

One More Lonely Girl



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Nayely Vélez-Cruz,
and Adam Wiechman

15:05

- 14:55



Influencer Feuds Create Polarized Social Networks

Pro-Selena/Anti-Hailey



Comments

selenagomez • Texas girl at heart. Cali girl for fun and NY gal for the real. Grateful, thankful and blessed lady! 1w

surfing.on.the.internet You are the best Selena, the most beautiful person, inside and out! We love you so much 3d 2,237 likes Reply
View 85 more replies

naji_irl Just unfollowed some celebrities and came here to show support for the OG. Mean girls will always lose. Big mood about being too old for the drama. 33 here and often take media breaks. Some people are so unhappy and unhealthy they don't know how to say "that's enough". Good for you. 3d 2,237 likes Reply
View 49 more replies

hulu • the fish ended up with the best catch 1w 41,519 likes Reply
View 268 more replies

princesspollyboutique • the fish don't even know they've been caught by an icon 3d 1,329 likes Reply
View 17 more replies

manderz1021 Waiting for Hailey to release a fishing pole brand now.... 4d 5,906 likes Reply

Comments

haileybieber • 4d

cheekywester68 is it too late now to say Sorry !!! 1d 4,438 likes Reply
View 23 more replies

theothersisterrr Unbothered level: Justin Bieber watching his wife get dragged by the entire internet 19h 1,998 likes Reply
View 15 more replies

monicali165 I don't know what to say. Bye 15h 207 likes Reply
View 1 more reply

rebeccacourtis_ Where's your fishing pictures? 1d 2,380 likes Reply
View 53 more replies

mohamah.akkari You did your eyeliner pink by an accident???? You should've wrote that 1d 368 likes Reply

char.fate #selenagomez 1d 2,178 likes Reply

Pro-Hailey/Anti-Selena



Comments

mamanicnik You're a beautiful soul @haileybieber. I have a daughter and I hope that she continues to grow to be a kind and genuine person like you. 23h 88 likes Reply
View 40 more replies

jaileysiconic thank you for blessing my eyes with all this beauty 😍 4d 1,118 likes Reply
View 19 more replies

erinvander76 Bullying is unacceptable! 11h 22 likes Reply

dindenyisdinamic Pregnant of girl? Pink whats? 2h Reply
View 1 more reply

laxcarin.yy_ ❤️之心❤️之心❤️之心❤️之心 7h 2 likes Reply

um_ain.a I really hope she's pregnant 😊 we need a mini her please❤️❤️❤️ 1h 1 like Reply

piggyrichelle I feel for you and Justin... I really hope you find peace in all this chaos ❤️ all the love. 1h 1 like Reply

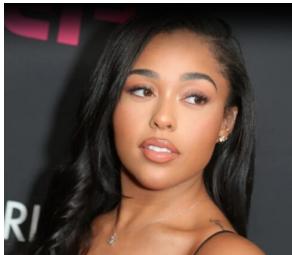
Jazz Ross • 4d ago Selena is VERY insecure! I know it boils her blood that the love of her life is married to someone else and has moved on. I'm sure it hurts, but Hailey doesn't deserve any of the hate that she throws her way. Her fans just use her health issues to excuse everything that she does. It's not right. She definitely needs help. 203 Like Reply
8 replies

E • 5d ago THANK YOU for this video. The way her fans are changing the narrative to make Hailey seem like the stalker when Selena has been obsessing over EVERY. SINGLE. GIRL. Justin has been involved with. 52 Like Reply
2 replies

See you Space Cowboy • 5d ago (edited) She has curated this down to earth image and her fanbase is very delusional and can't take any nuanced takes and will label anyone else as "mean" ... Read more 527 Like Reply

Influencer Feuds Create Polarized Social Networks

Selena's Friends



< Comments >

jordynwoods me baggy pants
1w

niks.couture You have no idea how Happy I am seeing you genuinely HAPPY and EVOLVING
1w 50 likes

lovealwaysperla Rare beauty looks good on you
5d 47 likes

dia_minnie Gods timing is always right fr look at that !
6d 33 likes

mukwazhitanaka Seeing Jordyn this happy making money and minding her own business and seeing her ex best friend Kylie trending for shade just makes me think that huh so Kylie really is the drama I love this for you Jordyn
5d 38 likes

c.syresmith If I Can See Your Shoes Your Pants Too Small
1w 192 likes

kristy.sarah If I Can See Your Shoes Your Pants Too Small
1w 28 likes

Comments

View 2 more replies

View 1 more reply

Hailey's Friends



< Comments >

carliwithani_ #teamselena
2d 3,261 likes

joc.elynherrera What's your talent? I am done with following people who don't bring anything positive...
2d 2,497 likes

