SoK: Hate, Harassment, and the Changing Landscape of Online Abuse

Kurt Thomas, Devdatta Akhawe, Michael Bailey, Dan Boneh, Elie Burszstein, Sunny Consolvo, Nicola Dell, Zakir Durumeric, Patrick Gage Kelley, **Deepak Kumar**, Damon McCoy, Sarah Meiklejohn, Thomas Ristenpart, Gianluca Stringhini

Content warning: Potentially triggering language and difficult subject material ahead.

More Americans are being harassed online because of their race, religion, or sexuality

More Than One-Quarter of Americans Experience Severe Online Harassment, ADL Survey Finds

Survey shows members of marginalized groups experience more hate

1 in 3 Americans Suffered Severe Online Harassment in 2018

2018 really was more of a dumpster fire for online hate and harassment, ADL study finds

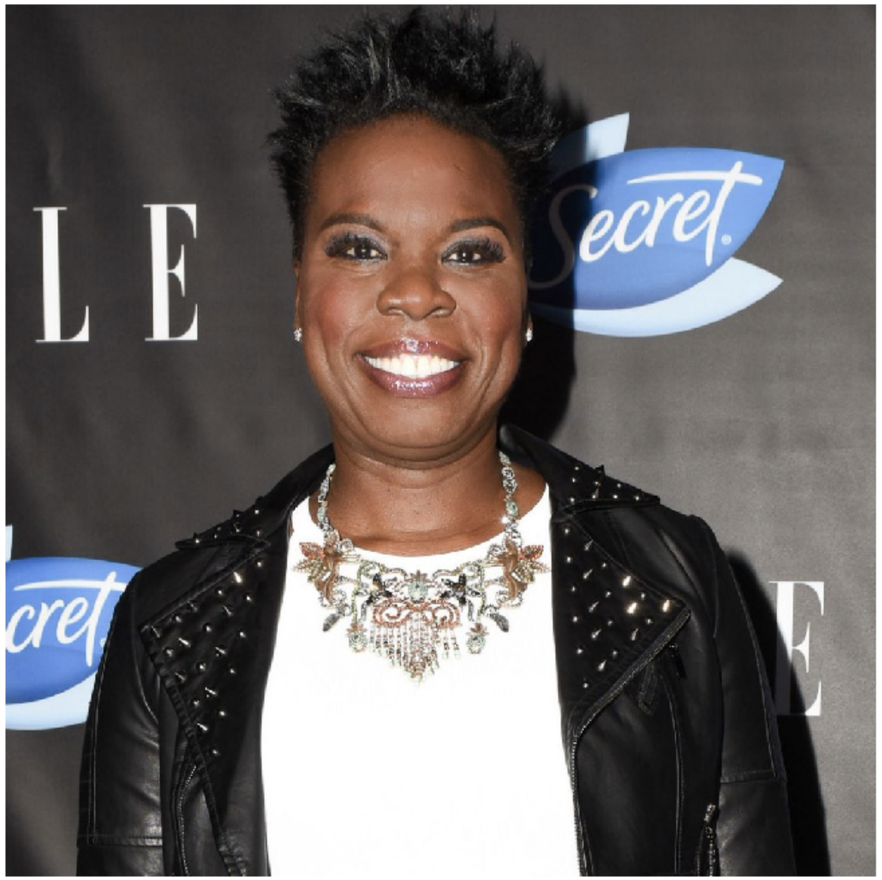
Roughly four-in-ten Americans have personally experienced online harassment, and 62% consider it a major problem. Many want technology firms to do more, but they are divided on how to balance free speech and safety issues online

What does hate and harassment look like?

ONLINE HARASSMENT | AUG. 24, 2016

A Timeline of Leslie Jones's Horrific Online Abuse

By Anna Silman



Leslie Jones Photo: Owen Kolasinski/BFA.com

Coordinated campaigns of **toxic comments** on social media that attempt to silence voices.

