From Users to Co-Designers: Youth Participation in Understanding Cyberbullying

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Appendix A

A : Requirement Gathering

Table A.1: Table indicating Platform-Type and associated Features

| Platform-Type	Feature	Platforms
Social networking & Content sharing	Stories Reels (Short-videos) Disappearing messages Comments	Instagram TikTok Snapchat Facebook
Messaging	Group-chats	WhatsApp Discord
Video Streaming	Video-Content Video-comments	YouTube Twitch
Discussion Forums	Threads	Reddit ASK.fm 4Chan
Micro-blogging	Tweets	X (previously Twitter)
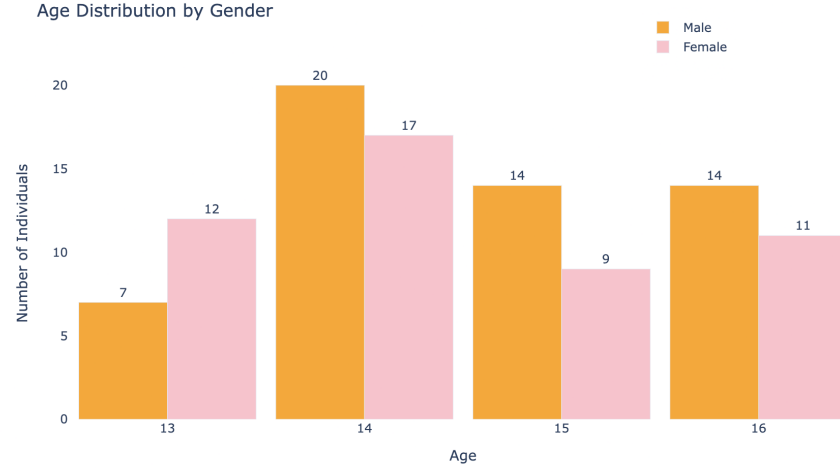
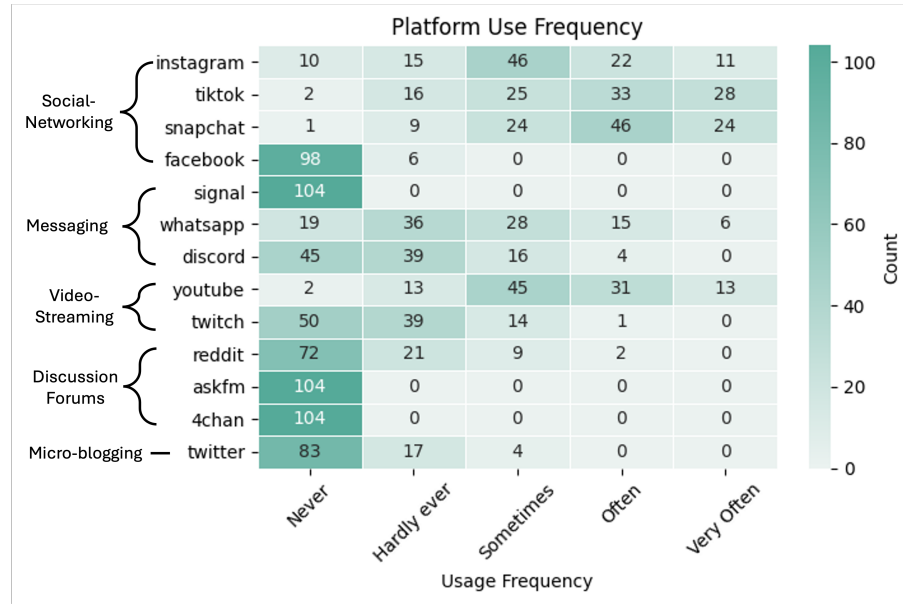Figure A.1: Age Distribution for Requirement Gathering Survey (Phase-1)