View 10 more replies

madisonann.h #teamalenagomez
2d 2,714 likes

rodri_barillas #teamselena
2d 4,768 likes

View 1 more reply

csala.patricia #teamselena
2d 2,258 likes

View 3 more replies

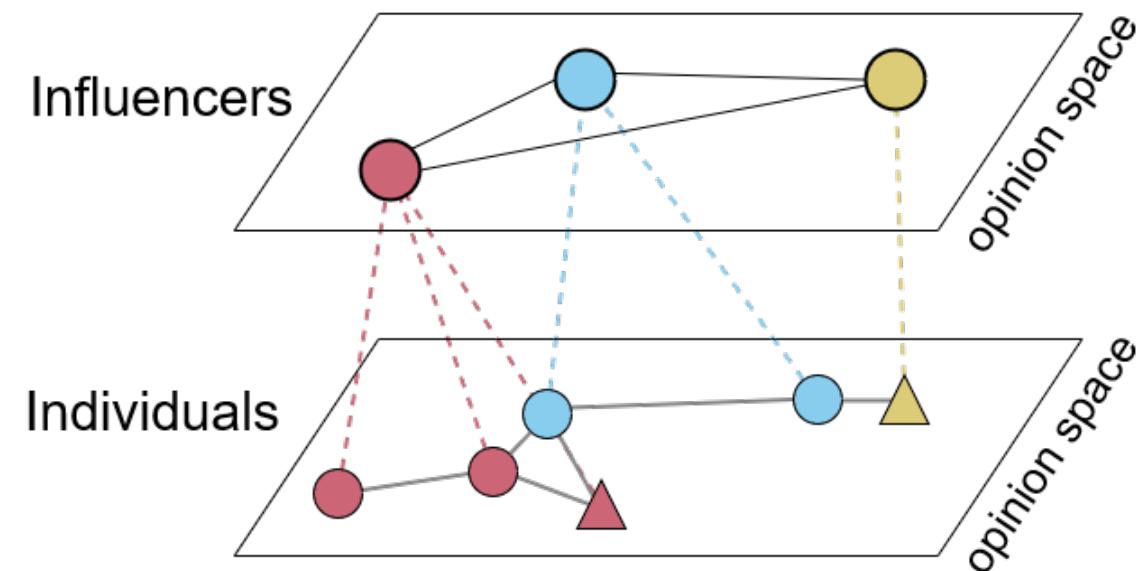
sevgx #teamselena
2d 2,125 likes

cummins_rulez #teamselena
2d 2,490 likes

jana_coleman16 Not Kylie paying for more followers!
1d 583 likes

Comments

Opinion Dynamics Model with Influencer-Influencer Interactions



Opinion Dynamics of Individuals

Opinion change of individual i :

$$\frac{dx_i}{dt}(t) = \underbrace{F_i(x, z)}_{\text{interaction force on } i} + \sigma \underbrace{\frac{dW_i}{dt}(t)}_{\text{noise}}$$

With interaction force on individual i :

$$F_i(x, z) = a \underbrace{\sum_{j=1}^N \frac{\phi(|x_j - x_i|)}{\sum_{j'} |\phi(|x_{j'} - x_i|)|} (x_j(t) - x_i(t))}_{\text{Individual-individual interactions}} + c \underbrace{\sum_{l=1}^L C_{il}(t)(z_l(t) - x_i(t))}_{\text{Influencer-individual interactions}}$$

Opinion Dynamics of Influencers

Opinion change of influencer l :

$$\gamma \frac{dz_l}{dt}(t) = e \underbrace{\sum_{i=1}^N \frac{C_{il}(t)}{\sum_k C_{kl}(t)} (x_i(t) - z_l(t))}_{\text{Influencer-individual interactions}} + d \sum_{l'=1}^L \frac{\phi(|z_{l'} - z_l|)}{\sum_k |\phi(|z_k - z_l|)|} (z_{l'}(t) - z_l(t))$$

