this work investigates whether dark meme engagement reflects meaningful signals of user wellbeing.

1 Introduction

Humor has historically been a successful coping mechanism in the face of uncertainty, distress, and social tension. It has been shown to strengthen resiliency [7], and decrease stress, anxiety, and depression [17]. Yet, the growing presence of dark humor in online spaces complicates this traditionally positive view. Dark humor (sometimes referred to as gallows or black humor), draws laughter from discomfort, using irony or absurdity to engage with heavy topics such as death, mental illness, and suffering. In online meme culture, it has become a distinctive form of digital self-expression that combines irony with emotional vulnerability.

While prior work has examined dark humor in professions that regularly encounter trauma such as healthcare, firefighting, or law enforcement [8, 9], its widespread use in mainstream digital contexts remains less understood. Research has shown that certain humor styles, particularly maladaptive forms, can be associated with stress, anxiety, or social alienation [4]. Yet, it is unclear whether these associations extend to dark humor as practiced online, where users may employ it as both a coping mechanism and a form of identity signaling.

Online community platforms like Reddit offer a valuable lens for studying this phenomenon. Unlike survey-based studies, Reddit data capture naturally occurring interactions that reflect how users navigate humor, emotion, and community norms in real time. In this project, we focus on dark humor memes, image-based posts that combine irony, absurdity, and taboo themes, as a glimpse into how people express and regulate wellbeing in digital environments. Our analysis investigates whether engaging with dark humor memes corresponds to differences in online behavior or linguistic expressions of wellbeing. We categorize dark memes into thematic groups that emerged from our retrieved sample of 42 identified dark memes out of a total of 98 top meme posts from the sub-Reddit *r/Memes*. These categories include: company greed, artificial intelligence, social commentary, hopelessness, shower thoughts, and healthcare or drug-related memes. We analyze both behavioral activity (e.g., posting frequency) and linguistic sentiment using the Linguistic Inquiry and Word Count (LIWC) tool.

Our study aims to answer the following research questions:

- **RQ1.** Do users who comment on dark memes differ from non-dark meme commenters in both activity patterns and sentiment expressed in their posts/comments?
- **RQ2.** Does engagement with dark memes correspond to shifts in sentiment or wellbeing indicators before vs after commenting?
- **RQ3.** Do different categories of dark memes elicit different emotional or wellbeing-related responses?
- **RQ4.** Does the type of dark meme predict distinct temporal changes in both behavior and expressed sentiment?

2 Background

2.1 Humor Categorization

The impact of humor often depends on it's specific form. While multiple categorization methods exist, two of the most widely recognized are the Humor Styles Questionaire (HSQ) and the Comic Style Markers (CSM). HSQ [11] divides humor into two dimensions:

adaptive humor (affiliative and self-enhancing) and maladaptive humor (self-deprecating and aggressive). These styles are closely linked with psychological wellbeing - affiliative and self-enhancing humor is positively correlated with stress relief and depression mitigation, whereas self-deprecating humor is positively linked to anxiety, and aggressive humor is tied to hostility [3, 14].

The CSM [15], a refinement of the HSQ, is a more granular classification. It breaks down the four HSQ categories into eight substyles: fun, humor, nonsense and wit for the adaptive styles and sarcasm, cynicism, irony, and satire for the maladaptive styles. Similar to HSQ, the four forms of adaptive humor are often linked to positive effects on the psyche, while the maladaptive forms are linked to negative psychological effects. However, wit is a notable exception: depending on the context it can have either positive or negative effects.

2.2 Dark Humor and the Internet

Dark humor – also called gallows humor or black humor – is a genre that engages with topics often considered to be grim or taboo, such as death, violence, mental illness, and social injustice. As dark humor is a genre rather than a style categorization, it can appear in both adaptive and maladaptive humor, though it is most often associated with sarcasm, cynicism, and irony - three of the four CSM maladaptive humor types.

In recent years, dark humor has drawn increased scholarly attention due to its growing presence in social and mainstream media platforms. Though historically used as a coping mechanism in certain professions [8, 9] and has also been theorized to help build connections in stressful and traumatic situations [16], its broader cultural diffusion has raised concerns about its effect on the psyche. Studies have shown that people who use darker or malicious forms of humor often demonstrate higher levels of dark personality traits such as psychopathy and narcissism [10]. Additionally, evidence has shown that exposure to certain kinds of humor can begin to influence decision-making and moral reasoning [5]. Importantly, dark and maladaptive humor have also been closely linked to increases in stress, anxiety, and depression [3], prompting concerns about its prevalence and motivating efforts to find methods to mitigate exposure [1, 6].