Figure A.2: Platform Usage Frequency for Requirement Gathering Survey (Phase-1)
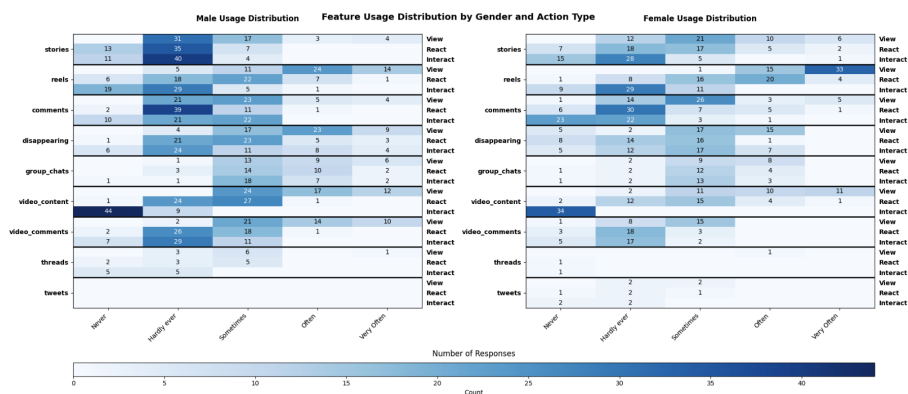
Feature Usage Distribution by Gender and Action Type

Male Usage Distribution

	Never	Hardly ever	Sometimes	Often	Very Often	
stories	13	31	17	3	4	View
		35	7			React
	11	40	4			Interact
reels		5	11	24	14	View
	6	18	22	7	1	React
	19	29	5	1		Interact
comments		21	23	5	4	View
	2	39	11	1		React
	10	21	22			Interact
disappearing		4	17	23	9	View
	1	21	23	5	3	React
	6	24	11	8	4	Interact
group_chats		1	13	9	6	View
		3	14	10	2	React
	1	1	18	7	2	Interact
video_content			14	17	12	View
	1	24	27	1		React
	44	9				Interact
video_comments		2	21	14	10	View
	2	26	18	1		React
	7	29	11			Interact
threads		3	6		1	View
	2	3	5			React
	5	5				Interact
tweets						View
						React
						Interact

Female Usage Distribution

	Never	Hardly ever	Sometimes	Often	Very Often	
stories		12	21	10	6	View
	7	18	17	5	2	React
	15	28	5		1	Interact
reels			1	15	33	View
	1	8	16	20	4	React
	9	29	11			Interact
comments	1	14	26	3	5	View
	6	30	7	5	1	React
	23	22	3	1		Interact
disappearing	5	2	17	15		View
	8	14	16	1		React
	5	12	17	7		Interact
group_chats		2	9	8		View
	1	2	12	4		React
	1	2	13	3		Interact
video_content		2	11	10	11	View
	2	12	15	4	1	React
	34					Interact
video_comments	1	8	15			View
	3	18	3			React
	5	17	2			Interact
threads	1			1		View
	1					React
						Interact
tweets		2	2			View
	1	2	1			React
	2	2				Interact

Number of Responses

Count

Figure A.3: Feature Usage by Engagement Style across Genders

Overall Online Harm Percentages

Harm	Percentage of Respondents
threat	90.5%
physical_apperance	79.2%
sexual_orientation	76.0%
skin_color	75.6%
religion	69.2%
disability	67.4%
rumours	66.1%
exclusion	50.7%

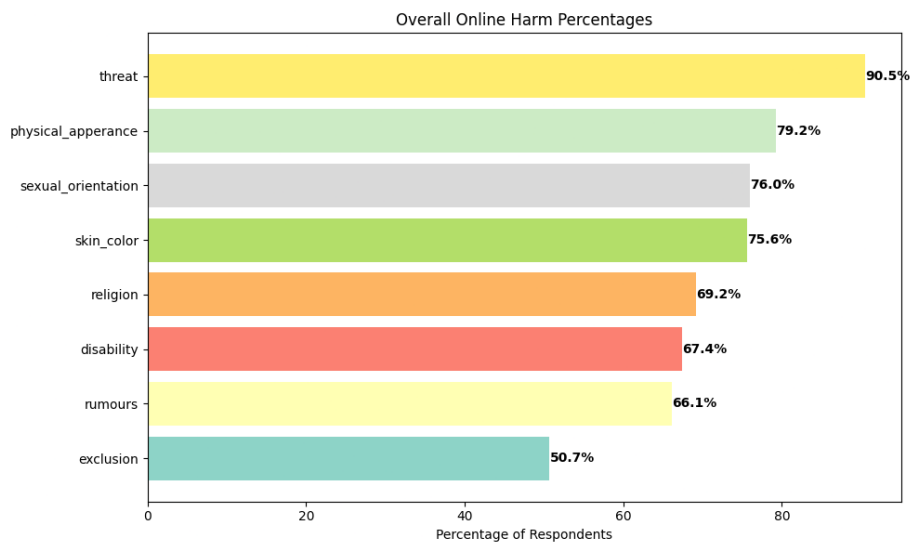Figure A.4: Percentage breakdown of Online Harms across all features collected via Requirement Gathering Phase-1