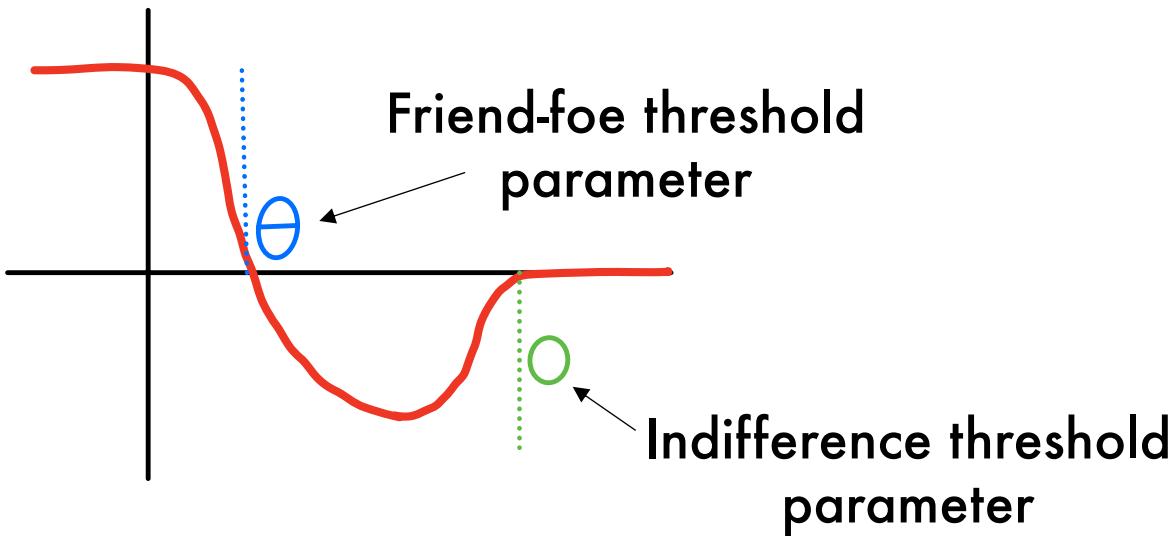
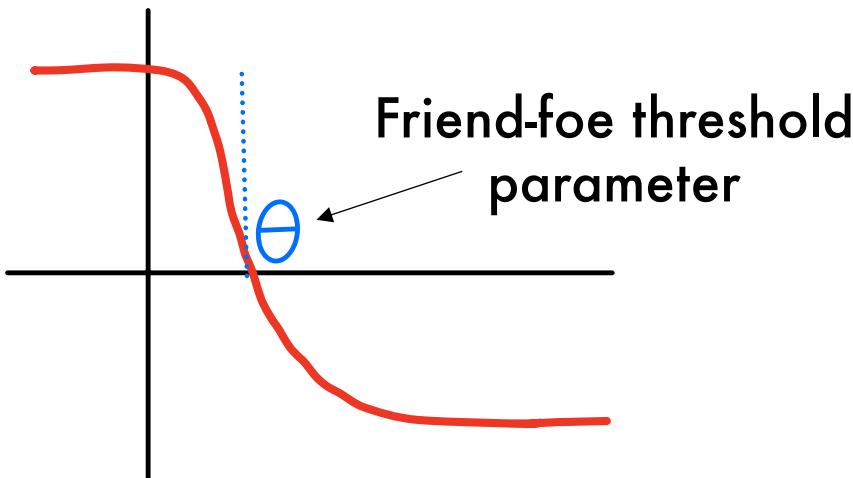
$$+ \hat{\sigma} \frac{d\hat{W}_l}{dt}(t) \underbrace{\left[\begin{array}{c} \text{noise} \\ \downarrow \end{array} \right]}_{\text{influencer-influencer interactions}}$$

Individuals Change Whom They Follow

Individuals change with rate $\Lambda_m^{\rightarrow I}(x, t)$ to individual I

$$\Lambda_m^{\rightarrow I}(x, t) = \underbrace{\eta}_{\text{scaling parameter}} \underbrace{\psi(|z_I - x|)}_{\text{pair function}}$$