Non-consensual leaking of **intimate images and other personal information** by former partners or anonymous attackers.

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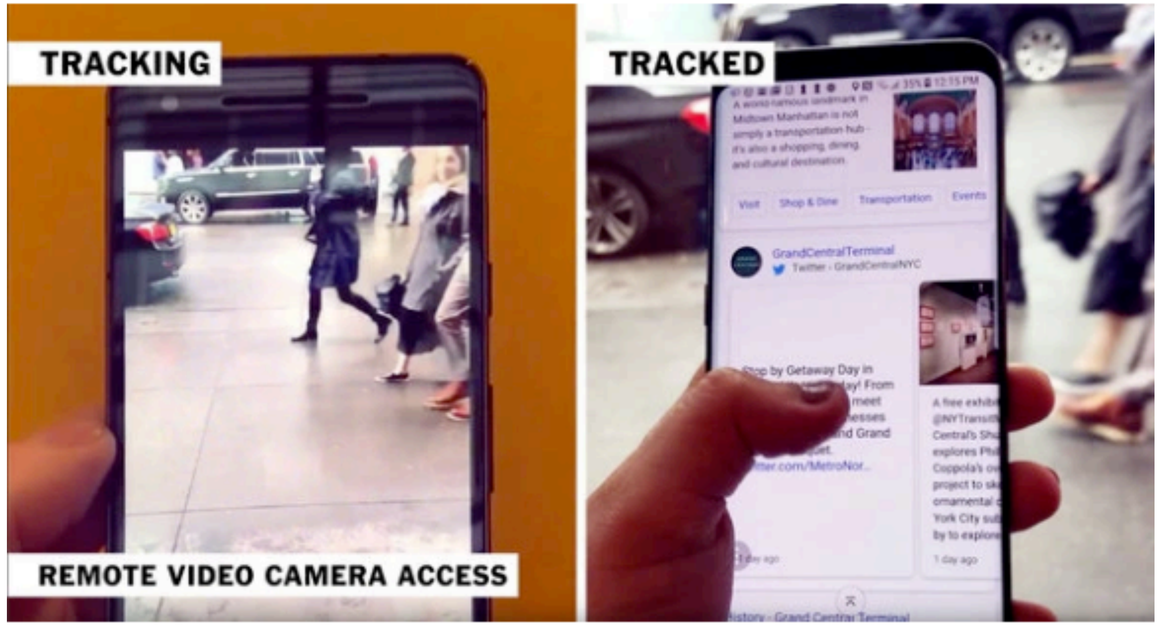
Former Rep. Katie Hill says the wave of harassment she faced after alleged revenge porn leak left her contemplating suicide

Áine Cain Dec 7, 2019, 2:30 PM

Hundreds of Apps Can Empower Stalkers to Track Their Victims



More than 200 apps and services offer would-be stalkers a variety of electronic capabilities, including basic location tracking, harvesting texts and secretly recording video. Drew Jordan/The New York Times

By Jennifer Valentino-DeVries

Spyware and tracking can aid in **surveilling** intimate partners through their devices and accounts.

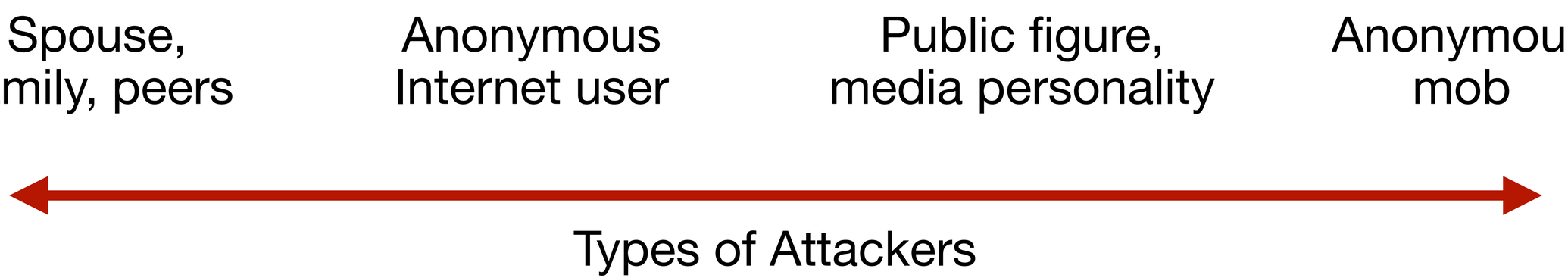
Intent is to **inflict emotional harm,** includes coercive control or instilling a fear of sexual or physical violence.

