

Exploring Motivations for Adding Alternative Text on Social Media Posts

**Cameron
Linhares-Huang**
Symbolic Systems
Stanford, CA, USA
cameroni@stanford.edu

**Catherine
Horkay**
Computer Science
Stanford, CA, USA
chorkay@stanford.edu

**Daniel
Wan Rosli**
Computer Science
Stanford, CA, USA
danwr@stanford.edu

**Nancy
Hoang**
Computer Science
Stanford, CA, USA
hoangnt1@stanford.edu

ABSTRACT

Social media platforms are becoming increasingly image-based with the rise of Instagram, memes, and infographics. These forms of communication exclude visually-impaired users, deterring them from active usership. While most social media platforms present the option for users to make their posts accessible, such as by adding alternative text (AT), the majority of users still do not practice this. However, given that social pressure is a proven method of encouraging specific behaviors, our study explores how different social pressure (SP) will impact the number of users who add alternative text to posts. In our study of 34 individuals on a red herring social media platform we deployed called StanfordYums, we explore three types of SP: impersonal, peer-to-peer, and authoritative. Impersonal influence was found to have

no positive or negative influence on any participant's behavior (where positive influence is measured by the conversion of a user who did not initially post with AT to one that adds AT when a condition was implemented). With social and authoritative pressure, respectively twenty percent and sixty percent of participants changed for the better by adding AT to their following posts. Our work suggests that social and authoritative pressures can be effective mechanisms to encourage the use of AT in user-generated content (UGC).

Author Keywords

Alternative Text, Social Pressure, User-Generated Content

1 INTRODUCTION

As social media has evolved to largely be a visual experience, visually impaired users are generally limited to experiencing their content via AT, where original posters or developers describe the contents of an image in order for screen reader software to process it [2]. Platforms such as Twitter, Instagram, and Facebook have included the option to add AT, but AT still remains widely unused. In a 2022 study from Twitter, researchers found that only “.06% of images on Twitter are accessible [3].” In attempting to meet the ideals of inclusive design, we wanted to focus on ways we could better encourage users to include AT.

Most users are still not adding AT to their posts, resulting in an inaccessible experience for users with

visual impairments. In this paper, we attempt to bridge the gap in the lack of accessibility that is prevalent in social media applications. To do this, we investigate three different interventions that incorporate some form of SP to nudge users to add AT before the final submission of their post. The first intervention is suggestive system pressure, which reminds the user that they did not add AT in their post and gives them a second opportunity to. This serves as the control for our experiment and does not include any form of SP. Our second intervention is peer pressure, which attempts to persuade the user to include AT by informing them that several of their friends on the site have also included AT in their posts. Past research has found that peer influence tends to encourage positive behavior change [1]. Moreover, the social learning theory suggests that people learn by observation, and will act upon their

observations even when not incentivized to [4]. Our last intervention is authoritative pressure, which persuades the user to include AT in their post with a recommendation from an OAE guideline for improving site accessibility. This incentivizes users to include AT in their posts based on their intrinsic motivations, which research has shown to be a successful influence in changing user-generated content [5]. Furthermore, people tend to abide by the advice of perceived experts or people with positions of authority [6].

We begin by introducing the social media application that we created and deployed to conduct the experiment and the rationale behind our design choices. With this, we relay our study design and results and synthesize the data to draw further conclusions about how our participants interacted

2 RELATED WORK

All of our related work is based on the exploration of SP and behavior change.

Our study explores how various types of SP might increase the number of users who add AT to their posts. Despite the increase in adoption of websites allowing users to add AT, surveys have shown that more than 80% of websites still have accessibility issues [7]. Currently, users are not incentivized to add their own AT. However, studies suggest that SP can be useful in behavior change [8]. In a recent influential paper, SP on social media has been used to push users into voting by representing it as a social norm on media sites like Facebook [9]. Seminal studies like the Asch conformity test have also demonstrated the large impact of SP on people's actions and beliefs [10].

Based on the related work on SP and behavior change, we had the following hypothesis: incorporating SP into our social media site would be effective in encouraging users to add AT.

3 METHODOLOGY

3.1 Materials

We created a platform that mimicked the core features of social media posting to test users. To do this, we analyzed several popular social media applications such as Instagram, Facebook, and Twitter and investigated how they incorporated the option to include AT in the workflow of creating a

post. We find that the design choices contribute to the overall study's limitations. To better understand these limitations, we conduct follow-up interviews with several of our participants, capturing both the ideas of the average user as well as users with anomaly results. The paper concludes with commentaries about the efficacy of the varying SP, as well as how future systems can incorporate design changes to yield more posts with AT.

