

Facebook Post-Suggestion Algorithm:

A Suggestion to the Algorithm

Team e-connect

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 E-connect Project Overview

Introduction

We are diverse in our attitudes and patterns of thoughts and beliefs, which affect our interactions with other people as integral parts of a large fabric our society. This diversity stems from our different cultural backgrounds and familial upbringings. Although diverse, we are all responsible for ensuring effective interactions and collectively fulfilling some common purpose founded on social consciousness. Rather than seeing differences as a cause of conflicts, we can benefit from having diverse individuals holding diverse viewpoints and ideological backgrounds as long as we invest in increasing effective interactions, human connection, and social consciousness. Nowadays, an essential part of our social interactions takes place online on social media. We, unfortunately, identified a need for more cultural consciousness across media platforms. We define social consciousness as the conscious awareness of being part of an interconnected and interrelated community of others. Understanding that such behaviors emerge from different personalities and external factors is crucial. The Big Five Model highlights the major trait categories that describe our characters (Woodward, 2016). These traits are openness to experience, conscientiousness, extraversion/introversion, agreeableness, and neuroticism (emotional stability). One of the most important drives of this online lack of cultural consciousness is extreme cases of these traits, such as a high level of hostility and emotional instability combined with external forces operating to influence behavior. To address this issue on a narrower scope, we chose to focus on Facebook as the world's most widely used social media platform.

The Facebook post suggestion algorithm can be categorized as one of the external forces influencing online users' behaviors. Considering the existing Facebook algorithm, we concluded it falls short of encouraging this cultural consciousness. Hence, our goal is to ideate how we might fill this gap and suitably modify the Facebook post algorithm to foster better cross-cultural communication and curiosity as a subset of social consciousness. We define cultural curiosity as the mental shift from being defensive when presented with different ideas and cultures to an interest to learn simultaneously while the ability to co-exist instead of competing for dominance. This is the first step in understanding and accepting our differences. From our Big Question: "How might we use digital tools to increase human connection and social consciousness?" we narrowed the scope and defined our Group refined question as "How might we redesign Facebook's suggested post algorithm to foster cultural curiosity among users?". We see diversity as a critical component to building a solid foundation of successful online cross-cultural understanding. The trick is to benefit from the Facebook post algorithm to promote mutual and cultural awareness that will ensure a fertile ground for effective digital user interactions.

Existing Algorithm

With the largest online database of customers on the internet, Facebook is the hub for digital socio-cultural interactions.

A significant part of a user's experience consists of their news feed. Filled with their friends' posts and suggested content from all over the world, it is essential to monitor this data and evaluate this data sorting algorithm to highlight potential biases and ethical dilemmas.

It's, therefore crucial to analyze Facebook's influence on digital interactions and its global reach to understand how users interact with the platform and how they are exposed to cultural diversity by Facebook's intelligent post-suggestion algorithm. While designing

Facebook as a global platform, the objective was to increase its reachability, enabling users to share their cultures with the cultures of other users across the world (Oglesby, 2021).

Programmers at Facebook saw that the intertwined structure of a spider web could be used to devise ways to categorize user content in Facebooks' database to connect people from different cultures, encouraging the sharing of information and cultural content. A spider's web is interconnected by longitudinal (vertical) and latitudinal (horizontal) silk webs. Using this analogy, they categorized content on Facebooks' cloud using different variables such as cultural background, geographical location, political inclination, individual preferences, etc in the form of longitudinal threads running outwards from the central point. Using data from a users' Facebook posts, they categorized users relevant to the content categorization in latitudinal threads intersecting the longitudinal ones. User data regarding a specific variable such as politics is stored at the intersection point of the longitude of politics and the latitude of the user.

As the longitudinal lines spread outward from the center, the radius increases, allowing for groups of more than one user to be represented along the adjoining latitudes. Thus, creating an extensive network of interconnected individuals based on similar-interests (variables) and effective categorization of user data.