Attraction-Repulsion Function ϕ

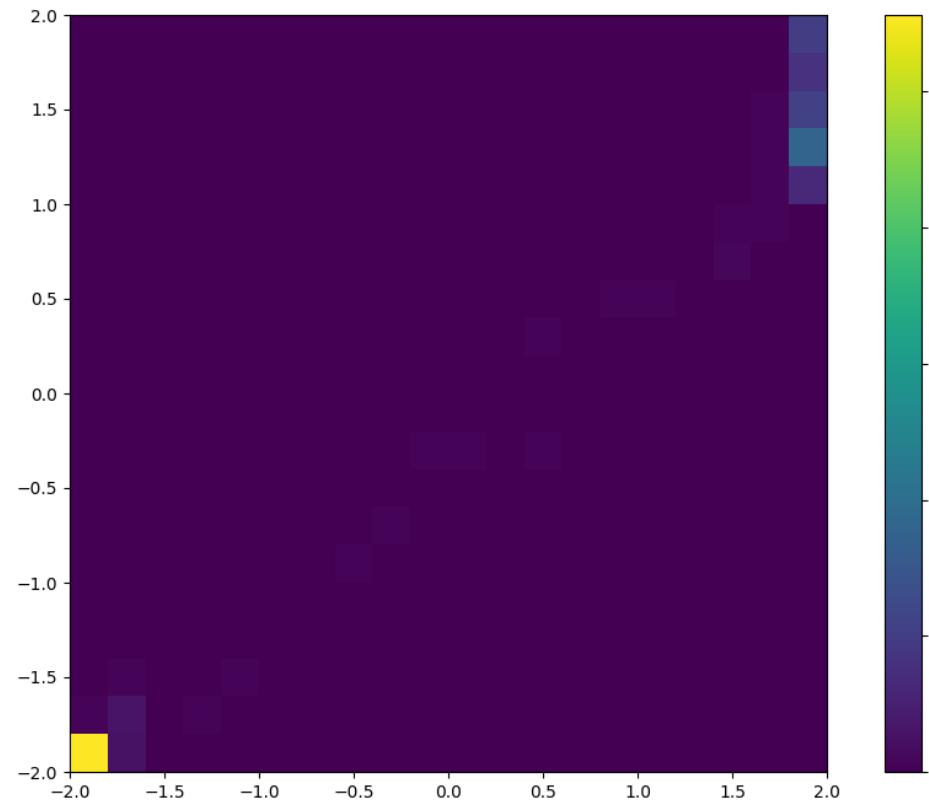
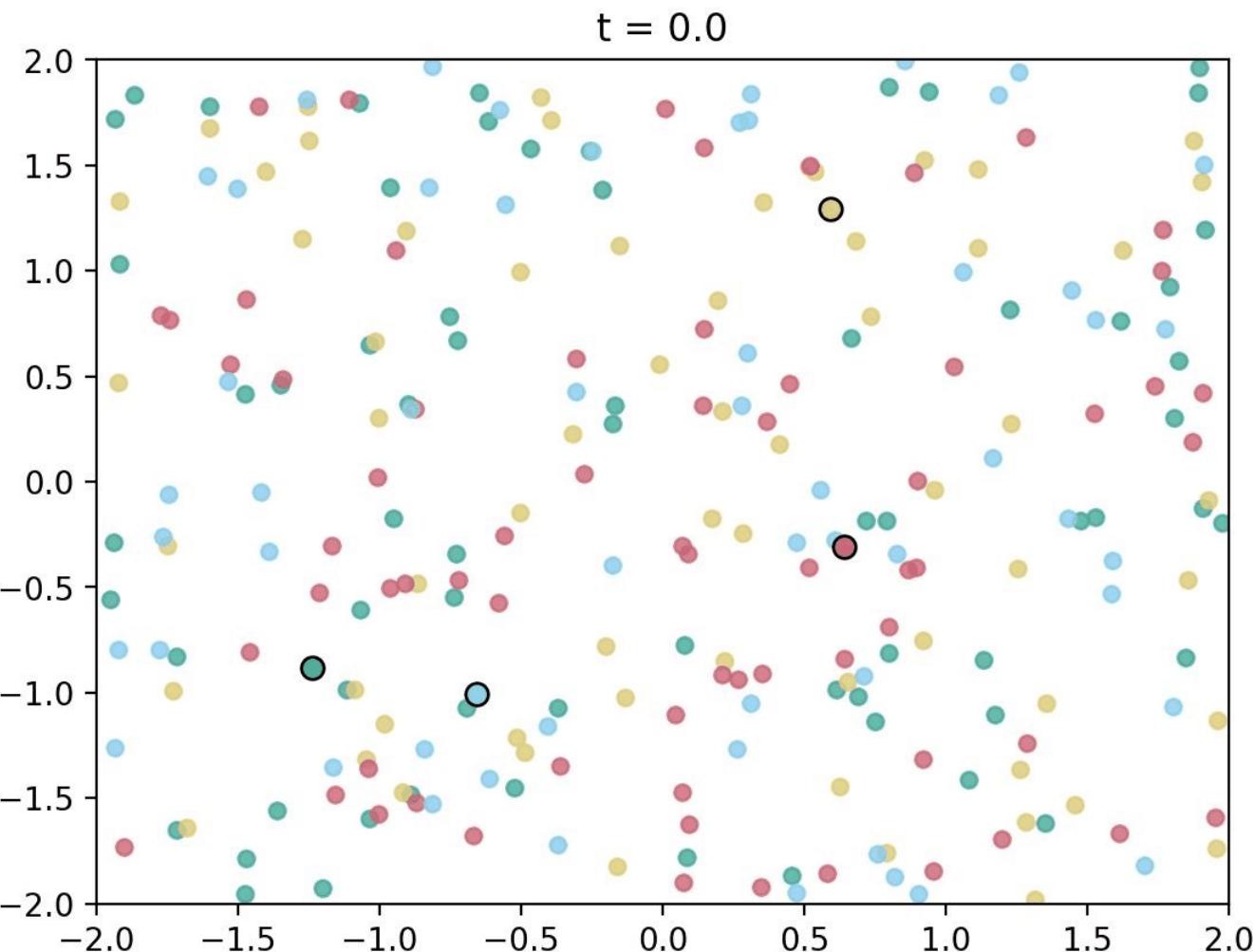