- This paper makes the following novel research contributions:
- We examine the efficacy of how impersonal, peer, and authoritative SP influence user motivation for adding AT
- We examine how future design systems of social media applications can incorporate these findings such that they can increase the number of users who post with AT

post. We ultimately settled on mimicking a minimalistic workflow of Instagram posts, as it was the most image-heavy of the mainstream platforms and best represented the nature of our site in Figure 1. The fields of Instagram that we mimicked appear after adding an image to the post, which is shown in Figure 2. While other sites like Facebook were also appropriate, we found that their workflows were too unintuitive to mimic and would pose too much of a barrier for the average user to include AT. For example, Facebook does not allow users to include AT in their initial uploading of an image. Instead, it requires the user to edit their original image to add AT.

The platform was created under the name of "StanfordYums." It was advertised to participants as a new Stanford Dining Hall food review application that required testing to disguise our investigation of AT. Specifically, participants were asked to post photos of their meals at dining halls under the guise of reviewing a new platform we had developed for class.

3.2 PROCEDURE

Our study was conducted in two rounds in order to examine changes in behavior when including AT. In the first round, participants were asked to make a post of their own where AT was optionally listed. In the second round, participants were split into three different groups to review a "new" revision of the app where each group was tested with a different type

of SP. In this revision, a pop-up was generated if users chose not to use AT in their post. Each pop-up included a different message shown in Figures 3-5. Participants were randomly split into groups in the second round based on whether they used AT in the first round—this decision was made to ensure that there was an even split of participants who did and did not use AT in each condition to see how they changed across groups. Participants in the second group were asked to “test out” the new friending system to make the peer pressure system more applicable.

After both rounds of posting were performed, participants were selected at random to participate in a post-study interview. These interviews were open-ended conversations and assisted in gauging why students decided to include AT and their current knowledge and use of AT. We asked different questions on a case-to-case basis that varied from trying to understand the rationale behind certain anomaly results to asking for recommendations on future design systems that can encourage users to add AT.

Our study was conducted in two rounds detailed below:

- Round 1: Users were asked to make a post of their own where AT is optionally listed.
- Round 2: Users were split into three groups to review a “new” revision of the app
 - Condition A (Impersonal Pressure): “We noticed you did not add alt text. Would you like to add alt text?”
 - Condition B (Peer Pressure): “Several of your friends used alternative text in their posts. Would you like to include it in yours?”
 - Condition C (Authoritative Pressure): “The OAE recommends adding alt text to help make your post more accessible. Would you like to add alt text?”

Note: With 34 users, we randomly assigned three groups to each have 5 AT posters and 5 non-AT posters. This involved arbitrarily removing 4 users from our study population cutting down the participants to 30 students.

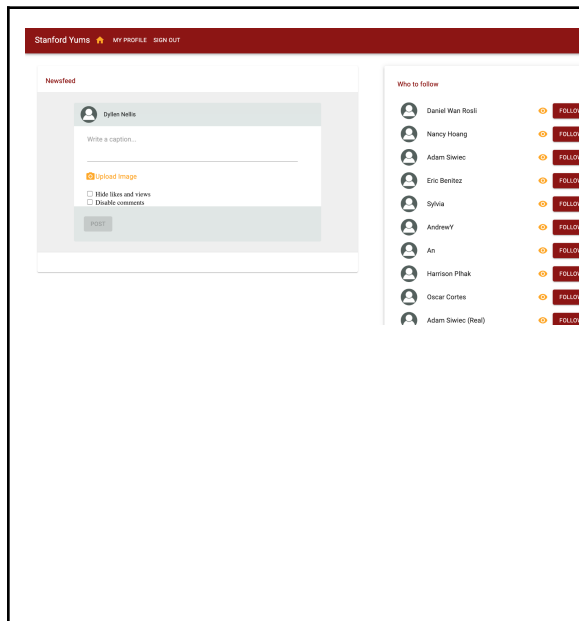


Figure 1: The opening user interface of the web application “StanfordYums,” a social media platform used to post pictures of food.

Figure 2 shows a social media posting interface. At the top, it displays a user profile for 'Daniel Wan Rosli'. Below this is a 'Write a caption...' text input field. Underneath the caption field is an 'Upload Image' button with a camera icon, followed by the text 'goose.jpeg'. Below the image upload section is an 'Add location...' text input field. This is followed by a 'Write alt text here...' text input field. Below the alt text field are two checkboxes: 'Hide likes and views' and 'Disable comments'. At the bottom of the form is a 'Enter to add tags...' text input field. A 'POST' button is located at the very bottom of the form.

