#MeToo, Networked Acknowledgement, and Connective Action:
How "Empowerment Through Empathy" Launched a Social Movement
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Appendix I: Data collection and cleaning

From the running archive that collects 1% of the entire Twitter stream, we used the following search strings – "metoo," "timesup," "sexual assault*," "sexually assault*", "sexual harass*," "sexually harass*", "sexual molest*," "sexually molest*", "sexual misconduct," "feminism," "feminist*"– to collect related tweets surrounding the #MeToo, created from October 2017 to February 2018. This yielded a total number of 395,037 tweets.

We first identified the language of each tweet by using the R package *cld2*. English tweets accounted for 75.5% of the entire corpus (298,249 tweets), followed by Spanish (9.4%, 37,263 tweets), Portuguese (2.5%, 9,915 tweets), Korean (2.4%, 9,776 tweets), Japanese (1.2%, 4,767 tweets), and French (0.05%, 2,218 tweets). For the interest of our research scope, we retained English tweets only.

We explored the English dataset by examining the most frequently mentioned hashtags, with a minimum frequency of 10. The research team manually investigated the meaning and contexts within which the hashtags were used, and identified some hashtags whose contexts were irrelevant to the #MeToo discourse and were using one of the search strings in passing without concrete meaning. For example, several K-pop related hashtags such as #np, #bestfanarmy, #nowplaying, #amas, #got7, #jinyoung, #iheartaward, were identified. We also found additional cases that were entirely used in a purpose of hijacking without any contextual reference to the #MeToo (e.g. "#AM2DM #AMJoy #MorningJoe #timesup #BestFanArmy #FF #NP #NowPlaying #PMJoy #BreakingNews #NeverAgain."). A visualization of hashtags network also demonstrated strong co-occurrences among those irrelevant hashtags, but not with other focal hashtags in the #MeToo discourse, suggesting those tweets were not part of discussions of our interest. So tweets mentioning any of those hashtags were removed. The cleaning process resulted in 296,387 tweets.

Appendix II: Variable construction

To code for our key discourses, networked acknowledgement and activism, we applied 1) bi-gram combinations using a Part-of-Speech tagging and dependency analysis and 2) hashtags extraction approach to capture the relevant tweets comprehensively. For the entire corpus, we ran a Part-of-Speech tagging and dependency analysis to extract the grammatical information of words as well as association of words within a sentence, using the R package, *spacyr*.

Networked Acknowledgement

The construction of networked acknowledgement variable consisted of three components. To include tweets about personal narratives of sexual traumatic experiences, first, we extracted tweets that used first-person singular pronouns ("I", "my", "me", "mine", and "myself") in combination with the past tense or past participle of the following verbs: "assault", "harass", "abuse", and "rape." We also extracted tweets using first-person singular pronouns with "assaulter(s)", "harasser(s)", "abuser(s)", and "rapist(s)." The verbs "assault", "harass", "abuse", and "rape" were chosen based on their frequencies and relevance after an observation of a list of all verbs used in the entire corpus.

Second, we extracted tweets using bigram combinations with dependencies information. From the list of verbs by frequency, we chose the following verbs to be a solidarity marker: "believe", "support", "share", and "hear." We then created a list of nouns that was a direct object of the verbs, and selected the verb + noun combinations with high relevance to networked acknowledgement. We further included combinations of a possessive adjective and "story" to extract tweets surrounding personal narratives. The combinations included:

Verb	Noun (direct object)
believe	woman, women, you, victims, survivors
support	woman, women, you, victims, survivors
share	story, stories
sharing	story, stories
hear	you
my	story, stories
our	stories

Lastly, we used hashtags and simple key-word based extraction approach. From the list of most frequently appeared hashtags (with the minimum frequency of 10), the research team collectively decided hashtags related to our conceptualization of networked acknowledgement:

Hashtags and key words
#heforshe, #ibelieve you, #believewomen, #believesurvivors, #wethepeople, #standup, #ihearyou, #hertoo, #yesallwomen, #solidarity, #survivor, #supportsurvivors, #notokay, #ustoo, #ptsd, "speak up", "speak out", "stand with", "stand for", "ptsd"

Activism

We employed a similar approach to capture activism discourse. First of all, to extract tweets calling for action or social change, we started with a list of modal verbs and their associated verbs that frequently appeared in our dataset. Then we manually investigated each combination of a modal verb and an associated action verb and selected the ones with high relevance with our activism discourse:

Modal verb	Verb	Modal verb	Verb
must	change	must	end
should	change	can	end
can	change	must	investigate
must	stop	should	investigate
should	stop	must	resign
can	stop	should	resign