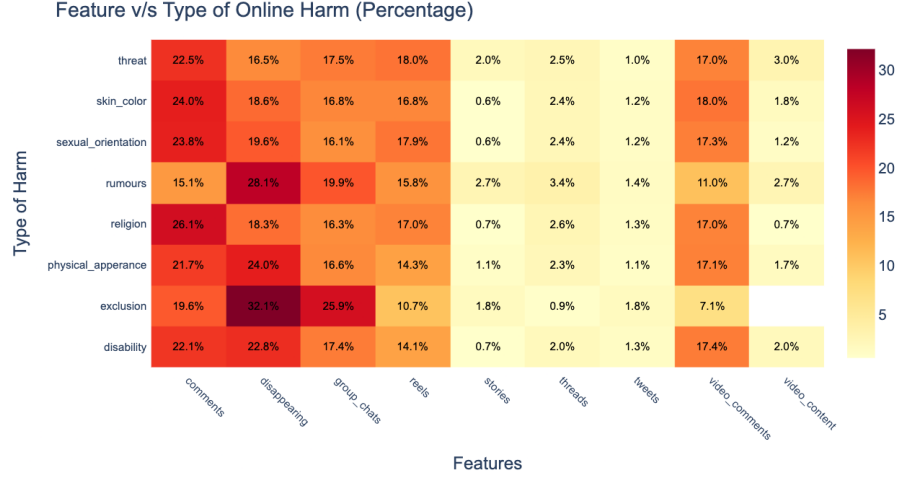Feature v/s Type of Online Harm (Percentage)

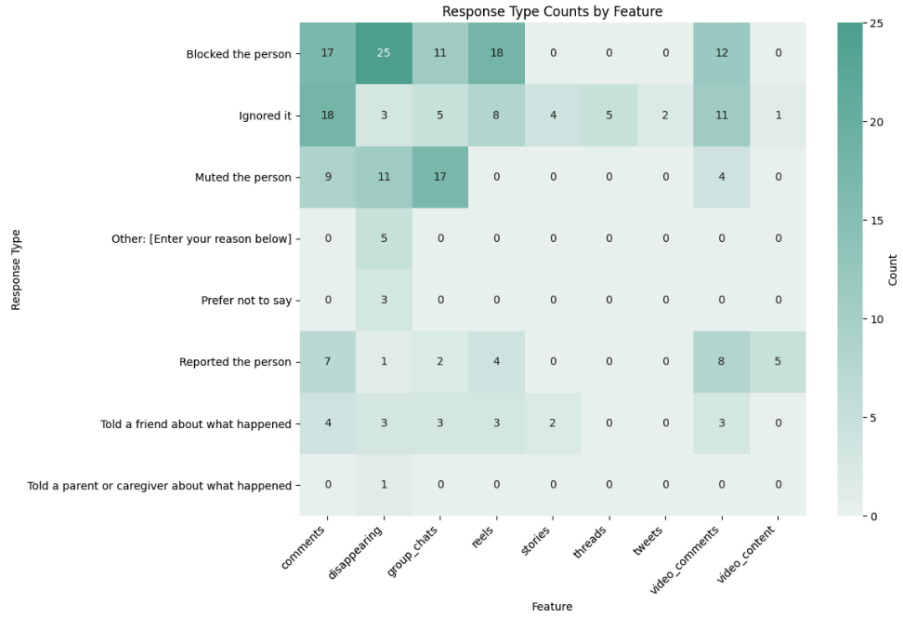Figure A.5: Type of Online Harms associated with Features collected via Requirement Gathering Phase-1