We should address online hate and harassment as a *security* problem.

Threat Model: Targets and Attackers

Targets of harassment can be individuals or at-risk groups (e.g., LGBTQ+ people)

An attacker's main goal is to emotionally harm or coercively control the target.



Literature Review

- Examined the last five years of research and journalism on online hate and harassment
  - IEEE S&P, USENIX Security, CCS, CHI, CSCW, ICWSM, WWW, SOUPS, and IMC
    - Used related papers as a “seed set”, manually searched through related works, and expanded search to include findings from social sciences
  - Also included major news events (e.g., Gamergate) and related attacks and news coverage
  - Reviewed over **150 news articles and research papers** in online hate and harassment

Differentiating Attacks

Research team synthesized criteria that differentiate attacks, falling into **three broad categories – Audience, Medium, Capabilities**

Category	Criteria
Audience	Intended to be seen by the target?
Audience	Intended to be seen by an audience?
Medium	Does attack use media, such as text or images?
Capabilities	Require deception of the audience?
Capabilities	Deception of a third-party authority?
Capabilities	Amplification?
Capabilities	Privileged access to information?

Differentiating Attacks – Audience

Category	Criteria	Examples
Audience	**Intended to be seen by the target?**	**Bullying, Trolling**
Audience	**Intended to be seen by an audience?**	**Doxxing**
Medium	Does attack use media, such as text or images?	Hate Speech
Capabilities	Require deception of the audience?	Impersonated profiles, Deepfakes
Capabilities	Deception of a third-party authority?	SWATing
Capabilities	Amplification?	Raiding, Dogpiling
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Seven Classes of Hate and Harassment

Category
Toxic Content
Content Leakage
Overloading
Fake Reporting
Impersonation
Surveillance
Lockout and Control