We also used bigram combinations with dependencies information. Similar to the approach taken for networked acknowledgement, we first investigated from the list of most frequently used verbs in our dataset, and selected the ones that indicated actions for mobilization and social change: "stop", "end", "change", "join", "investigate." Then, we extracted a list of direct object nouns of these verbs. After manually examining tweets associated with each verb + direct object noun combination, we concluded to include the following:

Verb	Noun (direct object)
stop	assault, assaults, harassment, harassments, violence, abuse, abuses, rape, rapes
end	assault, assaults, harassment, harassments, violence, abuse, abuses, rape, rapes, culture, discrimination, oppression, misconduct
change	culture, epidemic, behavior, policies, laws
join	us, me, movement, march, campaign, protest, fight, initiative
investigate	allegations, claims, charges, assault, harassment, crimes, accusations, assaults, abuse

Lastly, we used hashtags-based extraction approach. After the research team's investigation of hashtags, we included the following for our activism discourse:

Hashtags
#howiwillchange, #himthough, #mosquemetoo, #metook12, #churchtoo, #metoomilitary, #metoowhatnext, #metoocongress, #timeisnow, #itstime, #enoughisenough, #stoprape, #rapeculture, #metoophd, #metoomarch, #metoonatsec, #metoofgm, #metoomedicine, #neveragain, #nomore

Validation

For each discourse variable, we removed tweets that contained the following key words or hashtags to exclude tweets about "fake allegations" or "anti-feminism" which were not of research interest but likely to be included in our variable construction process: fake, false, #fake, #false, #feminismiscancer, #fakecases, #fakefeminism, #fakefeminist. The hashtags were chosen from the list of most frequently mentioned hashtags in our dataset.

Ultimately, it was likely that tweets were classified to both networked acknowledgement and activism. Given our conceptualization, we operationalized that tweets with markers of any social change (perceptual, cultural, or legal) and mobilization should be classified as activism. Therefore, we added a cleaning process of excluding tweets classified as activism from those classified as networked acknowledgment, if any.

We further went through a thorough validation process to examine the quality of the content. We started from a list of highly retweeted unique tweets with the minimum number of retweet counts of 4 (N = 466), then a group of graduate students went over the tweets to examine the relevance of the tweets to our theoretical conceptualization of networked acknowledgement and activism. We removed 79 unique tweets and their retweets, and this process resulted in 9,832 tweets for networked acknowledgement and 5,569 tweets for activism. The list of our finalized tweets under each discourse is presented in Appendix VI and VII.

Two independent coders took an additional step to validate the accuracy using a sample of 200 tweets. On average, the computer and two human coders had 96.25 percent agreement for networked acknowledgement and 96 percent agreement for activism.

Appendix III: Event List

We compiled the event list in two ways: first, we collected news articles by CNN, Fox News, *Wall Street Journal*, and *The New York Times* through the MediaCloud, which is an online open-source news archive that aggregates news articles from RSS feeds. It should be noted that the MediaCloud collects news articles published online. When accusations were covered by two or more of these major news outlets, they were included in our list. Furthermore, we verified our list to the timelines provided by *Vox, Chicago Tribune, Sydney Morning Herald,* and *Refinery 29* that reviewed a list of accusations and important events during one year after the Harvey Weinstein accusation. Below shows our finalized event list.

Date	Type	
10/5/17	Accusation	Harvey Weinstein
10/12/17	Accusation	Roy Price
10/18/17	Accusation	Larry Nassar
10/22/17	Accusation	James Toback
10/26/17	Accusation	Mark Halprin
10/29/17	Accusation	Kevin Spacey
11/1/17	Accusation	Brett Ratner
11/9/17	Accusation	Louis CK and Roy Moore
11/17/17	Accusation	Al Franken
11/20/17	Accusation	Charlie Rose
11/29/17	Accusation	Matt Lauer
12/6/17	Event	Time Magazine "Person of the Year"
12/7/17	Accusation	Woody Allen
12/11/17	Accusation	Donald Trump and Mario Battali
12/13/17	Accusation	Russell Simmons
1/1/18	Event	#TimesUp
1/7/18	Event	Golden Globes
1/14/18	Accusation	Aziz Ansari
1/20/18	Event	Women's March
1/26/18	Accusation	Steve Wynn
2/6/18	Accusation	Rob Porter

Appendix IV: Most retweeted Twitter handles (over 30 retweet counts in total) in networked acknowledgement