Figure A.6: Response Type associated with different social media features collected via Requirement Gathering Phase-1
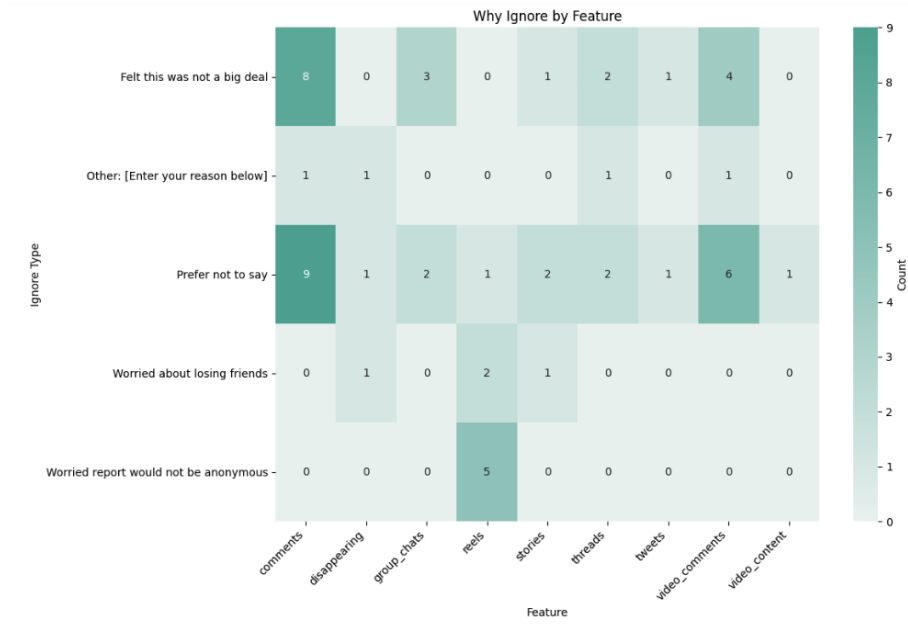
Figure A.7: Why would they ignore reporting as per different social media features collected via Requirement Gathering Phase-1

Table A.2: Simplified Feature Usage by Gender with Important Values Highlighted

Gender	Feature	Rarely (%) Never+Hardly	Frequently (%) Often+V.Often	Association OR (p-value)
	Reels	9.26	**70.37**	2.62 (0.135)
	Video Content	0.00	**54.72**	0.00 (1.000)
	Video Comments	4.26	**51.07**	**6.80 (0.012)**
	Group Chats	3.45	**51.72**	2.33 (0.370)
Male	Disappearing	7.55	**60.38**	**5.02 (0.001)**
	Threads	30.00	10.00	0.00 (1.000)
	Comments	39.62	16.98	**12.11 (0.010)**
	Stories	**56.36**	12.72	0.00 (1.000)
	Share Video Content	**100.00**	0.00	–
	Reels	0.00	**97.96**	2.62 (0.135)
	Video Content	5.88	**61.76**	0.00 (1.000)
	Stories	24.49	32.65	0.00 (1.000)
	Comments	30.61	16.32	**12.11 (0.010)**
Female	Disappearing	17.95	38.46	**5.02 (0.001)**
	Video Comments	37.50	0.00	**6.80 (0.012)**
	Group Chats	10.53	42.11	2.33 (0.370)
	React to Reels	18.37	**48.98**	–
	Share Video Content	**100.00**	0.00	–

Table A.3: Fisher's Exact Test Results for association - Feature Engagement Style v/s Viewing Nasty or Hurtful Content p-value and Odds Ratio as per feature engagement

feature	engagement	p_value	odds_ratio
stories	view	0.1403	0.0000
stories	react	0.0782	7.7143
stories	interact	1.0000	0.0000
reels	view	0.1549	0.0000
reels	react	0.1938	1.8862
reels	interact	0.4125	1.6593
comments	**view**	**0.0000**	**31.7826**
comments	**react**	**0.0000**	**11.5938**
comments	**interact**	**0.0000**	**9.1000**
disappearing	**view**	**0.0103**	**6.8906**
disappearing	**react**	**0.0007**	**4.7115**
disappearing	**interact**	**0.0009**	**4.4306**
group-chats	**view**	**0.0165**	**0.0000**
group_chats	react	0.3233	3.2000
group_chats	interact	0.1147	4.9500
video_content	view	1.0000	0.0000
video_content	react	1.0000	0.8000
video_content	interact	1.0000	0.0000
video-comments	**view**	**0.0004**	**0.0000**
video-comments	**react**	**0.0420**	**3.1071**
video-comments	**interact**	**0.0059**	**7.7917**
threads	view	0.1818	0.0000
threads	react	0.0801	20.0000
threads	interact	1.0000	0.0000
tweets	view	0.3333	0.0000
tweets	react	1.0000	0.0000
tweets	interact	1.0000	0.0000