This user-content association enables for a seamless share of information amongst people from different cultures, geographic and political backgrounds, even though they were not necessarily friends on Facebook or did not know each other.

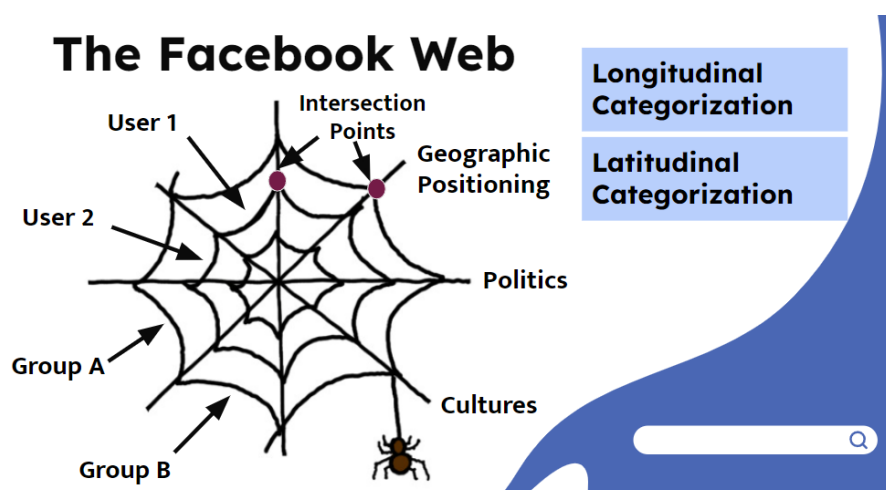


Figure 1: Visual representation of the analogy of spiders' web with the internet for content categorization of Facebook user data. The longitudes show categorical variables while latitudes show individual users and groups. The intersection of longitude and latitude stores user data regarding the variable.

A more refined look at the current Algorithm used by Facebook to moderate content on user feeds by suggesting posts helps understand the applicability of this model.

According to Facebook, suggested posts seen by users on their news feeds are influenced by several variable including:

- **Related Topics:** Posts are suggested based on if the user recently engaged with related topics.

For example, if a user recently commented on content from Minerva University's Page, they would be suggested popular posts about Minerva University from other pages.

- **Related Content:** A post may be suggested if the people who interacted with it also previously interacted with the same post, people, or group as that user.

For example, a photo may be shown to a user if people who commented on it also liked the same photo as that user recently.

- **Location:** Post suggestion also depends on the geographical location of the user and what other users in the same area are interacting with.

For example, a popular post about a concert in San Francisco will be shown to users within San Francisco.

- **Keywords:** Keywords from user searches or comments are also tracked and matched with other users, resulting in similar post suggestions for the users relevant to the keywords.

For example, if a user comments “Michael Jackson”, they will be shown similar suggestions as another user who typed either “Michael” or “Jackson.”

Our Solution

Now that we have an understanding of the existing algorithm and our goal of cultural curiosity, we can bridge these two concepts to highlight suggested amendments and how they may be implemented algorithmically. Online conflicts are often rooted in ideological divides. These debates have more at stake than the discussion at hand, but they are rooted in the core political beliefs that a person has. (De Kosnik, 2019) By conflating political affiliation with identity, people are less willing to concede that they may be wrong in an argument, and are more closed off to others’ opinions. Therefore, fostering this curiosity is an important, but difficult, first step in using digital tools to increase social consciousness and human connection.

The lack of curiosity for other cultures is in part due to the echo chambers created by social media's post-suggestion algorithms. By only showing people posts that they agree with, they have the sense that everyone agrees with them. This creates a reinforcing feedback loop where the more one expresses their opinions, the more they see evidence that they are right, and the more strongly they express them. When users are never faced with different opinions, they start to forget that different opinions exist. When they are confronted with this opposition, often in the real world, the shock can lead to the dismissal of the other opinions without any proper consideration of their logic. Because of this, echo chambers can lead to extremist ideologies and give legitimacy to perspectives that would otherwise be suppressed.