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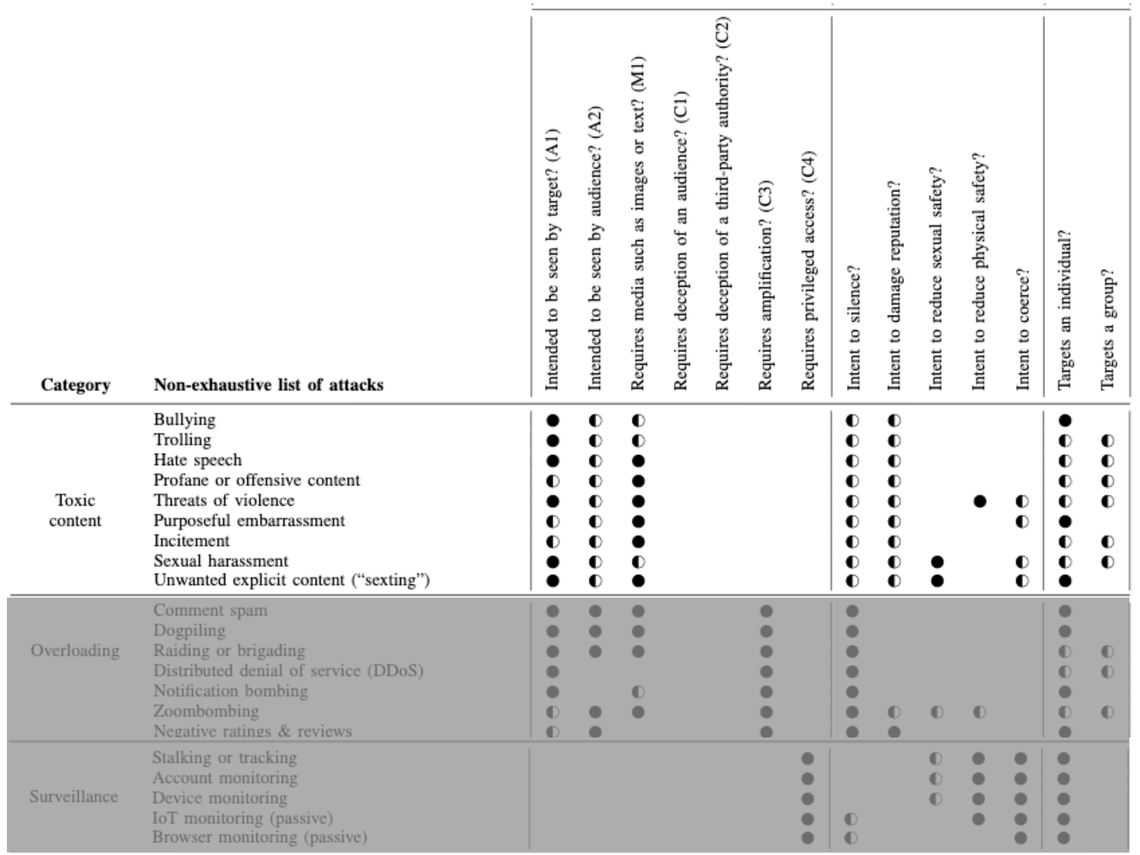