Sensitivity Analysis

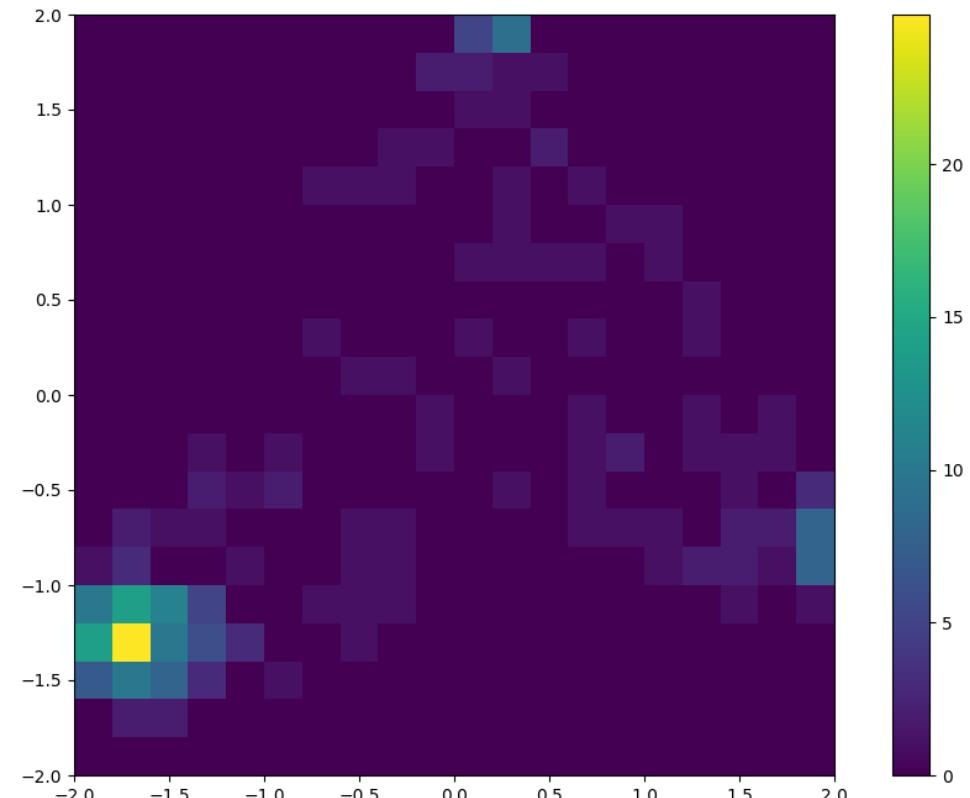
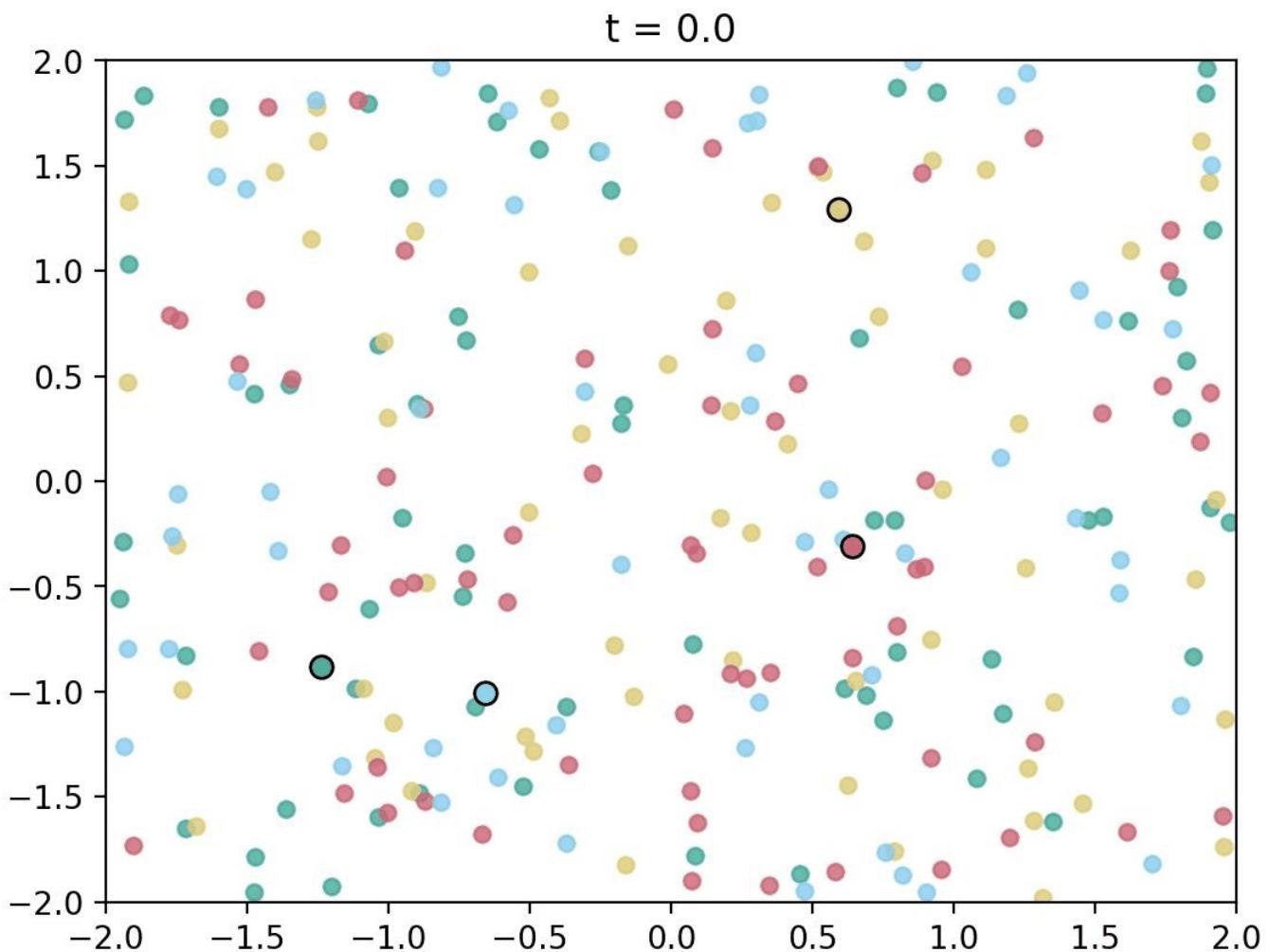
Varied parameters:

- `a`: power of social media (degree of influence of influencers on individuals)
- `theta_ind`: friend-foe threshold between individuals
- `theta_inf`: friend-foe threshold between influencers
- `level_off`: whether indifference threshold is used

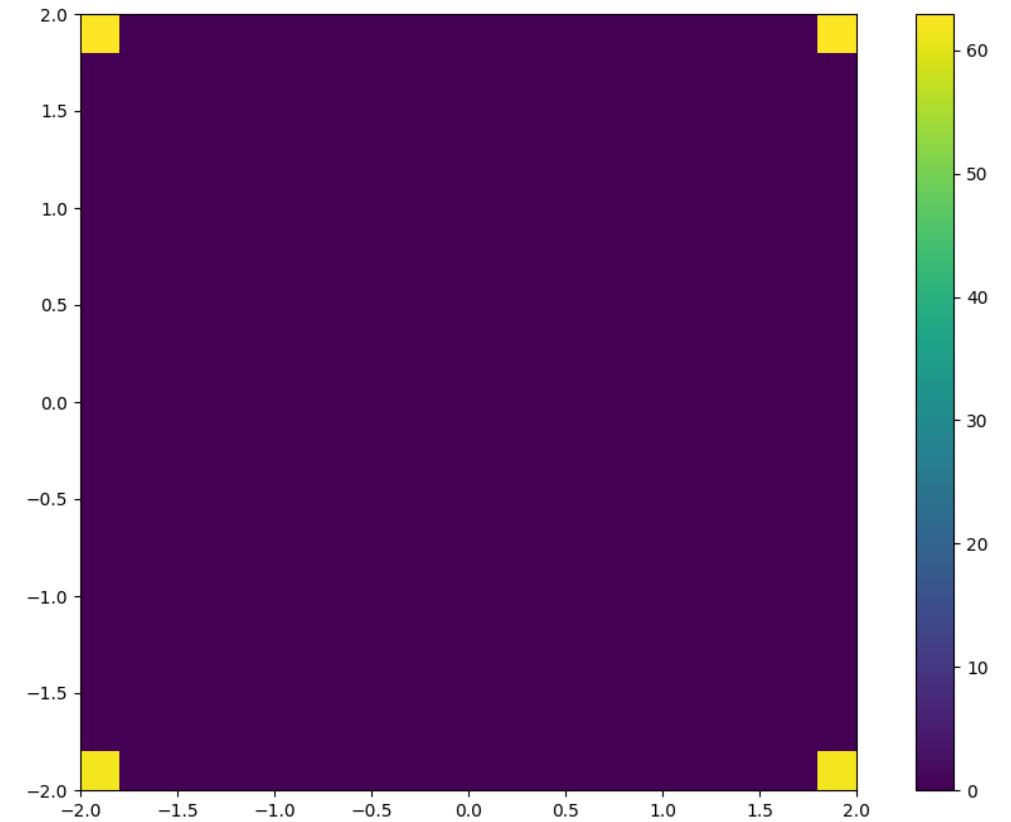
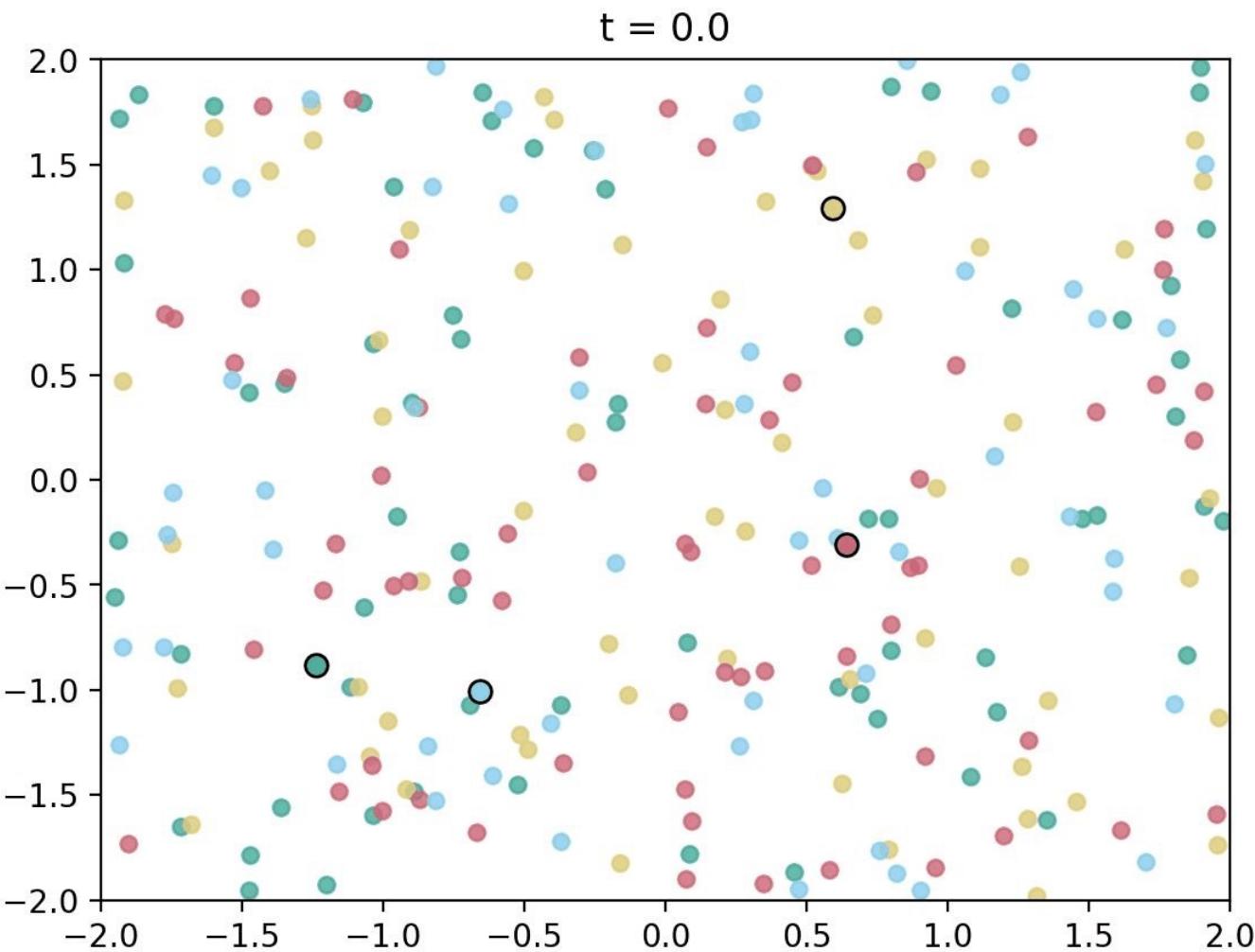
$a = 0.1$, `level_off = false`



