



Climate Change Cyber Activism: A Visual Communication Content Analysis of Youth Activist Greta Thunberg's Instagram

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Abstract: *On August 14, 2019, Greta Thunberg sailed across the Atlantic Ocean to attend the United Nations Climate Summit in New York City. The purpose of this study was to explore the messaging behind youth Cyberactivist Greta Thunberg's Instagram account during her journey. We used an arts-based visual content analysis approach and the following research questions guided the study: a) How did Thunberg share her climate activist journey with her Instagram followers? and b) How did Thunberg's Instagram followers respond to posts she made during her climate activist journey? We collected posts from August 14-28, 2021. Images, captions, and the first ten comments of the posts shared by Thunberg's Instagram account were qualitatively coded. Themes that emerged from the arts-based visual and textual analysis included: 1) Thunberg shared her experience through journey storytelling and voiced ongoing activism and 2) Thunberg's audience members' top comments indicated a primarily negative response to her journey. We highlight themes from the posts and discuss implications for online cyberactivists and communication professionals.*

Keywords: *Climate Change, Cyberactivism, Social Media, Thunberg, Visual Content Analysis.*

1. Introduction

On August 20, 2018, Greta Thunberg started her School Strike for Climate in front of the Swedish Parliament (Alter et al., 2019; Olesen, 2022). Thunberg's School Strike for Climate spurred the global, weekly demonstrations of Fridays for Future one month after she started. The first few started in two major European cities; The Hague, Netherlands and Berlin, Germany on September 4 and September 14, 2018, respectively (Kühne, 2019). On April 12, 2019, Gregor Hagedorn and many collaborators published an article in the academic journal "Science" in support of the Fridays for Future movement (Hagedorn et al., 2019). Since then, the article has been signed by 3,000 scientists. On September 20, 2019, over four million people came together to demonstrate the largest climate strike in history (Alter et al., 2019). As a Nobel Peace Prize nominee at the age of seventeen, Thunberg has shaken the world with her approach to climate change activism (Kühne, 2019; Olesen, 2022).

On September 23, 2019, Thunberg delivered a speech to world leaders at the United Nations (UN) Climate Action Summit at the UN Headquarters in New York City. To reduce carbon emissions, Thunberg opted out of taking a flight and instead chose to sail across the Atlantic Ocean for two weeks. In an Instagram post on July 29, 2019, Thunberg shared, "The science is clear. We must start bending the emissions curve steeply downwards no later than 2020, if we still are to have a chance of staying below 1.5 degrees of global temperature rise. We still have a window of time when things are in our own hands. But that window is closing fast. That is why I have decided to make this trip now." This post served as the catalyst for this study.

In the spirit of her own activism, Thunberg traveled to the UN Summit emission free. Through the power of solar panels and underwater wind turbines, a zero-carbon sailing vessel, the *Malizia II* skippered by Pierre Casiraghi and Boris Herrmann, carried Thunberg from Plymouth, UK

to New York, USA. The Malizia sailing crew contacted Thunberg in support of her mission and offered to help her sail to New York in time for the 2019 Climate Action Summit. During her journey, Thunberg documented her experience via social media outlets (Instagram, Twitter, etc.) to communicate updates and milestones with her followers. Thunberg's main social media communication tool is Instagram (Molder et al., 2022). Youth activists are connected to the world now more than ever through digital communication platforms (Fernández-Prados et al., 2021). Since her voyage, Thunberg has amassed millions of followers on social media, with 14.8M followers on Instagram as of April 4, 2023. As grassroots mobilizations increase online, it is imperative that activists, social scientists, communication experts, and STEM scientists explore messages and record the artifacts that emerge from noteworthy social media engagement trends focused on spurring public and policy action (Fernández-Prados et al., 2021).

2. Theoretical Framework

Cyberactivism is rooted in activism for social change through collective movement and mobilization of groups of people through digital technology (Sandoval-Almazan & Gil-Garcia, 2014). Cyberactivism 1.0 occurred through early web information and communication technologies such as e-mail and websites for sending information and organizing groups online and in-person at local and regional levels. The next iteration, Cyberactivism 2.0 leveraged social media such as Instagram and Twitter to create activist movements around political and social issues at a global scale (Sandoval-Almazan & Gil-Garcia, 2014).