Category	Non-exhaustive list of attacks	Intended to be seen by target? (A1)	Intended to be seen by audience? (A2)	Requires media such as images or text? (M1)	Requires deception of an audience? (C1)	Requires deception of a third-party authority? (C2)	Requires amplification? (C3)	Requires privileged access? (C4)	Intent to silence?	Intent to damage reputation?	Intent to reduce sexual safety?	Intent to reduce physical safety?	Intent to coerce?	Targets an individual?	Targets a group?
Toxic content	Bullying	●	◐	◐					◐	◐				●	◐
	Trolling	●	◐	◐					◐	◐				◐	◐
	Hate speech	●	◐	●					◐	◐				◐	◐
	Profane or offensive content	◐	◐	●					◐	◐				◐	◐
	Threats of violence	●	◐	●					◐	◐		●		◐	◐
	Purposeful embarrassment	◐	◐	●					◐	◐			◐	●	
	Incitement	◐	◐	●					◐	◐				◐	◐
	Sexual harassment	●	◐	◐					◐	◐	●		◐	◐	◐
	Unwanted explicit content (“sexting”)	●	◐	●					◐	◐	●		◐	●	
Overloading	Comment spam	●	●	●			●		●					●	
	Dogpiling	●	●	●			●		●					●	
	Raiding or brigading	●	●	●			●		●					◐	◐
	Distributed denial of service (DDoS)	●					●		●					◐	◐
	Notification bombing	●		◐			●		●					●	
	Zoombombing	◐	●	●			●		●	◐	◐	◐		◐	◐
	Negative ratings & reviews	◐	●				●		●	●				●	
Surveillance	Stalking or tracking							●			◐	●	●	●	
	Account monitoring							●			◐	●	●	●	
	Device monitoring							●			◐	●	●	●	
	IoT monitoring (passive)							●	◐			●	●	●	
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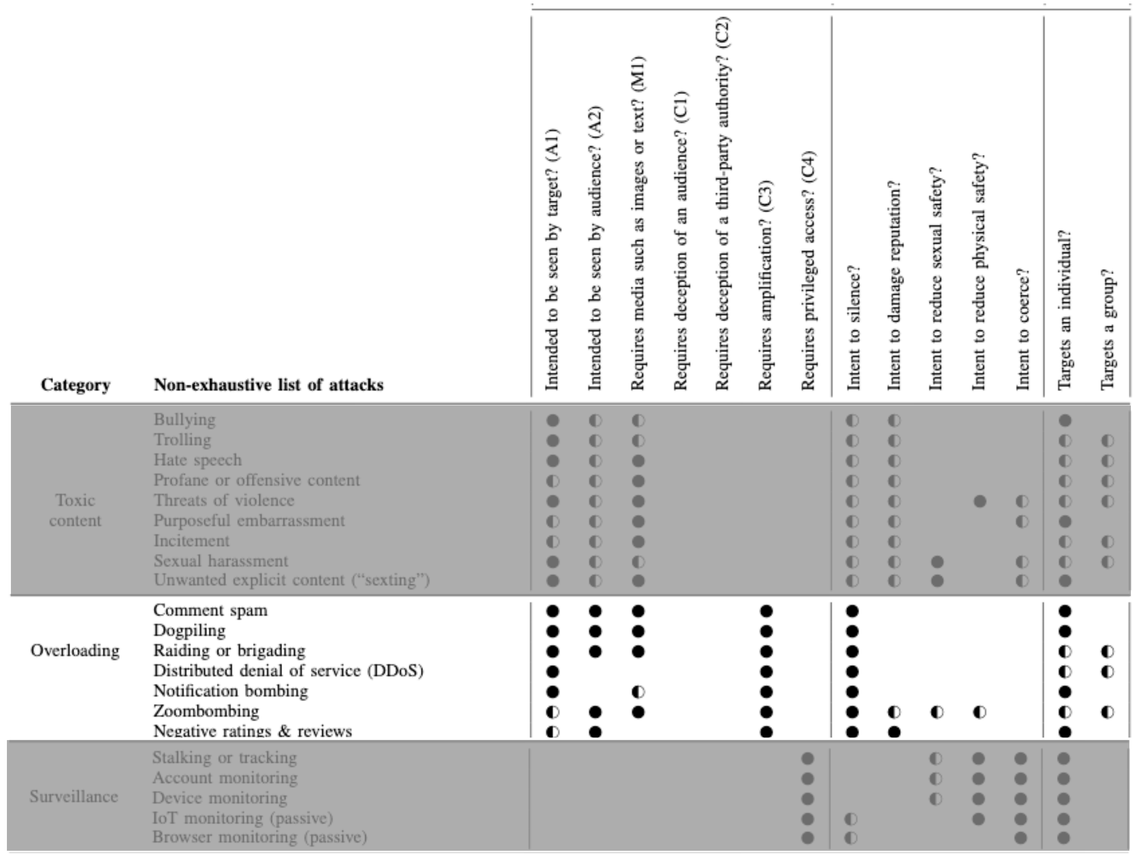