	Handle	Category	Freq		Handle	Category	Freq
1	Dannichka	Ordinary user	670	15	bindasladki	Ordinary user	53
2	terrycrews	Entertainment	345	16	DBal	Ordinary user	47
3	womensmarch	Women's rights organization	309	17	camillavalerie_	Ordinary user	45
4	Alyssa_Milano	Entertainment	305	18	ProudResister	Liberal activist	45
5	RonanFarrow	Media	153	19	seoulitepjm	Ordinary user	44
6	sawthisangeI	Ordinary user	144	20	monaeltahawy	Media	42
7	EmmaWatson	Entertainment	131	21	laurenduca	Media	40
8	dhabitahzainal	Ordinary user	122	22	ChrisCJackson	Entertainment	40
9	MichaelSkolnik	Liberal activist	108	23	UltraViolet	Women's rights organization	40
10	ALICEGLASS	Entertainment	106	24	ajplus	Media	38
11	bleuvaIentine	Ordinary user	82	25	LeeannTweeden	Media	36
12	partynextjoel	Ordinary user	65	26	AynRandPaulRyan	Media	36
13	Imamofpeace	Liberal activist	55	27	moryan	Media	31
14	joshdcaplan	Media	54				

Note. If a handle actively tweeted multiple tweets, it might also accumulate as many retweets as a handle with one highly retweeted post.

Note. Entertainment: those working in the entertainment industry, including celebrities, musicians and backstage staff; Media: journalists, pundits and media outlets from both the left and the right; Women's rights organization/activist: organizations or individuals dedicated to advancing women's rights; Liberal activist: people affiliated with liberal or democratic activist organizations or movements and having more than 10,000 followers; Ordinary user: individuals whose affiliations/professions are obscure and whose followers are fewer than 10,000

Appendix V: Most retweeted Twitter handles (over 30 retweet counts in total) in activism

	Handle	Category	Freq		Handle	Category	Freq
1	funder	Liberal activist	516	12	vonstolk	Women's rights organization	50
2	EmmaWatson	Entertainment	431	13	feministabulous	Media	45
3	itsgabrielleu	Entertainment	383	14	joncoopertweets	Liberal activist	44
4	figgled	Entertainment	287	15	YamileJana	Ordinary user	42
5	thehill	Media	222	16	TIMESUPNOW	Women's rights organization	42
6	JensenAckles	Entertainment	216	17	kylegriffin1	Media	40
7	jonfavs	Media	165	18	Eugene_Robinson	Media	34
8	ladygaga	Entertainment	114	19	movietvtechgeek	Media	33
9	krassenstein	Media	73	20	MaryEMcGlynn	Entertainment	30
10	Alyssa_Milano	Entertainment	68	21	mkraju	Media	30
11	RWitherspoon	Entertainment	59				

Note. If a handle actively tweeted multiple tweets, it might also accumulate as many retweets as a handle with one highly retweeted post.

Note. Entertainment: those working in the entertainment industry, including celebrities, musicians and backstage staff; Media: journalists, pundits and media outlets from both the left and the right; Women's rights organization/activist: organizations or individuals dedicated to advancing women's rights; Liberal activist: people affiliated with liberal or democratic activist organizations or movements and having more than 10,000 followers; Ordinary user: individuals whose affiliations/professions are obscure and whose followers are fewer than 10,000

Appendix VI: Most retweeted tweets (over 20 retweet counts) in networked acknowledgement