On online forums such as Reddit, the psychological impact of dark humor may be amplified. As dark humor intrinsically toes the line between taboo and not-taboo, it can easily overstep and become offensive or harmful. In the real world, such as in the workplace, shared context may provide clues to help others interpret the intent behind dark humor. In contrast, online platforms lack this shared context and tonal clarity, increasing the likelihood that the dark humor fails to "land" appropriately or causes distress. For example: one study looked at the presence and use of dark humor in response to school shootings [2]. With such a sensitive topic, it is easy to imagine the vastly different responses that dark humor might provoke in survivors as opposed to others using it to make political commentary.

Compounding the issue, anonymity in online environments can significantly affect posting behavior [12] Anonymity has been linked with more aggressive posting styles and inhibition, and can lead to posting humor that may be otherwise socially unacceptable. This phenomenon is especially prevalent in platforms such as Reddit, where anonymous interaction is central to user experience.

3 Key Related Work

Very little prior work uses memes as the form of dark humor delivery. One notable exception is Napp's thesis, which combines dark humor with the meme format [13]. This paper presents some preliminary results on the impact of dark memes on well-being. Namely, dark humor falls into the satire category of the CSM, which is associated with negative affect. Conclusions of the study show that although participants self-reported a positive impact on mood after viewing dark memes, often those who seek them out already show high levels of psychological distress. Thus, viewing dark memes may not actually be beneficial to their wellbeing.

Our study differs from Napp's in two key ways. Firstly, we will have a more diverse participant demographic as we source our data from Reddit posts. This is in contrast to the prior study, which focused mainly on Gen Z participants. Secondly, we conduct a longitudinal study and will be tracking markers of participant wellbeing over the course of several months. This is different from the prior work, which looked at the effect of dark memes immediately after viewing them. Combined, these two factors help to address two of the key limitations outlined by Napp, and will allow us to make more general statements about the impact of dark memes on wellbeing.

4 Proposed Study Design

4.1 Data Collection

For the data collection, we used Python Reddit API Wrapper. We focused on the top posts on r/meme between January 2025 and April 2025. We got a total of 98 posts, within those posts they were manually into memes with dark humor and memes without dark humor. In each post, we gathered the top 100 comments and analyzed the author of the comment by looking at their posting history, particularly 50 days before and 50 days after their comment. We ignored users that had private accounts or deleted accounts when gathering post history.

4.2 Meme Categorization

For the 98 memes, each of the researchers on the team was assigned 50 memes, and we took turns labeling them by the meme template category and by whether it is dark or not dark. Each author cannot see what other authors labeled. For the memes that have one dark and one not dark label, a third researcher labels it or brings it to the group for discussion. In the end, we ended up with 46 memes with dark humor, and 52 memes without dark humor. Within the meme with dark humor, three researchers labeled each of them into one of nine subcategories: language, hopelessness, sexual, company greed, healthcare/drugs, AI, social, shower thoughts, and other.

4.3 Analysis Tool

Besides each commenters' post count, we also plan to use LIWC to further understand the emotion and tone of the data. We are also curious about the length and lingual content of the posts.

We aim to compare the posting habits, including frequency, tone, and emotion, both before and after interacting with dark memes, between dark/non-dark memes, and within different dark meme subcategories, and to verify the statistical significance of our findings.

5 Timeline

Our proposed project timeline spans from mid-September to mid-December. In mid-September, we brainstormed potential project ideas and, after receiving feedback from classmates and Professor Koustuv Saha, decided to focus on analyzing user-created memes, particularly dark memes. By late September, we finalized our dataset plan and selected the social media platform that would serve as our primary source for data collection. Data collection for both dark and non-dark memes took place throughout late September and early October.

In mid-October, we began conducting a deeper analysis of the metadata from the dark memes agreed upon by the annotators. This involves examining specific characteristics such as the number of upvotes per post, total comments, and engagement patterns—for instance, whether the number of posts from the same users increases or decreases after commenting on dark memes. By early November, we plan to compile the labeled and analyzed data into a structured dataset suitable for further statistical and linguistic analysis.