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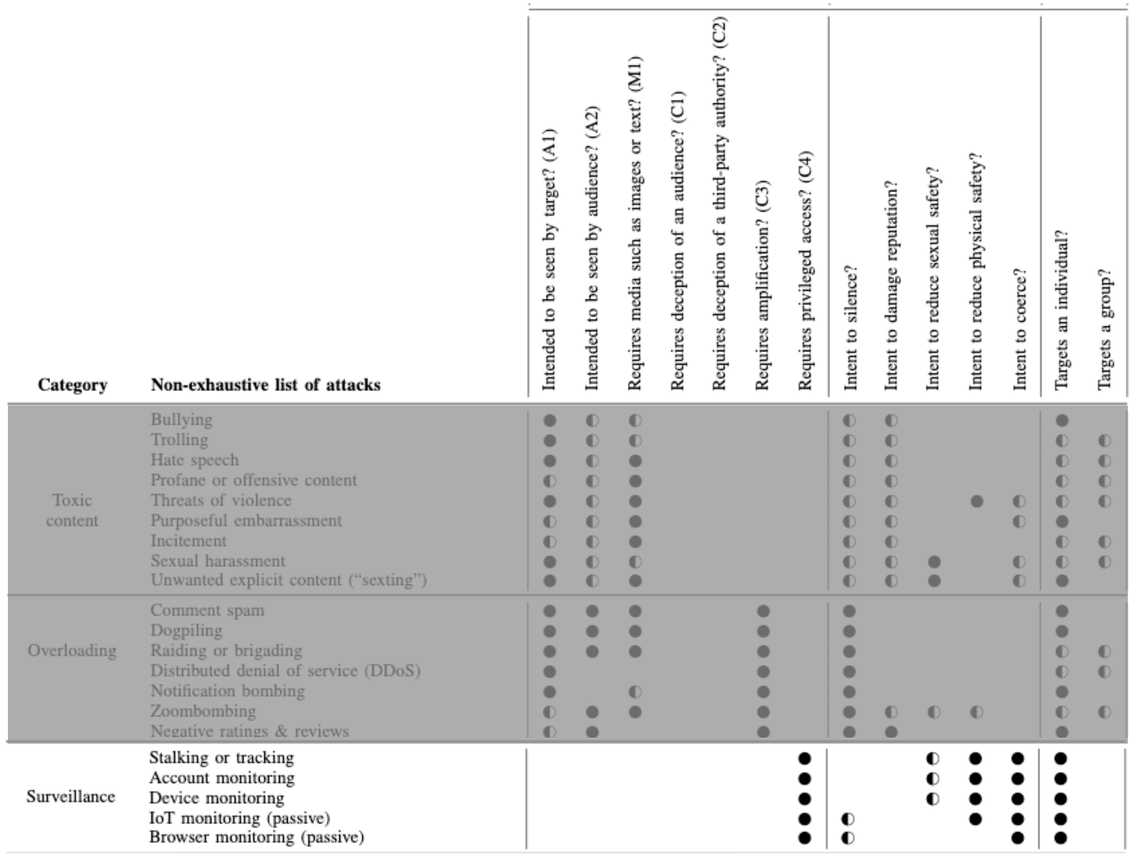

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Parallels to Security Attacks

Hate + Harassment	Classic Abuse
Toxic Content	Spam
Content Leakage	
Overloading	
Fake Reporting	
Impersonation	
Surveillance	
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Parallels to Security Attacks

Hate + Harassment		Classic Abuse
Toxic Content	→	Spam
Content Leakage	→	Data Breaches
Overloading	→	DoS, DDoS
Fake Reporting	→	Mark not-spam
Impersonation	→	Phishing
Surveillance	→	RAT, Tracking
Lockout and Control	→	Ransomware

Hate and harassment attacks span many different kinds of attackers, targets, and methods.

Hate and harassment impacts diverse users in different ways.

Survey Instrument

- Surveyed ~1000 participants from 22 countries around the world for three years and asked about hate and harassment experiences
  - Survey was translated for countries that do not primarily speak English
  - Some countries do not appear for all three years to maximize unique countries
- Asked participants “Have you ever personally experienced any of the following online?”
  - Asked about hate and harassment experiences documented in prior work
  - Collected demographic data (e.g., gender, LGBTQ+ status, age, social media usage)

Measuring hate and harassment outcomes

- Modeled experiencing any form of hate and harassment as a binomial distribution
  - Input variables are categorical demographic data

Demographic	Treatment	Reference	Odds
LGBTQ+	LGBTQ+	non-LGBTQ+	1.9x
Social Media Usage	Daily	Never	2.5x
	Weekly	Never	2.3x
Age	18 – 24	65 and up	4.0x
	25 – 34	65 and up	3.4x
Year	**2017**	**2016**	**1.2x**
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- Participants from *minority* groups experience more online hate and harassment