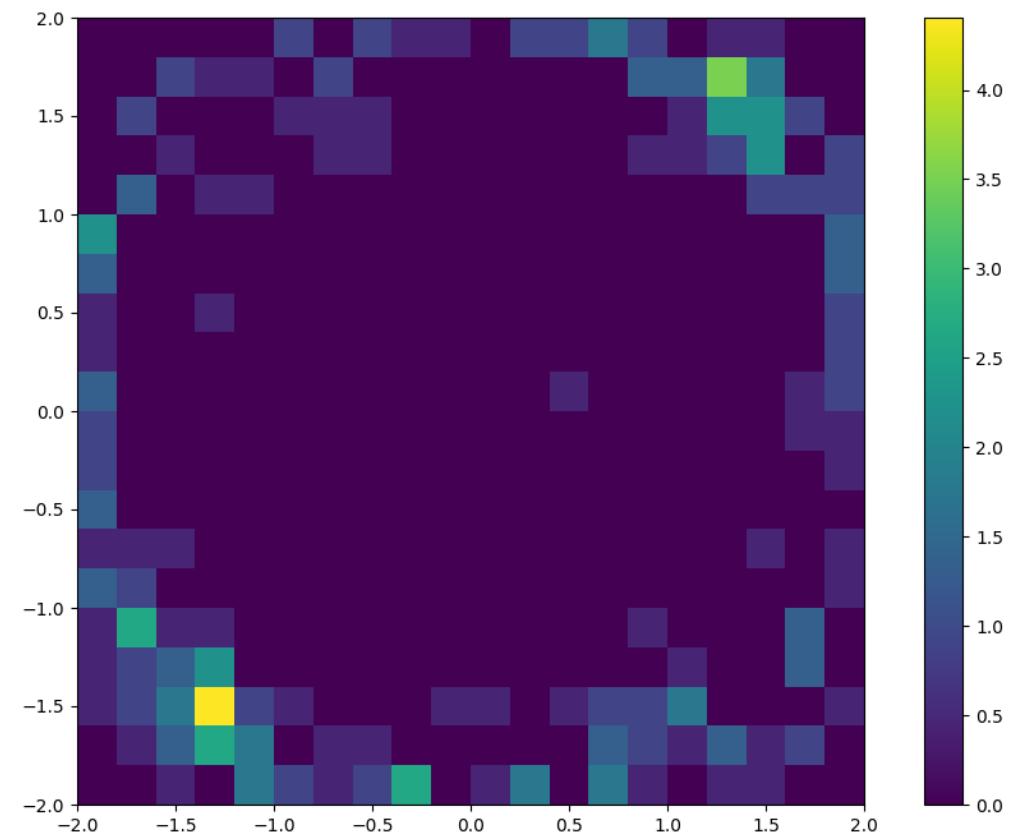
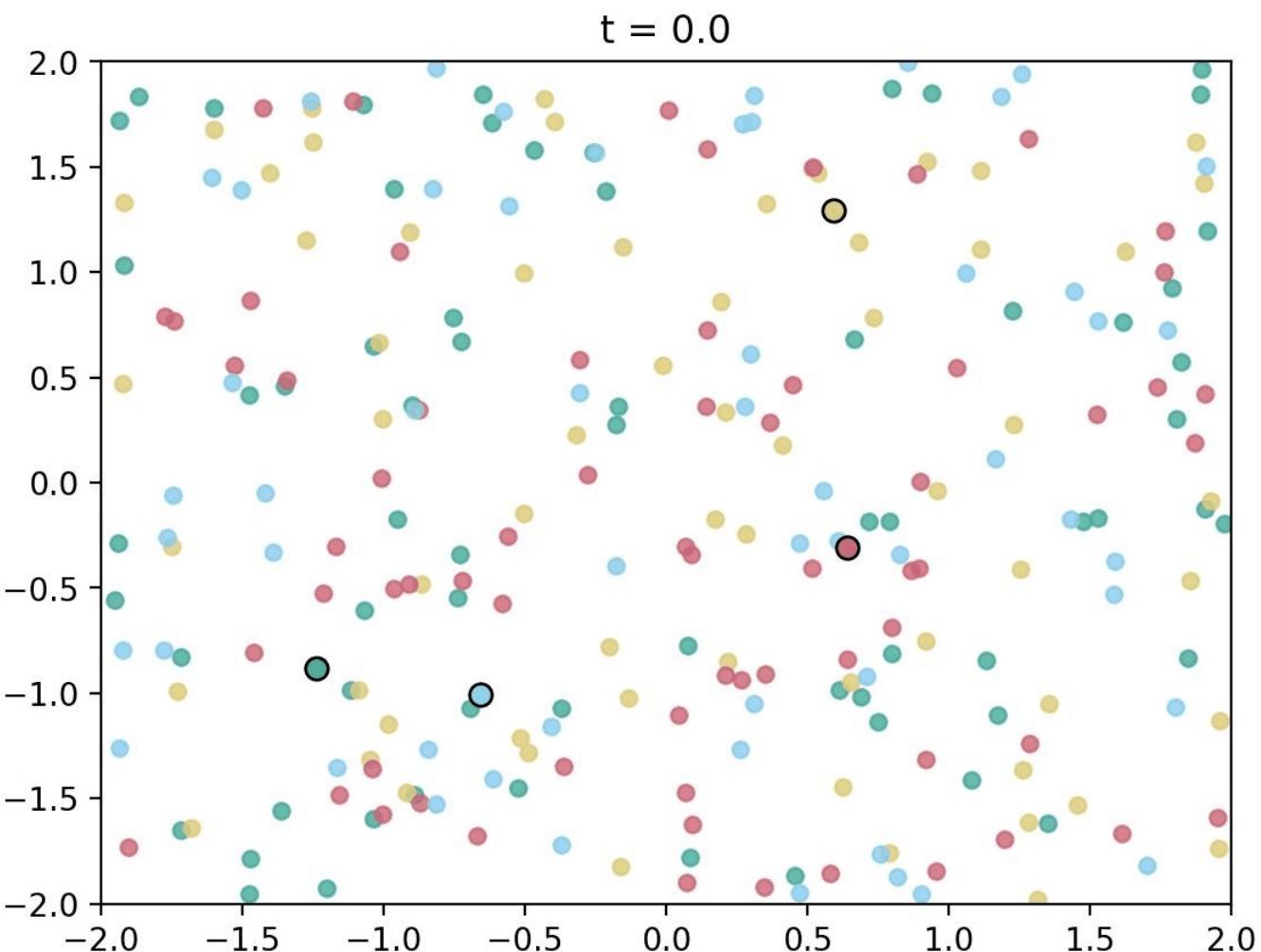
$a = 0.1$, `level_off = true`



$a = 1.0$, level off false



theta_inf = 2.5, results are same for level off true and false



Conclusions

- Adding the repulsion mechanism leads to long-term polarization
- Influencers can slow and/or steer the progression of polarization
- Adding extreme indifference weakens polarization
- Increasing influencer friendliness decreases polarization but doesn't increase social cohesion

Futures Directions

- Implementation with social media data (Instagram posts, Twitter, Social Blade time series data)
- Role of the media
- Neutral influencers (Justin Bieber)
- Metrics (e.g. rate of cluster formation)

Thank You ☺