In mid-November, our focus will shift toward interpreting the results and identifying trends within the dark meme subset. We will analyze potential emotional patterns and similarities among commenters—for example, whether users who frequently comment on dark memes also engage with non-dark memes—and examine how these behaviors correlate with the posts they create. This analysis will help us better understand user engagement patterns and how different themes of dark humor are received on social media. By early December, we expect to finalize our results and begin drafting our report, summarizing our findings, challenges, and potential directions for future research on online meme culture and emotional communication.

6 Addressing Feedback

6.1 Initial Project Pitch

Our initial project pitch has largely changed after addressing feedback from both the professor and our peers. Our initial pitch was centered on evaluating sentiment text analysis tools like LIWC to see how well they pick up on dark humor and sarcasm versus non-sarcastic humor. The peer feedback for this pitch was primarily positive due to the relevancy of dark humor in online spaces. However, there were concerns regarding the subjectivity of dark humor, and where our data would come from. We eventually addressed this peer feedback by developing categories of dark humor we observed and selected our desired platform (Reddit) by the final project iteration.

6.2 First Project Idea Iteration

After reviewing the professor's feedback on our initial pitch, we decided to change our project focus from evaluating text sentiment analysis to dark humor's effect on people's mental wellbeing to have a more clear connection to wellbeing. We decided to stick

with the idea of dark humor for our final project idea because of the high relevancy of dark humor in online communication, as validated in the previously mentioned peer feedback. We initially did not have a selected platform to source the dark humor, but after changing our idea to connect more to wellbeing, we decided that Reddit comments and posts were the most feasible form of data to analyze. We then decided to compare the effect of dark humor on specific sub-Reddit communities such as r/GenAlpha and r/GenZ to see if there was a generational difference on the effect of dark humor on wellbeing. We would measure and compare dark humor's effect on wellbeing by analyzing the sentiment (with a sentiment text analyzer) of the comments of posts with a dark meme.

6.3 Final Project Idea

The selection of Reddit as a platform to retrieve our data was validated by a final ten-minute feedback session with the professor, where we materialized our final project idea from the first project idea iteration. In this session, the professor suggested taking a longitudinal approach to looking at Reddit comments to measure dark humor's effect on wellbeing within one sub-Reddit community. This would help reduce our project's complexity while still being impactful. We would longitudinally monitor commenters' behavior within a specific time-frame before and after interacting with dark humor. If we no longer compare two sub-Reddits, the professor suggested that we define our control group as those who did not comment on a dark meme (as a proxy for not being exposed to the dark meme). Therefore, our experimental group would be those who did comment on a dark meme. In response to the professor's feedback, we decided to adopt the longitudinal approach and definition of experimental and control groups for our final project idea.

7 Preliminary Analysis

We conducted a preliminary analysis of 98 memes, identifying 42 as dark and 56 as non-dark.

To further analyze the memes, we examined the correlation between the number of upvotes and the number of comments to determine whether there was any relationship between the two for the 56 non-dark memes shown in Figure 1. The same analysis was conducted for the dark memes shown in Figure 2.

When analyzing Figure 1, we observe a steep increase in the number of comments relative to the score, which is calculated as the number of upvotes minus the number of downvotes. This suggests that posts with higher engagement, as measured by comments, also tend to receive higher overall upvote scores. However, there is considerable variance, indicating that not all non-dark memes necessarily generate large discussions. This may suggest that while high scores reflect general approval, the number of comments may be a better indicator of how engaging or discussion-provoking a meme is.

We observed a similar trend in Figure 2, where there is also a positive correlation between the upvote score and the number of comments. However, compared to Figure 1, the data points for dark memes align more closely with the best-fit line, suggesting a stronger relationship between upvote score and comment activity. This indicates that for dark memes, higher upvote scores are more

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consistently associated with increased comment activity, reinforcing our decision to further investigate how dark humor shapes user engagement and discussion dynamics.