Handle	Tweet	Frequency
Dannichka	Terry Crews is 6'3 240lbs and he was scared to speak up about his sexual assault. Now ask yourself why a 5'1 125lbs woman wouldn't be scared	670
terrycrews	Being sexually assaulted makes me gay? Or in your own words, a "faggot"?(reprehensible term) Molesters use this same logic on their female or child victims, calling them "bitches" or "hoes" who asked 4 it. This mindset has gone unchallenged by the Black community for 2 long.	338
womensmarch	To all the women sharing stories of sexual assault and sexual harassment, thank you for your bravery to speak up. You are not alone. #MeToo	286
Alyssa_Milano	If you've been sexually harassed or assaulted write 'me too' as a reply to this tweet.	284
RonanFarrow	In a 10 month investigation, 13 women told me Harvey Weinstein sexually harassed or assaulted them. 3 allege rape: https://t.co/7XKS6CotVP	153
sawthisangeI	the fact that this was the same night he got sexually assaulted I'm so mad he deserves so much better	138
EmmaWatson	In this instance it was women affected but I also stand with all the men, indeed any person, who has suffered sexual harassment.	131
dhabitahzainal	Last night my friend was sexually assaulted in the LRT from Pasar Seni to Masjid Jamek. A man pulled his penis out of his pants and rubbed it against her bum. She screamed for help. Bystanders laughed. @MyRapidKL's staff didn't help and let the perpetrator walk away. TWICE.	122
ALICEGLASS	this is why I had to leave Crystal Castles. here is my story: https://t.co/bs9aJRwgms #metoo	106
MichaelSkolnik	I don't speak out against sexual assault and harassment because I have a daughter. I speak out because I have a son. Fellas, it's on us.	90
bleuvaIentine	melanie martinez really took advantage of her best friend and sexually assaulted her. i really hope y'all acknowledge	82
partynextjoel	Last night I was sexually assaulted by my Uber driver. I have already contacted Uber and the authorities reagarding this incident. However, if you live in the Seattle area, do not ride with this man. He drives a white Toyota Sienna. Lic # BGY7552.	65
Imamofpeace	I'm not sure how many of you are aware that Saudi women who started to drive are being assaulted, dragged and sexually harassed on streets.	55
joshdcaplan	Conservative actor Rob Schneider reveals he was sexually harassed by 'very famous director': 'I felt disgusted!'	53
bindasladki	If you aren't okay w posting #MeToo, know this: 1. I believe you. 2. You don't have to speak up to be brave. Living in the after is brave.	53
DBaI	In late 2015, I was sexually harassed at Naughty Dog by a lead. My work environment became extremely toxic afterward. 1/	47
camillavalerie_	I get the sense sometimes that most men don't realise that basically	45

	every woman they know has been sexually assaulted to some degree	
ProudResister	Dear Alabama Voters, Today a brave woman came forward to share her story about Roy Moore sexually assaulting her when she was only 14. On December 12th, when you elect your next Senator, I hope you vote for Doug Jones and not the pedophile on the ballot. - Concerned Citizen	45
seoulitepjm	hi everyone, the army who was sexually assaulted sent me a message. she wants y'all to know that she will be ok and… https://t.co/u9BCDGf7I7	42
UltraViolet	Sexual harassment is an epidemic. Sexual assault is an epidemic. #BelieveSurvivors #MeToo	40
ChrisCJackson	IVANKA: it's important to believe women when they make credible accusations of sexual harassment by powerful men..	40
LeeannTweeden	I've decided iit's time to tell my story. #MeToo https://t.co/TqTgfvzkZg	36
laurenduca	Sexual misconduct doesn't have a political ideology, you misogynistic troglodytes. Keep outing alleged abusers. I don't give a shit what side of the aisle they're on.	32
moryan	3 years ago, a TV executive sexually assaulted me. Finding it hard to write a pithy tweet, so here. Please share.	31
brielarson	As always, I stand with the brave survivors of sexual assault and harassment. It's not your fault. I believe you.	27
HannahSuydam	To anyone saying the "#MeToo" tweets are attention seeking, you are the reason women are afraid to speak up after being sexually assaulted.	27
beautyinATL	I was a waitress and sexually harassed by 2 dishwashers for months. I reported reported, was overlooked not cared about then fired! #MeToo	27
irin	JUST OUT: Eight women told me and @AmyJBrittain they were sexually harassed by Charlie Rose: "He was a sexual predator, and I was his victim."	26
EdKrassen	Let's all support those women who Trump has sexually assaulted, and let's all ask them to come forward ASAP!	25
NARAL	To everyone sharing their stories of sexual assault: thank you for your bravery. We see you. We believe you. We stand with you. #MeToo	24
ShannonDingle	If you aren't okay w posting #MeToo, know this: 1. I believe you. 2. You don't have to speak up to be brave. Living in the after is brave.	22
empathywarrior	I wish #MeToo was rapists and assailants admitting to being trash humans instead of survivors having to bare their souls.	21
aparnapkin	I sincerely hope #metoo turns into "I believe you." "Me too."	21