Cyberactivism 2.0 posited that successful social media activism includes the following stages: a triggering event, traditional media response, viral organization, and a physical response (Sandoval-Almazan & Alonso, 2011). They described a triggering event as one that (1) breaks the status quo of society, (2) is autonomous, and (3) is organized by citizens. Then, traditional media outlets respond to the event by publishing information through TV, radio, print, and digital newspapers. The media response is followed by viral organization that stimulates online and offline mobilization. Finally, the movement reaches a physical response that places the protest outside of the digital and into the physical world. Table 1 operationalizes the Cyberactivism 2.0 steps to the case of Thunberg's global climate change activism effort.

Trigger Event	Traditional Media Response	Viral Organization	Physical Response
Thunberg sits outside of the Swedish parliament building with her <i>School Strike for Climate</i> sign on August 20, 2018	News articles with images of Thunberg and her <i>School Strike for Climate</i> sign (Alter et al., 2019)	#schoolstrike4 climate #fridaysforfuture	Other individuals attend Youth Climate Strikes (Kühne, 2019; Olesen, 2022)

Table 1: Thunberg's School Strike for Climate within the Cyberactivism 2.0 framework

Ciszek (2016) pointed out that activists often take to social media to challenge dominant structures and discourse, speak up for minority groups, and leverage the platforms to share dissenting perspectives. Environmental activism has existed for decades. Activists are said to engage in efforts to increase awareness through physical actions such as marches and protests, virtual actions such as growing social networks, raise funding for pro-environment non-profit organizations, and encourage behavior change (Fernández-Prados et al., 2021). Pro-environmental behavior is focused on encouraging humans to reduce their impacts on the natural world through efforts such as recycling, reusing, and repurposing household goods, and carpooling for fewer cars on the road to cut carbon emissions (Kaur & Chahal, 2018). Along this line of reason, Thunberg is an example of a youth activist employing social media for communication and education of global public audiences about climate change and pro-environmental behavior change. By choosing to sail to the UN Climate Summit, Thunberg exemplified pro-environmental behavior change for her audience.

Purpose/Research Questions

The purpose of this study was to explore the messaging behind youth Cyberactivist Greta Thunberg. The following research questions guided the content analysis:

How did Thunberg share her climate activist journey with her Instagram followers?

What visual elements did her posts include?

What perspective did she share in her captions?

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How did Thunberg's Instagram followers respond to posts she made during her climate activist journey?
What tonality did the posts' comments take?
What content did the followers include in their comments?

3. Methods

The study followed an arts-based research approach to qualitative content analysis design. This study explored visual and textual message themes in Thunberg's Instagram posts during her sailing journey to the United States as a model of youth environmental Cyberactivism. Study procedures are outlined in the following sub-sections.

Data Collection

Thunberg shared 24 Instagram posts during her journey from August 14-28, 2019 (Figure 1).