To further analyze the data, we examined the activity of commenters under both non-dark and dark memes, comparing their posting frequency before and after commenting on each type. As shown in Figure 3, approximately 44.0% of non-dark meme authors and 42.9% of dark meme authors increased their posting frequency. In contrast, 47.1% of dark meme authors and 44.5% of non-dark meme authors posted less afterward, while 11.5% of non-dark meme authors and 10.0% of dark meme authors showed no change in posting behavior. From this, we can infer that both groups exhibited similar overall activity trends, but dark meme authors showed a slightly higher tendency to reduce their posting frequency after engagement, suggesting potential differences in user behavior after viewing dark memes compared to the non-dark memes.

To better visualize the posting behavior of commenters rather than relying on aggregated percentages, Figure 4 compares each author's posting frequency before and after commenting on both non-dark and dark memes. From the "no change" line, we can observe that most points fall below it, indicating a general decrease in posting activity for both groups. However, commenters on dark memes exhibited a slightly larger reduction in their posting frequency compared to those commenting on non-dark memes. This suggests that interaction with dark content may be associated with a decline in subsequent engagement, potentially reflecting differences in emotional impact or even community behavior following exposure to dark humor.

Our preliminary analysis provides valuable insights into the behavioral patterns of users who engage with both dark and non-dark memes. Overall, we observe that posts containing dark memes tend to show a stronger correlation between upvote score and number of comments, suggesting that dark memes generate more discussion within the community compared to non-dark memes. These findings highlight the engaging nature of dark humor content, which often provokes more conversation and reaction than typical meme posts. Future analyses would be to continue exploration as to whether this increased engagement tends to be negative or positive, in order to better understand how users typically respond through comment analysis.
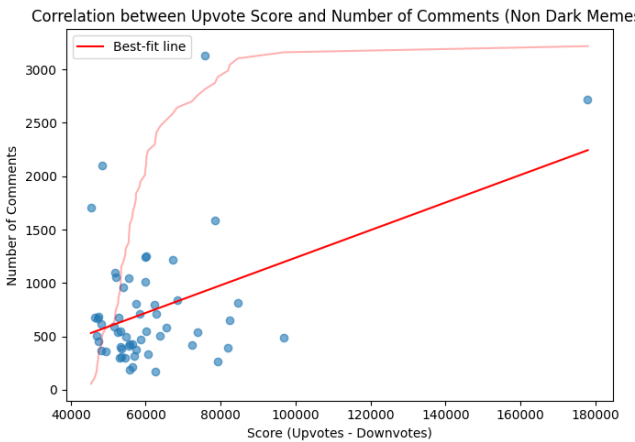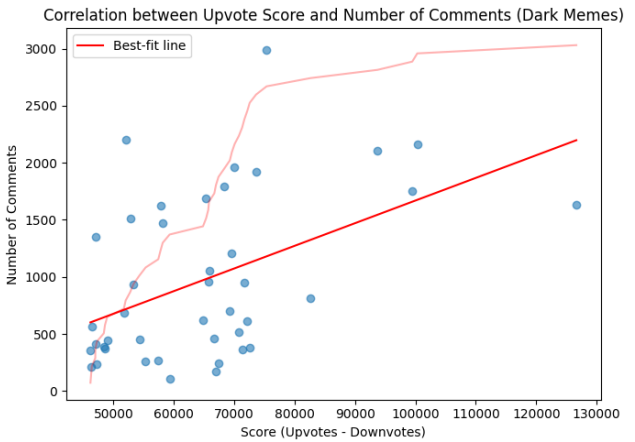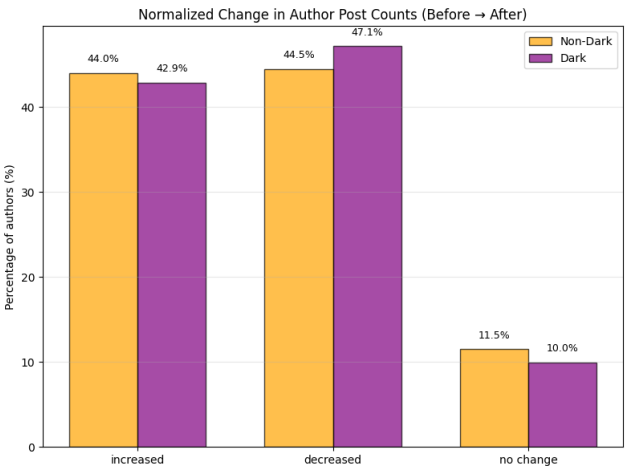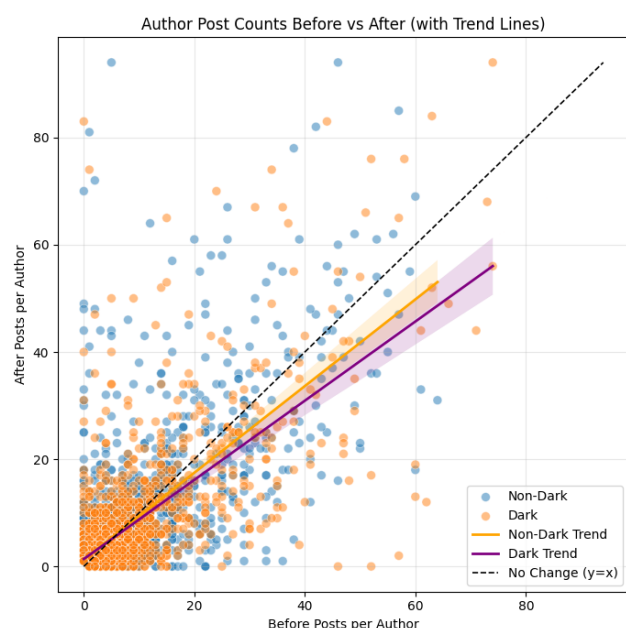