To break this echo chamber, it is important to show people posts that disagree with them. This would give them evidence that contradicts their belief and encourage them to consider different opinions. By recognizing that other opinions exist through more frequent exposure to, users would become more open-minded and would not as hastily assume that they are right. This open-mindedness not only builds awareness of other opinions, but it gives users permission to disagree with others. Because political beliefs are so closely tied to personal identity, users become defensive when they are confronted with other opinions. There is a subconscious belief that the existence of a different belief is a direct attack on one's own perspective. By acclimatizing users to different opinions, they can start to see how it is possible to coexist with people who disagree with them. This would reduce conflicts online and hopefully shift users' reactions from defensive to curious.

When introducing users to different opinions, it is important to avoid completely polar viewpoints. If an opinion is too different from the user's own, they will instantly become defensive and find more reasons to reinforce their own opinion. Instead of opening the user's mind, this process would push the user further into believing they are right and would shut down the possibility of them seriously considering this new opinion in the future. This can be connected to strategies of bias mitigation. There is a distinction between considering the opposite and considering the alternative. In both cases, individuals should think of reasons why someone who disagrees is right. However, considering the alternative suggests giving individuals opinions that do not fully negate their own, but is merely a variation. This will be an important distinction in moving the online discussion because of how polarized social media platforms currently are. This process must gradually introduce users to new ideas, or we risk creating even more conflict.

To create this balance between breaking echo chambers and giving space to personal perspectives, we propose two parameters the algorithm should use in collaboration with the variables identified earlier.

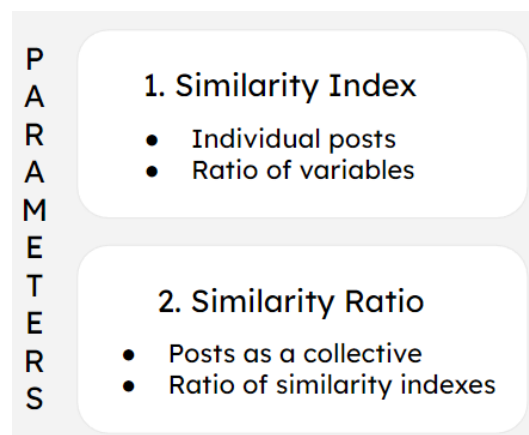


Figure 2: Proposed weighed solution parameters for improvement of the Facebook post-suggestion algorithm.

The first parameter we would add is the Similarity Index. This looks at the similarity of each individual post. It would be presented as a ratio of the variables described earlier. Adjusting this parameter allows us to tailor the extent to which a post fits the user's similarity. For example, a post with a moderately high similarity index may be one from a mutual follower on a similar topic. Conversely, a post with a moderately low similarity index may be about a similar topic but come from a user in a different social circle or geographical location. This can help us estimate the extent to which a user will agree with a post, and how much it will expose them to a new idea. Keeping the similarity index moderately high or low, and not extreme in either direction, will help introduce new ideas in familiar contexts.

From the Similarity Index, we would create the Similarity Ratio. This looks at the posts in a user's feed as a collective and measures how similar each is. Looking at the macro-level of posts in addition to the micro-level is important because having a variety of posts that the user does and doesn't agree with opens them to the idea that multiple ideas can coexist in the same space.