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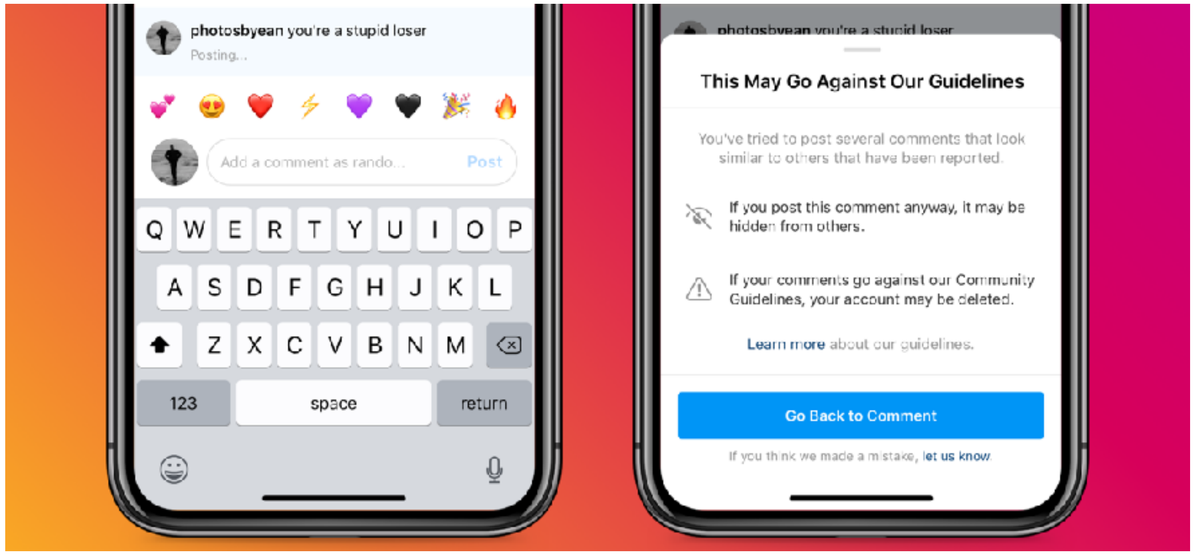
Designing hate and harassment defenses **must** take into account diverse online experiences.

What can we do about it?

Towards Solutions and Interventions

- **Nudges, indicators, warnings**
- Human moderation, review, and delisting
- Automated detection
- Conscious design
- Policies, education, awareness