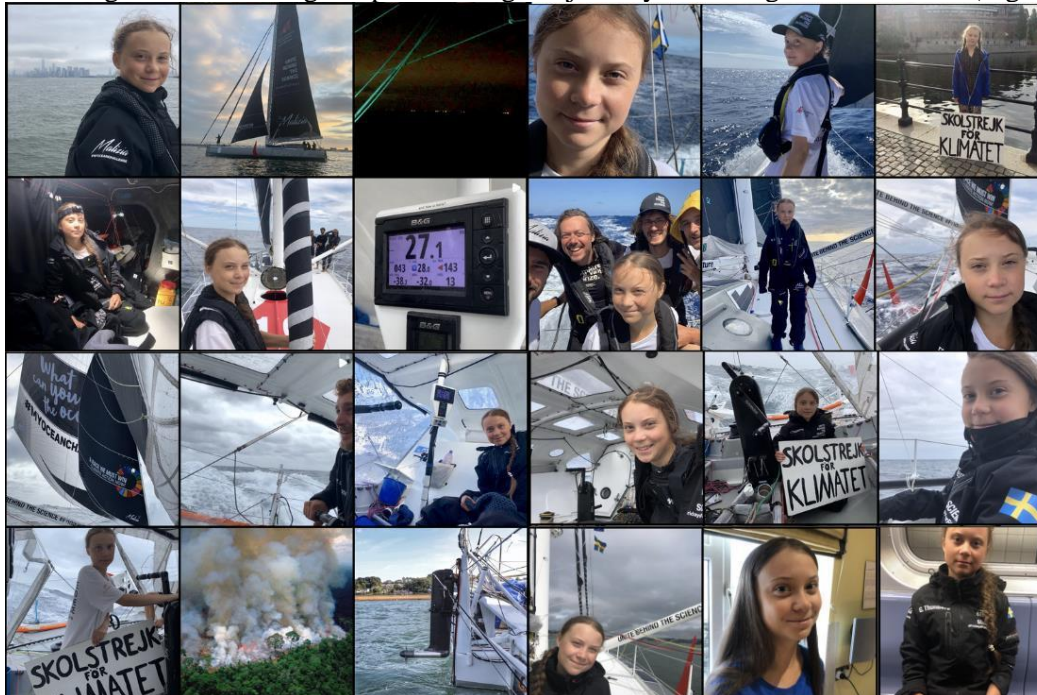


Figure 1: A collection of the 24 Instagram posts that Thunberg shared during her Malizia sailing trip from August 14-28, 2019.

However, we chose to focus on posts that were still photographic images, and therefore, we omitted two video posts of the crew sailing from our analysis. Instagram is a free social networking platform that includes visual artifacts like images and videos that may be accompanied by textual context in the form of captions and comments. The posts ($N = 22$) were collected from Thunberg's Instagram account (@gretathunberg). We took individual screenshots of the posts. We also selected five posts, by choosing every fifth post throughout this timeframe to examine followers' first ten comments more deeply.

Visual Content Analysis

A visual content analysis is an arts-based research approach to examine communication patterns found in visual artifacts such as photographs, paintings, drawings, and in this study, social media posts (Leavy, 2020). Prevalent in media studies, visual content analysis involves making meaning from images, drawings, or other visuals as well as accompanying text, when appropriate, through a variety of technical procedures (Bell, 2001). This method allows for general statements to be made about what is represented within the media. The observational approach begins with a hypothesis, or well-defined variables, and then the observed content is categorized based on the hypothesis or variables (Bell, 2001).

Russmann and Svensson (2016) described four variable clusters that can be used for a visual content analysis of Instagram posts: 1) perception: how posts are perceived through perspective, broadcasting, and mobilization, 2) image management: how an account's public image is

maintained through personalization, privatization, and celebrities, 3) integration hybridity: how an account shares existing content and campaign references, and 4) interactivity: audience engagement with the account's content, tonality, captions, and comments. We focused on the perspective, broadcasting, mobilization, personalization, hybridity, and campaign references of the posts by examining the content of Thunberg's images and captions. In addition to the interactivity, or engagement, of the posts, the message and tonality of comments from a sub-sample of posts were examined. A negative tone can be discerned by comments that included criticism, insults, pessimistic outlooks, and sarcasm (Russmann and Svensson, 2016). Positive comments included optimistic outlooks, campaign support, approval, and compliments. We chose not to include privatization, celebrities, shared content, or reciprocity as variables in this study.

Post Images and Captions

Through an inductive coding process, post images and captions were analyzed for attributes. Then, the first author grouped the attribute codes into the variables Russmann and Svensson (2016) described. Figure 2 illustrates how the researchers examined the photographs and captions; the numbered items are the initial codes, and the bullet points are the variable themes related to Russmann and Svensson (2016).



Figure 2: Example of image and caption coding process.

For example, attribute codes of one of the images in Thunberg's posts included: Thunberg (1), the sailing vessel (2), the Swedish and European Union flag (3), weather conditions (4) and a campaign motto (5) (Figure 2). Emergent caption codes for the same post (Saldaña, 2015) were (6) journey progress and (7) a call to action. Once the codes were categorized into the Russmann and Svensson (2016) variables, we used them to inform overarching themes.

Post Comments Tone and Content

Similarly, the first and third authors conducted an inductive coding process of the first ten comments posted on 5 of the 22 Instagram posts that were analyzed. The five posts were chosen by picking every fourth or fifth post within the overall sample, starting with the fourth post on August 18, 2019, and ending with the last posted on August 28, 2019. The coding process was done by hand as demonstrated in Figure 3.