Figure 2: Posting fields used in the web application for posting.

Figure 3 shows a modal dialog titled 'Add Alt Text?'. The text inside reads: 'Hi! We noticed you did not add alt text. Would you like to add alt text?'. Below this text is a text input field labeled 'Add AT here'. At the bottom right of the dialog are two buttons: 'SKIP' and 'ADD'.

Figure 3: Condition A - Impersonal Pressure

Figure 4 shows a modal dialog titled 'Add Alt Text?'. The text inside reads: 'Hi! We noticed that you did not add alt text. Several of your friends added alt text. Would you like to also?'. Below this text is a text input field labeled 'Add AT here'. At the bottom right of the dialog are two buttons: 'SKIP' and 'ADD'.

Figure 4: Condition B - Peer Pressure

Figure 5 shows a modal dialog titled 'Add Alt Text?'. The text inside reads: 'Hi! We noticed you did not add alt text. The OAE recommends adding alt text to help make your post more accessible. Would you like to add alt text?'. Below this text is a text input field labeled 'Add AT here'. At the bottom right of the dialog are two buttons: 'SKIP' and 'ADD'.

Figure 5: Condition C - Authoritative Pressure

3.2 RECRUITMENT

Participants were recruited from the undergraduate student population at Stanford University through online flyers and personal connections. Our recruitment advertised requests for volunteers to test a new social media platform dedicated to reviewing Stanford dining hall food for a computer science class. This advertisement was made for participants to remain unbiased about AT going into our study.

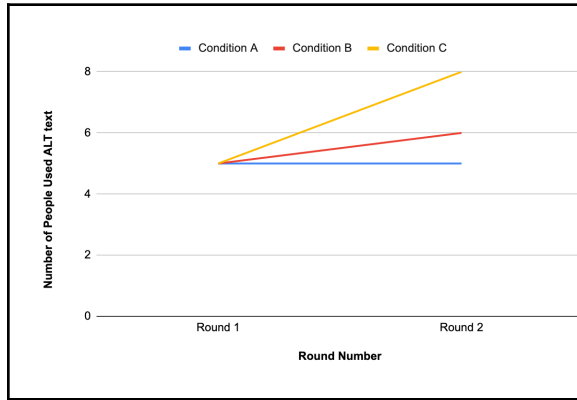
Our participants ranged in age from 19 to 25. 22 participants were male, while 12 were female. Only 1 of the participants was not an undergraduate student from Stanford. All participants owned a smartphone with social media applications and had experience posting online. No participants were recruited based

on their knowledge of AT—this was a deliberate decision, as we wanted to get an accurate random sample of participants to best represent a larger population.

3.3 ANALYSIS

To determine the efficacy of the various types of SP, we observed the change in participant behavior from the first to the second round. To better understand the specific motivations and reflections of participants we randomly interviewed a handful of participants across different conditions. Insights from these interviews are included later in the discussion section.

4 RESULTS



For the second round, participants were divided into three groups with each having 5 participants who initially used AT and 5 who did not. In Condition A, the impersonal pressure to use AT did not affect any user's decision to change their use of AT. In Condition B, 40% of participants who did not participate in AT started to use AT and 20% of participants who initially used AT stopped using AT. In Condition C, 60% of participants who did not previously use AT incorporated the use of AT in the second round. The overall changes between all conditions can be seen in Figure 6.

Overall, the results of the system pressure condition suggest that nudging the participants does not do anything to encourage users to add AT in their post. The results of the peer pressure condition suggest that this form of SP is generally effective. Despite the negative change in AT inclusion that occurred with one user, the results of the condition overall led to the inclusion of more AT. One reason that our peer pressure condition may have proven to be less effective is due to the phrasing we used. Prior studies have shown that specifying the number of friends may induce more SP than the vague description of "several of your friends [11]." Our authoritative pressure condition proved to be the most successful, with our results potentially suggesting that users are most susceptible to influence when understanding the importance of AT when recommended by a perceived expert.

Figure 6: Change in users who included AT before and after various forms of pressure.

5 DISCUSSION

The success of Condition C suggests that participants generally are more compliant to authoritative pressure than to peer pressure (Condition B) when adding AT.

However, designers who aim to increase the prevalence of AT on a social media platform writing must consider the possibility that some users do not know what AT is or its purpose, and avoid adding AT for this very reason. One of the participants in our study did not know what AT was, but from the inclusion of the word "OAE" in Condition C's modal were able to deduce that AT was some form of captioning to help disabled users. If other users shared this same lack of knowledge, solely knowing that their friends included AT would not give enough context for them to deduce what AT is.