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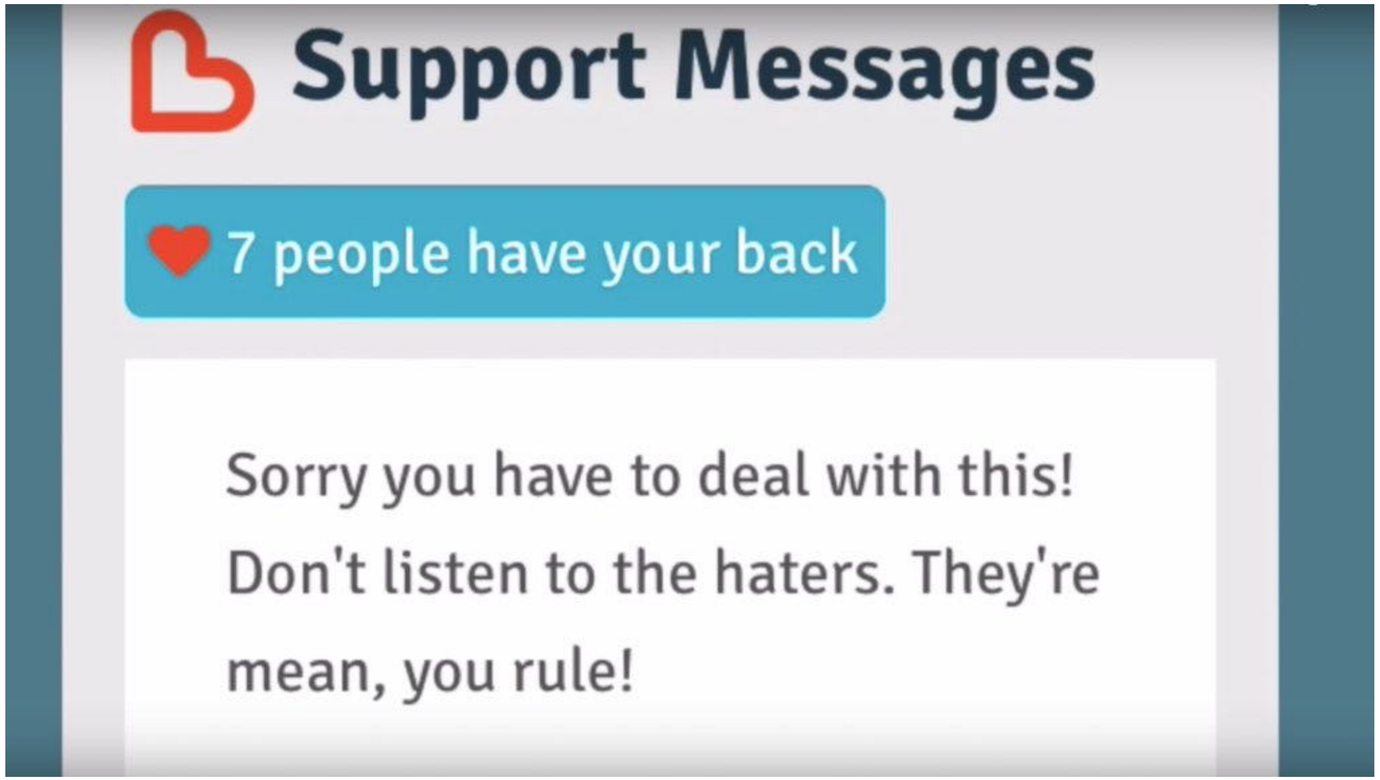

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Guy Who Built Twitter's Retweet Button Admits Maybe That Was a Really Bad Idea

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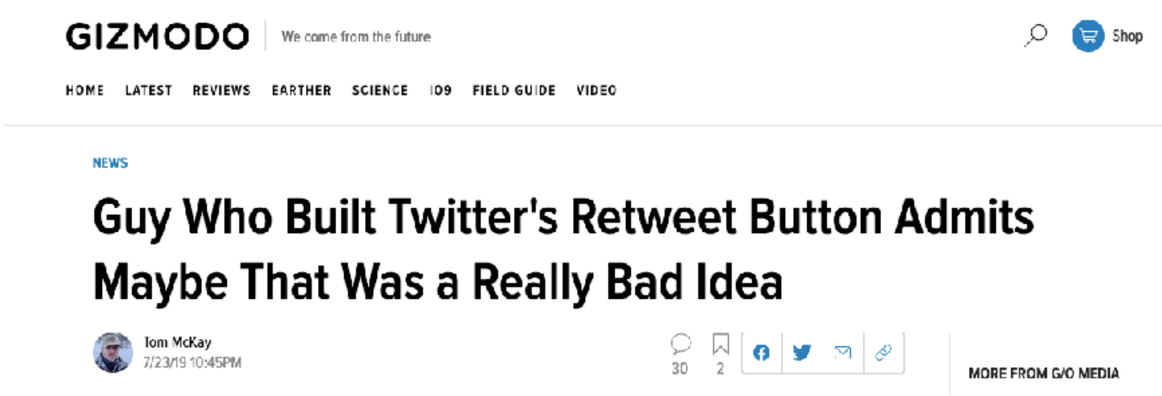

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