

# Supplemental Materials for Nonsuicidal Self-Injury and Substance Use Disorders: A Shared Language of Addiction

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## 1 Subreddit Descriptions

NSSI subreddits were identified by using Reddit's search engine for keywords such as "self harm" and "self injury." Resulting subreddits were examined for appropriateness, and their Wikis - a page about the community that usually outlines community guidelines, moderators, and key resources - were consulted to identify related subreddits missed by the initial search. One subreddit that had been banned in 2017 (*r/selfharpics*) was identified using the Pushshift Reddit dataset (Baumgartner et al., 2020), which contains historical data no longer present on reddit.com. The following subreddits related to NSSI were selected: *r/selfharm*, *r/stopselfharm*, *r/adultselfharm*, *r/selfharpics*, *r/selfharmscars*, *r/madeofstyrofoam*, and *r/selfharm\_memes*. A description of these communities, based on an initial examination of their content and Wikis, is provided below. We decided to exclude *r/madeofstyrofoam* and *r/selfharm\_memes*, as these subreddits are 1) mostly images with little text, and 2) humorous in scope, and thus not likely to elicit the personal narratives of self-injury we were interested in. After examining the monthly post volume on the remaining subreddits throughout their existence (see Figure 1), we determined that *r/selfharm* had the highest number of posts and members over the course of nearly ten years, suggesting that inclusion of the remaining subreddits, significantly less popular as well as being narrower in scope, would contribute very little to our dataset. *r/selfharpics* and *r/selfharmscars* are also dominated by images, providing further justification to not include them in our final dataset.

**r/selfharm** Created March 2010. 94.7k members in 2022. The community describes itself as "a subreddit for self-harmers to relate to each other, ask questions, and build up a community." Community rules and guidelines include "no pictures,"

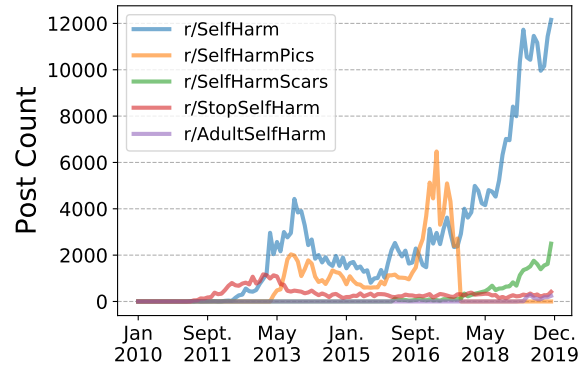


Figure 1: Monthly post counts across the life of NSSI related subreddits.

"no encouragement of or instruction for self harm," "no suicide notes or threats," and "no demeaning or triggering comments." Information provided in the subreddit Wiki includes advice on caring for injuries and preventing scars, as well as links to crisis resources.

**r/selfharpics** Less information is available about *r/selfharpics*, as it no longer exists on Reddit. Based on our monthly post totals, popularity peaked in March 2017, and the ban took effect some time in September 2017. Posts on existing NSSI subreddits suggest that the sub was banned due to glorification and/or promotion of violent content.

**r/selfharmscars** Created March 2016. 39.3k members in 2022. The community describes itself as "a subreddit to share pictures of your selfharm scars." The Wiki contains information on caring for injuries, preventing and fading scars, and links to crisis resources. Rules include "no pictures of fresh self harm," instructions to flair posts with "NSFW" or potentially triggering as appropriate, and instructions to blur or crop out cuts that are still healing. The subreddit contrasts with *r/selfharpics* in that it limits images to just scars, thought to be less

triggering than pictures of cuts or other injuries. Nevertheless, a cautionary message is displayed before being able to view the subreddit, stating that only 18+ year old members should continue.

**r/StopSelfHarm** Created May 2011. 14.1k members in 2022. Little information is provided about this community (they do not have a description, guidelines, or a Wiki), but content appears similar to *r/selfharm*. The feed is a mix of text and pictures (which are not permitted on *r/selfharm*) but no images of fresh injuries. Popularity (based on monthly number of posts on the subreddit) peaked in January 2013.

**r/AdultSelfHarm** Created March 2019. 8.5k members in 2022. The community describes itself as “a place for older people who self harm to interact with one another.” There are no guidelines or a Wiki, but the content appears similar to *r/selfharm*, including the absence of images. The recent creation of this subreddit may be in response to the perception that most *r/selfharm* users are adolescents.

**r/MadeOfStyrofoam** Created December 2014. 51.1k members in 2022. The community describes itself as “an open forum with loose moderation to discuss self harm in all its forms.” The description states, “You may post and comment as you please. Any posts and comments will be subject to the reaction of the community as a whole, be them negative or positive.” The description also includes a comment that “this sub is not for everyone,” referring people who may be triggered by its content to *r/selfharm* or *r/stopsselfharm*. Rules include “no self harm pictures” and “no encouragement of self harm.” The content is largely self harm memes. “Made of styrofoam” references deeper, dermis-level cuts that may expose a layer of skin with a similar appearance to styrofoam.