Negative Comment
Positive Comment
Neutral Comment

Comment	Google Translation*	Key Ideas
@brad.vranish @healwithamber this is normal		
There's a plastic bag		Plastic
Can you please elaborate what materials your raincoat is made out of?		Rain jacket material 1
Gore-Tex is PTFE.		Rain jacket material 2
http://ecomerge.blogspot.com/2014/06/update-no-more-gore-tex.html?m=1 http://ecomerge.blogspot.com/2014/06/update-no-more-gore-tex.html?m=1		Rain jacket material 3 (alternatives)
So much plastic, how dare u		Plastic
Soo much plastic, how dare you		Plastic
Are you Kiding? PLASTIK? (profanity emoji)		Plastic Negative emoji
Buste di plastica	(Italian) Plastic bags	Plastic
The phone is make whit plastic i telefoni sono fatti con la plastica	(Italian) phones are made with plastic	Plastic

*Note: Translated if the original comment was not in Standard English.

Figure 3: Example of the coding process for the first ten comments of a post with the highest percentage of negative comments from Thunberg's post on August 27, 2019.

The first and third author separately coded the comments for tonality (negative, positive, or neutral) and content (emojis, plastic use, carbon emissions, Thunberg's appearance, and her personal life). The comments were interpreted as negative based on the use of angry emojis and heated language. We followed the constant comparative method to arrive at a shared interpretation of the data and application of our codes (Glaser, 1965).

Limitations

There were limitations to the study that are worth mentioning. First, we only focused on the images and captions of 22 posts and a sample of the comments from 5 of the 20 posts. Although the comments from these posts were informative, they are not generalizable. We recognize that they are not representative of all the comments from Thunberg's journey posts or her overall Instagram account engagement. Second, the visual content analysis relied on our interpretation of the images and captions. Therefore, the analysis is subject to researcher bias. A third limitation is that we did not member-check or get feedback from Thunberg on our interpretation of the posts' messages. We recognize that there could be errors in our interpretation of the images, captions, and comments, due

to the nature of a content analysis. For example, some comments were posted in a language other than English and, despite using online translation tools, there were language barriers in our interpretation.

Positionality

To mitigate bias and provide transparency in research, we offer the following positionality statement: We are four white women who study science communication and STEM, mobile technology, digital media, and non-formal/formal science engagement in the context of agricultural and natural resource sciences at a land-grant university in the United States. We are concerned about climate change. Through our interests and experiences, we were motivated to explore the influence and messaging behind a young, prolific climate change activist.

Results

Of the 24 posts shared during Thunberg's journey, there was an average of 454,000 likes. For RQ1, we analyzed 22 images and captions that were posted during the journey and omitted two videos. For RQ2, we focused on the five posts and coded the first ten comments per post.

RQ1) How did Thunberg share her climate activist journey with her Instagram followers?

The first research question addressed the strategic messaging associated with Instagram posts shared during Thunberg's journey from Plymouth, UK to New York, USA. We found the themes of ongoing activism and journey storytelling emerged (Table 2).

Caption	Codes	Theme
School strike week 52. Pos 47 degrees 17 minutes north and 13 degrees 17 minutes west #fridaysforfuture #schoolstrike4climate #climatestrike	Official Broadcasting Carried by one Mobilizing Campaign reference	Ongoing activism
Day 6. Sunshine sailing north of the Azores!	Snapshot/Selfie Broadcasting Carried by one Not mobilizing Campaign reference	Journey storytelling
School strike week 53. #fridaysforfuture #climatestrike #schoolstrike4climate	Official Broadcasting Carried by one Mobilizing Campaign reference	Ongoing activism
Home Sweet Home since 14 days. Soon last evening aboard the Malizia II. Tomorrow we reach New York.	Snapshot/Selfie Broadcasting Carried by one Not mobilizing	Journey storytelling

Finally here. Thank you everyone who came to see me off in Plymouth, and everyone who welcomed me in New York! Now I'm going to rest for a few days, and on Friday I'm going to participate in the strike outside the UN.	Snapshot/Selfie Broadcasting Carried by one Not mobilizing	Journey storytelling
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Table 2: A sample of posts with images, captions, codes, and themes.