Appendix B

B : High-level and Detailed Design
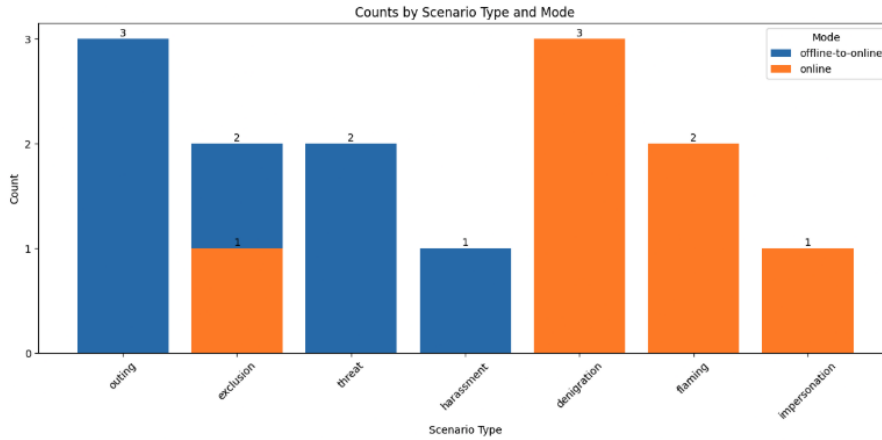
Figure B.1: Scenario count used in surveys for Cohort$_1$ by type and mode

Perception-1	Perception-2	p-value	Odds Ratio
Serious	Real	1.0000	0.8693
Real	Report	0.4361	1.3653
Serious	Report	0.0001	5.9353

Table B.1: Fisher's Exact Test Results for Cohort 1

B.0.1 List of Scenarios from Existing Literature
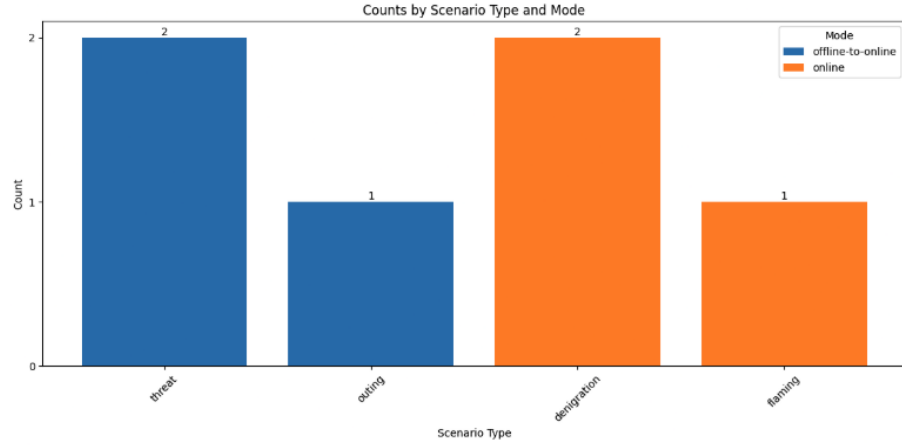
Figure B.2: Scenario count used in surveys for Cohort$_2$ by type and mode

Perception-1	Perception-2	p-value	Odds Ratio
Serious	Real	0.0331	4.7159
Real	Report	0.2287	1.9740
Serious	Report	0.0003	17.0909

Table B.2: Fisher's Exact Test Results for Cohort 2

Table B.4: Cyberbullying Scenarios Compilation

Author	Type of Harm	Scenario Mode	Cohorts	Scenario Text
Ashktorab, Z et al 2016 [?]	Threat	Offline-to-Online	1 and 2	Tom and Jake had an argument recently and things have escalated online. Jake keeps tweeting threatening posts saying how he's going to "beat the crap" out of Tom. Things get even worse when Jake starts tweeting where Tom normally is during certain times of day. These messages are repetitive and Tom is afraid he could be ambushed at any time
Campbell, M et al 2022 [?]	Threat	Offline-to-Online	1 and 2	Jenny filmed a group of girls bashing up on Wendy and posted it on YouTube. Her friends snickered and laughed when she came to school the next day.