Finally, to set these two parameters, we would use a genetic algorithm to tailor them to each user. Because users have different levels of open-mindedness, they would not all have the same reactions to the frequency of new posts. We would use the following steps to determine these parameters:

1. Randomly assign the parameters
2. Test on 30 posts
3. Rank efficacy of parameters based on retention and comments

4. Use the middle 20 posts to set a new range for parameters
5. Repeat

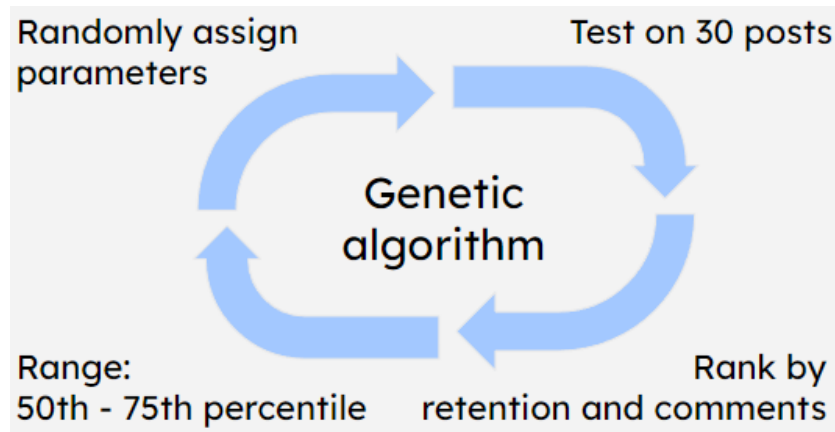


Figure 3: A proposed genetic algorithm to tailor proposed parameters to individual users for improvement of the Facebook post-suggestion algorithm.

We chose to rank the posts based on retention and comments because these are indicators of engagement. Unlike likes and shares, which indicate more passive forms of support, these two show how long a user is thinking about a post and how much they are discussing it. We are using the middle 20 of these rankings because the lowest 5 may be too boring for the user and the highest 5 could indicate such polarization that they spend a significant time-fighting in the comments.

Using these two parameters and the genetic algorithm will give more balance to the post-sorting algorithm in the hope to foster more cultural curiosity online.

Conclusion

Implementing any sort of the change in the post-sorting algorithm would present challenges. We have already identified how one's cultural and social contexts in the real world can influence their reception of posts online. However, there is now an additional interpretive lens; that of a normal social media feed. Users are used to seeing content familiar to them and their ideology. Therefore, in practice, if we were to try to integrate more novel users and opinions, we will face resistance from users who are expecting complete similarity and familiarity.

Word count: 2,156 words

Appendix

Skill Applied	Where is the skill applied in the project?	Why is this a strong choice of this skill (how does it make the project stronger)?	Explain how this skill is applied and why the application is strong.
#differences (CX)	In our project, this skill is applied mainly in the introduction to explain the root causes of differences between people by referring to the drivers of human behavior.	Our project, at its core, is built on the idea of diversity and holding different points of view. To serve our goal of ensuring mutual cultural understanding between diverse people, we need to understand how diversity emerges in the first place. In other words, how are people different, and what causes them to behave and think in certain ways? By gaining a deep understanding of the drivers of human behavior, we have a solid foundation of understanding the core of our project. Hence, We know in what way we can interfere with building and designing potential solutions based on that understanding.	We applied this for understanding diversity and designing how to maximize our benefit out of it through avoiding conflict and maximizing cross-cultural understanding. This diversity affects how we interact with each other. We referred to the Big Five Model as an excellent overview of everyday personality and to understand how differences emerge. Then, we identified that the lack of online social consciousness results from extreme scenarios in the traits of the Big Five Model rather than the right level, for example, a low level of agreeableness and Neuroticism. We also focused on the idea that personality is not the only driver of human behavior. In fact, there are also external factors operating to influence how we behave. We identified the Facebook existing algorithm as one of these external forces operating to influence online users' behavior and, as a result, interferes with giving rise to a lack of cultural curiosity and social consciousness. This deep examination and understanding of the root drivers of human behavior allowed us to design our solution by focusing on the Facebook Algorithm as a main external force guiding online users' behavior. We focused on the idea of making use of this algorithm to promote effective users' interaction and online behavior that fosters cultural curiosity.