Thunberg shared candid updates with her followers throughout her journey. This finding is supported by Thunberg being present in 17 of the 22 images. Thunberg's posts were primarily 'snapshot/selfies' that presented a casual and authentic approach to documenting her journey.

RQ1a) What visual elements did her posts include?

All posts were a form of broadcasting information with content related to the trip's progress, vessel information, and ongoing activism. This information was complimented by images of the sailing vessel, crew, Thunberg herself, and weather conditions. Based on the way that Thunberg framed the images, we categorized the posts as 'primarily carried by one individual' rather than 'carried by multiple individuals.' Some posts met the criteria of having 'a mobilizing character' while others did not have an explicit call to action (Russmann & Svensson, 2016). Eleven of the 22 images contained a campaign reference. For example, posts made during School Strike for Climate days had Thunberg's protest sign displayed. Another example of campaign references were the logos and signs associated with the trip like Unite behind the Science and Team Malizia in images.

RQ1b) What perspective did she share in her captions?

As for the captions, Thunberg shared candid updates relating to life on the Malizia II. She posted information about the sailing vessel and crew. This may have been to educate followers about the journey's mission and how it was made possible. Thunberg also reported weather conditions, specific coordinates, and locations. This information is critical while sailing, so sharing it with followers seemed relevant and noteworthy.

Ongoing activism occurred during her time on the vessel. Thunberg spent two Fridays on the Malizia II and that did not stop her from posting "School Strike Week 52" or "53" during those weeks. Campaign hashtags like #fridaysforfuture were used. Three main hashtags were used throughout the journey: #schoolstrikeforclimate #fridaysforfuture #climatestrike.

RQ2) How did Thunberg's Instagram followers respond to posts she made during her climate activist journey?

The second research question examined how Thunberg's followers responded to the posts she made during her journey. We looked at question through two-sub questions of followers' tone used and the content of their posts. Overall, we found the most vocal posters to predominantly use negative tones with negative content.

RQ2a) What tonality did the posts' comments take?

At least 50% of the first ten comments posted to the five posts that we examined in depth included a negative tone. The tone was determined by the comment's context, such as critical comments about Thunberg's environmental behavior or derogatory comments related to her appearance. Many of the posts contained both positive and negative emojis, and when these were present, these also helped inform the tone of a comment. Examples of comments with negative tones were: (in German) "The main thing is there is a plastic bottle in the background (laughing emoji)," "How much fuels have you pumped into the ocean whilst on your travels? @gretathunberg," and "Sooooooo skinny."

RQ2b) What content did the followers include in their comments?

The top ten comments selected from five posts related to Thunberg's environmental behavior, as well as Thunberg's appearance and personal life. Table 3 highlights some of the posts and a sample of the coded top comments.

Most of the comments related to Thunberg's environmental behavior, pointing out plastic materials in the images and some referenced the material that her rain jacket was made from. For example, some comments pointed out that plastic water bottles and bags were present on the sailboat in an image. Another commentor posted about her rain jacket in Italian which translated to, "Gore-tex is a derivative of plastic (pondering emoji)." A third comment stated, "Weird that's a boat that is literally made of oil products. Carbon footprint is huge. Way to go on being a terrible activist." These comments challenge Thunberg's environmental behavior by pointing out products that are derived from plastic that she and the sailing crew were using during the journey.

Comments related to Thunberg, personally, mentioned her lifestyle and appearance. One commenter asked why she chose to drop out of school to "be a puppet." Another posted in response to an image with Thunberg's hair in the wind, "A little cow-licked hair eh."

Despite many negative comments, there were some that were positive. For example, some comments about Thunberg's appearance were positive with statements like, "I think Greta is cute (heart emoji)" and one in Swedish that translated to, "Kiss you (heart and rose emojis)." One comment posted "#FridaysforFuture" in support using the same hashtag Thunberg uses for her activism.

4. Conclusion/Discussion

Results of the study indicated Thunberg utilized a personal, behind the scenes, narrative style to encourage activism. Greta self-managed her Instagram account despite arguments that her online advocacy was calculated. Her candid updates, typos in captions, and variable hashtag forms indicated that there was not a public relations professional managing her posts. We believe the hashtags were used to increase post awareness and accessibility within a certain niche. On Instagram, if a post has a hashtag, it is automatically categorized, based on the selected hashtag, to increase engagement.