Table B.4 – continued from previous page

Author	Type of Harm	Scenario Mode	Cohorts	Scenario Text
Ollagnier et al 2022 [**?**]	Outing	Offline-to-Online	1	Zoe is overweight. After gym class, Marjorie and Lucie, who are jealous of her good school results, take a picture of her in a posture that highlights her extra pounds. They broadcast it to the whole class with mean comments. Natacha, a friend of Zoé tries to defend her. She is helped by Pauline who also has a few extra pounds and is Marjorie's friend. Julien, who was obese when he was younger, tries to intervene with Marjorie and Lucie as well as Zoé to put an end to the situation.
Ollagnier et al 2022 [**?**]	Outing	Offline-to-Online	1	Sophie and Lucas have been together for a few months and go to the same school. During a school trip, taking advantage of the absence of his girlfriend (stayed at home with the flu), Lucas secretly kisses Silvia, a classmate of Sophie. Sophie learns of Lucas' betrayal from her friend Adrien, who witnessed the scene. With his help and that of Lisa, she starts insulting Silvia on the Whatsapp chat. Axelle and Soan decide to defend Silvia on the chat, blaming Lucas; Michel joins them in defending Silvia. Herbert, a friend of both Sophie and Silvia, intervenes to stop the harassment between Sophie and Silvia.

Table B.4 – continued from previous page

Author	Type of Harm	Scenario Mode	Cohorts	Scenario Text
Ollagnier et al 2022 [?]	Outing	Offline-to-Online	1 and 2	Fatima is new to the class and is very pretty. During a school trip to the seaside, she goes swimming with her classmates. Among them are Pauline (jealous of Fatima), Teresa, Julie and Théo, the best friends of Pauline and Fatima. Pauline takes a picture of Fatima and shares it with the whole class, making fun of her because she has dark skin. Pierre and Nicolas add to it by making unpleasant comments about the Arabs. Teresa and Julie defend Fatima and Theo tries to put an end to the incident.
Camelford, K et al 2016 [?]	Denigration	Online	1 and 2	Victoria, a girl in your friend group, sends a group photo text with a meme of Jessica, an unpopular girl from your school after she tripped and fell with the caption, "Oh You Want to Be Friends With Us. It's Not Going to Happen." Other friends respond with "LOL" and "What a loser."
Ashktorab, Z et al 2016 [?]	Denigration	Online	1 and 2	Sara is a new girl at school who dresses differently than the other kids. She is quiet and introverted so she has had trouble finding friends. Another kid at school starts taking pictures of Sara and posting them on a group on Facebook, "Sara's weird outfits". The page has over 1000 likes and people start to comment on the strange clothing Sara wears to school. The comments seem to keep getting more malicious and personal. Recently, someone wrote: "She's so ugly and her style sucks. She needs to die."

Table B.4 – continued from previous page

Author	Type of Harm	Scenario Mode	Cohorts	Scenario Text
Ollagnier et al 2022 [?]	Denigration	Online	1	Paul is gay. He confided in his friend Ellian on his Facebook account. Contrary to Paul's expectations, Ellian reacted aggressively and spread the message to the whole class with homophobic comments. Arthur and Nicolas make fun of him with Ellian and insult him by claiming that he is sick and possibly contagious and that you should not approach him. Lisa and Camille defend it by arguing that everyone can be different and that we must respect it. Jimmy friend of Ellian and Paul intervenes trying to explain to Ellian the consequences of his attitude and to Paul that if Ellian reacts like that, it's because he doesn't know how to handle the news that surprised him.
Ashktorab, Z et al 2016 [?]	Exclusion	Online	1	Jenny, Kayla, Sara and Felicia are all very good friends and have lunch together at school daily. Recently, however, Jenny has been avoiding Felicia. Jenny begins posting multiple pictures on Instagram in which she crops out Felicia and only tags Kayla and Sara. Felicia is feeling sad about how Jenny is excluding her and does not know how to react. She does not know if it was something that she did to make Jenny feel and act this way.