Appendix VII: Most retweeted tweets (over 20 retweet counts) in activism

Handle	Tweet	Frequency
EmmaWatson	I stand with all the women who have been sexually harassed, and am awestruck by their bravery. This mistreatment of women has to stop.	431
itsgabrielleu	Sexual harassment is REAL and can cost you your life!!! This shit must end!!! https://t.co/mlKU5TWXpu	383
figgled	Can we stop calling sexual assault a 'sex scandal'? Like if a person stabs someone it's not a 'knife debacle'	287
JensenAckles	For my wife, for my daughters, for all women...I stand with all of you. This has gotta change. #metoo #nomore	216
jonfavs	Donald Trump should resign over these NINETEEN credible sexual assault allegations, and no elected Democrat should be afraid to say that.	165
funder	.@realDonaldTrump- You should resign for your sexual misconduct. Anyone who disagrees with that statement condones‚Ä¶ https://t.co/V330BjUTp1	122
ladygaga	A message from me & my buddy Vice President @JoeBiden @ItsOnUs to stop sexual assault. Go to http://www.ItsOnUs.org #ItsOnUs to help.	114
funder	Poll: 70% of Americans says Congress should investigate sexual harassment allegations against Trump-RT if you agree.	96
thehill	JUST IN: Trump accusers to unite, demand Congress investigate sexual misconduct allegations against Trump.	75
funder	Retweet if you agree Congress should investigate Donald Trump‚Äôs sexual assault allegations #TrumpSexPredator	58
vonstolk	#MeToo Let's change this - Women rule the world - They deserve better - Join me in this movement - Through music we..	50
funder	It's time to investigate the sexual assault charges against Donald Trump He got a pass during the campaign on numerous accusations of assault. But now he's president & we need a new special prosecutor-RT if you agree. #TrumpSexProbe #TrumpSexPredator	45
funder	Trump should resign due to the sexual assault allegations against him. RT if you agree. #MeToo #TrumpSexProbe	44
YamileJana	https://t.co/7XDzuSlsw5 #MeTooMilitary #ItsTime We realize the importance of our voices when we're silenced…..	42
TIMESUPNOW	Join us in saying #TIMESUP to the world. #WHYWEWEARBLACK	42
RWitherspoon	Join us as we stand in solidarity. #TIMESUP	38
funder	.@SpeakerRyan- You must investigate these Donald Trump sexual assault allegations immediately. Everyone who retweets this agrees. #TrumpSexPredator	37
funder	Retweet if you agree Congress should investigate Donald Trump‚Äôs sexual assault allegations #TrumpSexProbe	35
movietvtechgeek	Mayim Bialik's feminist view is how #rapeculture and Harvey Weinstein thrived for 30 years https://t.co/Lcio7hwgmL via @curvygirldiva	33
krassenstein	It's time to thoroughly investigate the multiple sexual assault charges against Donald Trump. Being President doesn't make you immune to	32

	having to answer for your crimes. Being President doesn't make you KING. I call for a full independent investigation into such allegations.	
thehill	Poll: Vast majority wants Congress to investigate sexual harassment claims against Trump https://t.co/76h6darWid https://t.co/yJs5MeYdKp	31
MaryEMcGlynn	I was hesitant to tweet this, but it has to stop. This happened to me today when I ran into Gene Simmons. #MeToo https://t.co/P3oSyae2nj	30
mkraju	CNN POLL CONDUCTED BY SSRS December 14-17 Should Congress Investigate Sexual Harassment Allegations Against Trump? https://t.co/dAPSMvD0qm	30
therealKripke	Completely fucking horrified by the amount of women I know, love & respect tweeting #MeToo. This shit must change.	27
Alyssa_Milano	We shared our #MeToo stories, let's honor hers. Help @UNICEFUSA stop the sexual exploitation of girls. #HerToo	26
joncoopertweets	According to latest poll, 53% of Americans believe Trump should resign in the wake of sexual assault allegations by 20 women. EVERY Democrat in Congress should be calling for Trump's resignation, yet only 7 senators and 4 House members have done so. WHY? #MeToo #TrumpResign	26
mmpadellan	MEN: We ALL have a responsibility to end sexual assault. Start with our SONS. Teach them how to be REAL men, and NO means NO. #MeToo	25
mrbenjaminlaw	Guys, it's our turn. After yesterday's endless #MeToo stories of women being abused, assaulted and harassed, today we say #HowIWillChange.	23
mattmikalatos	There's a hashtag on Twitter right now called #churchtoo where people are sharing their stories of sexual harassment..	23
beninbushwick	if you're a guy & want to help end sexual harassment/violence, a great thing to do is to take a brutally honest look at your drinking habits	22
_Ayoteee	See ehn if you know the number of things women have to do on a daily basis to avoid sexual harassment you'd join me,	22
Eugene_Robinson	Opinion | Congress must investigate Trump's alleged sexual misconduct https://t.co/PiO3fjIZ6N	21
MikeLevinCA	Farenthold and ALL members of Congress who settled sexual harassment claims with taxpayer dollars should resign and pay back those settlements with personal funds NOW.	21
RWitherspoon	#TIMESUP on abuse, harassment & the imbalance of power. Not just in Hollywood, but every industry! Join us TODAY & wear black! Use the hashtag #WhyWeWearBlack & tell us why you stand with @TIMESUPNOW. @TraceeEllisRoss @iamrashidajones @kerrywashington @brielarson @TessaThompson	21