**r/selfharm\_memes** Created February 2020. 11.6k members in 2022. The community describes itself as “a place where self-harmers can make shitty memes about their suffering.” They remind posters to “stay respectful,” but write “if you want to have a serious discussions [sic], ask questions and want to get help go to *r/selfharm* as this is just for memes and the occasional pun.” Community rules include “no pictures of self harm or scars” and “no asking for self harm advice.”

**r/addiction** Created April 2009. 67.2k members in 2022. The community describes itself as a subreddit “to help people who struggle with addiction of any kind by sharing our experiences and giving ideas to help fight addiction.” They provide a quote that reads, “Every second brings a fresh beginning. Every hour holds a new promise. Every night our dreams can bring hope. Every day is what you choose to make it,” followed by four words of affirmation: “You can do it.” Along with the title, “You can recover,” these optimistic words are clearly intended to be supportive.

**r/alcoholism** Created January 2010. 49.3k members in 2022. The community consists of members seriously committed to combating alcoholism. They describe their content as, “Information and support for those affected by alcoholism/Alcohol Use Disorder.” Members encourage any helpful or empowering posts, stating, “If you are concerned about alcohol’s effect on your life or a loved one’s life, please feel welcome.”

**r/opiatesrecovery** Created February 2012. 37k members in 2022. The community describes itself as “group of people dedicated to helping each other kick the habit.” Along with the title, “You Are Not Alone In This Fight,” encouraging posts and strict community guidelines against graphic content, sourcing, disrespect, and photos of drugs show the supportiveness of this community.

**r/leaves** Created January 2011. 230k members in 2022. The community describes itself as “a support and recovery community for practical discussions about how to quit pot, weed, cannabis, edibles, BHO, shatter, Delta 8, or whatever THC-related product you’re using, and getting support in staying stopped.” A lighthearted and supportive community, this subreddit’s Wiki displays a welcome message reading, “People smoking pot when they want without recrimination? Good. Not being able to stop smoking pot even when you want to? Bad.” The moderators enforce community guidelines against disparaging others when advising about what to do.

**r/stopdrinking** Created in December 2010. 354k members in 2022. The community describes itself as “a place to motivate each other to control or stop drinking” and welcomes “anyone who wishes to join in by asking for advice, sharing our experiences and stories, or just encouraging someone

who is trying to quit or cut down." Aptly titled, "a support group in your pocket," this subreddit promotes daily check-ins, posting/reading about what has worked in decreasing drinking behavior, and encourages members to only post when they are sober.

**r/redditorsinrecovery** Created December 2009. 51k members in 2022. The community describes itself as "A place for Redditors in recovery to hang out, share experiences, and support each other." The description states, "Everyone is welcome," and encourages members to "Discuss the various ways to achieve and maintain a life free from active addiction." The moderators also enforce strict guidelines against posting identifiable information about oneself and others as well as disparaging people's roads to recovery, stating, "We all have our own ideas of what recovery is, and many of us are very passionate about our ideas. Please be considerate that what worked for others might not be the same as what worked for you."

## 2 Content Specific LDA Parameters

Content Specific LDA contains a text preprocessing step, which identifies words that are related to the theme of the corpus (i.e., NSSI and SUD). To do this, we use a background corpus of general text that we sample from *r/AskReddit*. This step ensures that platform-wide Reddit language will not be modeled during the LDA process, and topics will only consist of words related to NSSI and SUD.

First, we create a corpus of NSSI and SUD comments. This corpus contains a total of 154,838 comments: 77,424 from SUD subreddits and 77,414 from *r/selfharm*. We then randomly select an equal number of comments (154,838) from *r/AskReddit* during 2019, creating a combined corpus of 309,676 comments. For each comment in the combined corpus, we assign a binary label 1 if the comment was posted in an NSSI or SUD subreddit and 0 if the comment was posted in *r/AskReddit*. We also tokenize each comment using a tokenizer designed for social media data (Schwartz et al., 2017), creating a set of 103,421 unigrams. We reduce the unigram space by only considering words that are used within at least 0.0001% of the comments (i.e., at least 30 comments) for a total of 9,737 unigrams. Using the binary outcome and the reduced unigrams, we calculated a weighted log odds ratio using an Informative Dirichlet prior (IDP; Jurafsky et al. (2014); Monroe et al. (2008)).

The IDP estimates the difference in word frequency between the NSSI/SUD corpus and the *r/AskReddit* corpus, with the prior shrinking each unigram frequency towards the frequency in the background *r/AskReddit* corpus. We then select the top 2,500 unigrams related to the binary variable as weighted by the IDP, with the 2,500 threshold chosen upon manual inspection of the unigrams. Finally, we filtered the 154,838 NSSI and SUD comments to only contain these 2,500 unigrams. This final filtered comment set is then fed into the LDA pipeline for topic estimation.

## References

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