Figure 1

Figure 2

Figure 3

Figure 4

8 Expected Project Outcomes & Contributions

Our preliminary analysis of a sample of dark and non-dark memes suggests that dark humor content may evoke distinctive patterns of engagement and user behavior. Building on these early observations, the full project will examine how dark meme interaction relates to both behavioral activity and expressed wellbeing over time using Reddit. We expect to produce several outcomes. First, we aim to produce empirical evidence of how the content dark humor differs from non-dark humor in driving online engagement, measured through comment and posting activity. Second, we will identify behavioral and emotional indicators of user wellbeing associated with dark meme engagement, using linguistic indicators derived from LIWC. Third, by analyzing specific categories of dark memes such as company greed, artificial intelligence, social commentary, hopelessness, shower thoughts, and healthcare/drug-related humor, we will evaluate whether different sub-types of dark humor correspond to specific emotional and temporal patterns. Through these analyses, our project will contribute to a broader understanding of dark humor as both a form of online social participation and a potential signal of emotional state. This work may help inform future studies on digital coping behaviors, emotional expression, and the complex relationship between humor and wellbeing in online communities.

9 Collaboration Plan

Adriana: For the project proposal deliverables, I wrote the abstract, feedback section, expected project outcomes & contributions section, and partially wrote the introduction. For the project itself, I along with my group members categorized the sentiment and topic of all memes (both dark and non-dark) retrieved from Reddit. In the future, I plan to contribute to the analysis of data patterns to

be observed. For the final paper, I plan to polish up and update the sections I have written in this proposal (that are applicable for the final paper) according to new findings.

Lanea: During the beginning of the project, I have been in charge of situating our study in the greater context of dark humor and wellbeing literature. I read and selected all of our background papers and wrote the background and relevant works sections, along with helping to write the introduction and flesh out the research questions. I also helped with the initial meme categorization and pre-processing. As the project continues to develop, I plan to continue to help process our data and analyze trends that emerge. I will also continue to look for resources in literature to refine, support, or challenge our results.

Joey: For the project proposal, I wrote the timeline section outlining what has been completed and what we plan to work on next, as well as the preliminary analysis section after Emerald added the figures. For each figure, I explained the data presented and how it deepened our understanding of user behavior and guided our next steps. I also contributed to group discussions that helped refine our research focus and participated as one of the annotators during all three annotation phases. Moving forward, I will continue contributing to discussions and take a more active role in data analysis, such as using LIWC to examine the emotional tone of comments and better understand user engagement. For the final paper, I plan to update the timeline and expand the preliminary analysis to include new findings.

Emerald: I am the owner and documenter of data collection, including gathering meme posts, defining the data collection window, and collecting commenters' activities. I also performed preliminary analysis on how the data was distributed, between non-dark and dark meme comments, and before and after activity comparison. I participated in defining our research question. In the second half of the research, I will be defining the hypothesis and processing data to help with statistical proof of the hypothesis.

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