Another element that we believe is important to highlight are two posts Thunberg made outside of this study's dates (August 14-28, 2019). On August 31, 2019, Thunberg posted about 'haters' going after her appearance and different qualities (Figure 4).

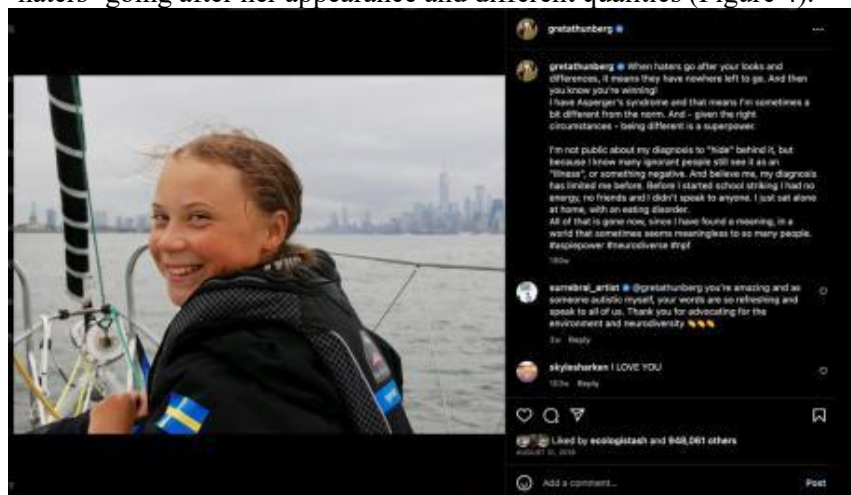


Figure 4: Screenshot of Thunberg's post on August 31, 2019.

She shared what it is like to have Asperger's and that finding a purpose through activism has helped her, "find meaning, in a world that sometimes seems so meaningless to so many people." Then as another form of response, Thunberg posted on September 25, 2019, and started her caption with, "Here we go again...as you may have noticed, the haters are as active as ever..." (Figure 5).

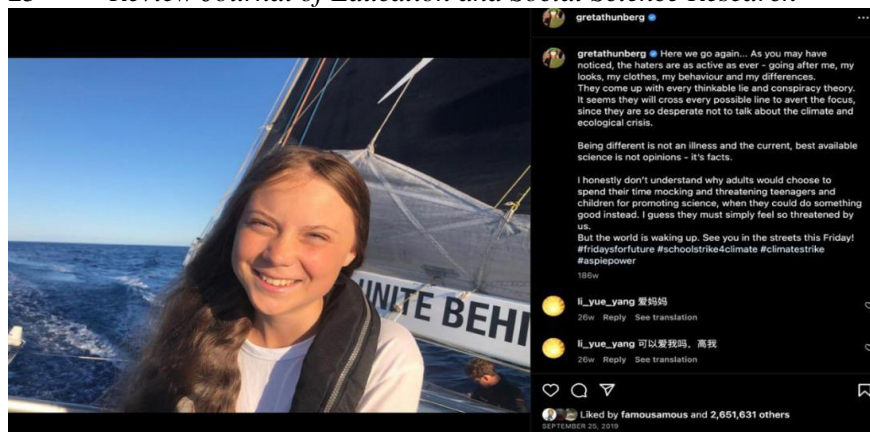


Figure 5: Screenshot of Thunberg's post on September 25, 2019

Although out of the scope of this study, these posts serve as evidence that Thunberg manages her social media account, pays close attention to audience reactions, and does not shy away from responding to her audience.

Future research should explore other climate cyberactivists' social media posts to build on the patterns and findings found in our study. Researchers should also consider replicating the methods through Russmann and Svensson's (2016) framework to further explore visual and textual frames of other ANR activists' accounts, as well as top comments from public audiences for impacts of Cyberactivism 2.0 through the lens of dialogic communication. For example, there are other youth activists on Instagram who are also leaders of the Fridays for Future movement (Fernández-Prados et al., 2021). The interactions between climate change social media creators and their followers should also be further studied to gain a better understanding of these relationships. By exploring specific cases of Cyberactivism, advocacy organizations, communication professionals, and researchers can learn how to effectively craft messages that resonate with target audiences to bring awareness to an issue or even inspire behavior change.

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