The inclusion of "OAE" itself given Condition C's success is indicative of an appeal to empathy for the visually impaired and less able-bodied, which introduces an intrinsic motivation to add AT. The peer pressure introduced by Condition B is exercising extrinsic motivation, in which a user is afraid to be outcasted socially. Intrinsic motivation is more successful with user-generated content (UGC) than extrinsic motivation, which may further explain the triumph of Condition C in behavior change [6].

There was an anomaly in Condition B where a user who initially posted with AT in the control round converted to posting without AT. However, this user

attested in their post-study interview that this was not reflective of their values but solely because they were in a rush. This opens up a larger discussion on the robustness of our study design, and whether we can truly attribute causality of the condition modals to the introduction of AT in a post. If more time was allotted, we would take more posts to calculate on average if a user includes AT to avoid skewing from anomalies like this one instance.

6 CONCLUSION

We maintain that authoritative pressure was the most successful due to the inclusion of OAE, which implicates why the addition of AT is important for social good: so that the content a user shares can be accessible to visually-impaired users. Taking advantage of the ethos of Stanford's Office of Accessible Education reminded our participants of a paternal other that creates a social pressure to be considerate of others who are less able-bodied.

Condition B was less successful because it appeals to the extrinsic motivation of peer pressure, largely rooted in the fear of being outcasted socially. Condition C was more effective at getting users to include AT in their posts because it introduces intrinsic motivation, which produces more continuity and lasting change in the long term [5].

Much work has proven the efficacy of using various types of social pressures to influence behavior. In the domain of AT, many might assume the answer to be automation, yet advocates from the disabled community and disability studies would argue otherwise—human input is effective and often unmatched, especially in the context of social media where posts are often much too complex for automated technologies [12].

6.1 LIMITATIONS & FUTURE WORK

Given the time constraints of the project, the participant groups all consisted of Stanford-educated students with one-degree connections from the research team, and posts were made within shorter turnaround time frames. As an application, the UI design was kept to a minimalistic mock-up of Instagram, which failed to capture all forms of social media and could have misled several users into thinking AT is a requirement. In addition, given the nature of the application as a food diary, many of the generated captions could have been used as AT. This

may have led to participants being less active in filling out the AT field due to perceived redundancy.

Study Design. Based on these limitations in the study design, there are various directions we think would be useful to explore. First, with regards to the platform, it would be interesting to see how results may change if the platform has many more features. Given that user attention span and understanding are critical to task completion, adding more distractions to the UI might impede the rate of AT inclusion. In the same vein, adding more context to AT to varying extents would be interesting to see how participants may respond to varying degrees. Seeing how users best empathize to include AT is a core piece of disabilities studies in allyship. The platform was also particularly designed to be a web application; however, many users posted from their mobile devices. While the application was functional from mobile browsers, users had more difficulty creating posts which led to confusions such as one user adding AT because they thought it was a required field after their initial post did not immediately go through.

Recruiting & Sample Representation. Based on the limitations in our recruitment, in future work we would hope to explore more diverse populations—specifically studying how the inclusion of AT varies between different countries would be interesting. The language used to describe AT in other countries also likely differs greatly from the North American standard. We also acknowledge the fact that our group of researchers and participant group includes no individuals who are explicitly a member of the visually impaired community.

Reflections. From improving upon our pilot study to conducting our official study, we gained critical insight into further explorations in this space. First, we found the lack of knowledge surrounding AT to be surprising. Two participants that were interviewed noted that the first time they heard about AT was due to their student housing encouraging it for a differently-abled peer. On the grounds of our interviews, we gathered that some individuals may only know about the meaning or context of AT if they have a first-degree connection with someone from a differently-abled community, which cannot be true for millions across the globe. Based on the strong increase in adding AT in Condition C, we hypothesized that adding more context about the need for AT could potentially provide more incentive to users.

In reviewing the quality of the AT provided, we also reflected more on the value of automatically

generated AT. Though it is well known that human input is still essential and often irreplaceable in many contexts (especially on social media) where there is more complex content to describe for an automated system, it would be interesting to investigate how we could leverage automation to ease the human burden. Future work may combine AT with human input to explore how automated technology may impact participant reaction to adding AT.

Additionally, during our interview with one participant, they suggested that one possible improvement to increasing the use of AT might be transforming the model to be crowdsourced. This model might look like any user being able to contribute to the AT of a photograph on Instagram, where the burden of the entire caption is not placed on one individual. Including records of authorship might be essential to maintaining accountability in the quality of the crowdsourced AT.

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