Table B.4 – continued from previous page

Author	Type of Harm	Scenario Mode	Cohorts	Scenario Text
Campbell, M et al 2022 [?]	Exclusion	Offline-to-Online	1	Rosalyn is in a class for 'gifted kids' – it is called the 'Ignite class'. Other kids call her a nerd, ignore her, and deliberately leave her out of group activities, and this has been going on all year. This makes Rosalyn very sad.
Huang, C et al 2020 [?]	Exclusion	Offline-to-Online	1	Max is a class leader. He and his classmates use an instant messaging app to communicate about school matters. Recently, Ada made a mistake and missed an important group project. To prevent new problems from cropping up unexpectedly, Max asked other classmates to keep her out of all discussions related to school affairs.
Ashktorab, Z et al 2016 [?]	Flaming	Online	1 and 2	Kyle keeps receiving repeated snapchats from Tom and Jake calling her names. They update their public stories with video messages of themselves saying "Kyle is ugly" or "Kyle needs to die." These videos are sometimes coupled with captions. Tom and Jake also send direct snapchats to Kyle
Campbell, M et al 2022 [?]	Flaming	Online	1	Some girls created a "We hate Penny" website where they posted jokes, cartoons and gossip and rumours, all putting down Penny. They made fun of her clothes and wrote how stupid and ugly she was.
Huang, C et al 2020 [?]	Harassment	Offline-to-Online	1	Sonia and Debbie often hang out together. Recently, Sonia asked Debbie to do her a favour, but Debbie refused. Sonia thought Debbie was not a good friend. Therefore, she repeatedly sent messages to insult her as an emotional catharsis.

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| Author	Type of Harm	Scenario Mode	Cohorts	Scenario Text
Camelford, K et al 2016 [**?**]	Impersonation	Online	1	Kallie, your friend, comes to you in tears because she found out that someone is impersonating her Twitter account. Her username is @kallie2000 and someone cleverly substituted two numerical "1" instead of the letter "l," so the impersonating username is @ka11ie2000. Kallie confides in you and tells you not to tell anyone.
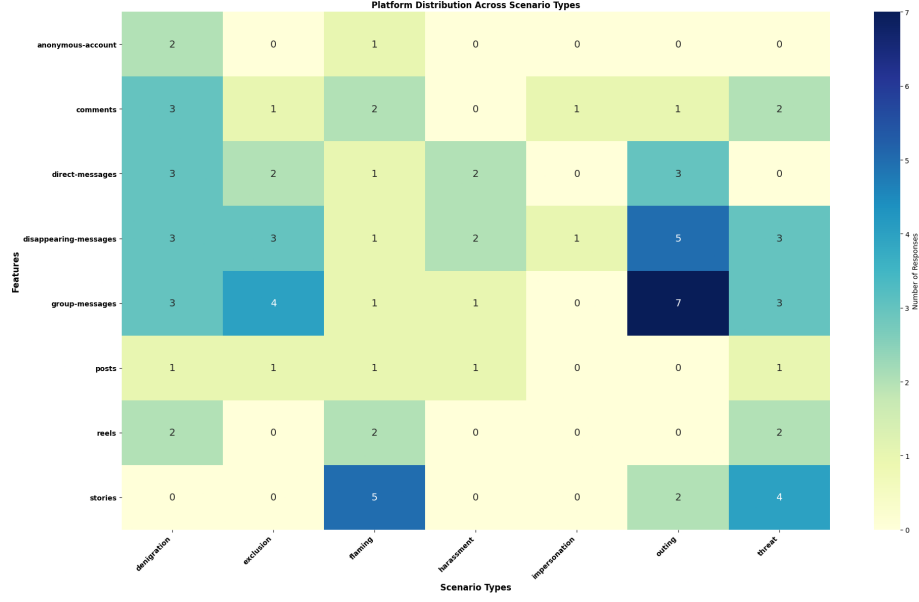
Figure B.3: Possible new social media features adapted for specific Scenario by $Cohort_1$

Perception 1	Perception 2	p-value	Odds Ratio
Serious	Real	0.0761	3.2946
Real	Report	0.0167	2.8718
Serious	Report	0.0003	9.6727

Table B.3: Fisher's Exact Test Results for Combined Cohorts