#complexcausality (CX)	We use feedback loops to illustrate the influence of algorithms on open mindedness through the creation of echo chambers.	Our aim is redesigning a post-sorting algorithm to increase cultural curiosity. This is a causal mechanism, so having an understanding of the design choices that lead to certain reactions from the user. We are trying to interfere with this cycle. First, we must understand this system to then identify changes we can make to take advantage of the feedback loops.	We used this to blend the explanation of cultural curiosity with our understanding of the facebook algorithm. By identifying design choices as causes and facets of curiosity that are our desired effects, we could see what was missing and perform our gap analysis. In this exploration, we identified a reinforcing feedback loop of echo chambers where people become more emboldened in their opinions the more they are shown similar content. Then, this new confidence leads them to seek out more similar information, encouraging the algorithm to show similar content more frequently, and the cycle continues. Identifying this loop helped us understand that we had to break it by removing one of the causes; namely, the constant increase of the same type of post. Then, we realized that while this was necessary, it was not a sufficient cause. Simply limiting the number of similar posts would not have the desired impact, we also had to ensure that some similar content was present. Ultimately, this application showed a strong understanding of feedback loops as well as sufficient and necessary causes, and how we can use these tools to trigger a desired outcome.
#gapanalysis (EA)	This is applied throughout our whole project, in the characterization of the problem and in the solution developing process.	This guided our work throughout the whole project. It builds on gaining a deep understanding of the right problem we are addressing. Rather than immediately taking action and jumping to finding solutions, a deep understanding of the problem involves taking	We applied this to deeply engage with the existing Facebook post suggested algorithm. The current post algorithm suggests posts based on related topics, related content, and geographical location. Through consideration of this algorithm, we found out that it falls short. There is a gap of an online lack of both mutual cultural understanding and social consciousness. We defined our goal state as a fertile ground for effective user interactions that foster

		<p>time to assess the current situation, determine a specific goal state and highlight the gap between the two is crucial for successful problem-solving. Filling this gap will be the bridge between us (initial state) and what we want (goal state). Identifying the gap is all about examining the initial state and seeing how efficient it is. Based on that, we can modify it to fill the gap, which is a process described throughout our paper to develop our solution to promote cross-cultural curiosity among Facebook users.</p>	<p>cultural understanding and curiosity. We decided the way to fill the gap is by a better post algorithm. By evaluating the existing algorithm, we determined that we do not necessarily need a completely novel solution. However, the current algorithm can be used but changed and improved to serve our goal. From there, we were able to define a clear and concise group question: "How might we redesign Facebook's suggested post algorithm to foster cultural curiosity among users?". That being said, we will fill the gap by suitably modifying the current Facebook algorithm, as explained in the HC #algorithm section in the Appendix. Filling the gap will promote better cross-cultural curiosity and communication.</p>
#biasmitigation (EA)	We used bias mitigation to strategize for the design of our algorithm.	<p>This was an important to consider in our CCP because it established a strong foundation to build our algorithm on. Cultural curiosity is closely linked to the idea of bias. When one is acting defensive or aggressive, it is often because of an existing bias against difference or otherness. To foster cultural curiosity, we knew we had to undo this bias. By understanding the mental processes that helped break biases, we could try to work these into the user's existing habits through our algorithm.</p>	<p>An effective application of this constitutes an explanation of the bias mitigation strategies, why they work, and how they could be implemented. In this paper, we look at two bias mitigation strategies: considering the opposite and considering the alternative. While these are similar, the importance of the difference between these two is carefully explained: considering the opposite exposes one to more drastically different opinions, and risks pushing one further into their own bias. Then, this distinction is used to aid in the development of our new algorithmic design. Not only do we show an understanding of how these mechanisms work, but how we can encourage the use of these mechanisms to undo the intrinsic bias against difference held by users.</p>
#analogies (EA)	An analogy between	To benefit from the	Despite superficial differences

	<p>spider web and the internet is created after the introduction to introduce Facebook as a major digital platform and its user-content categorization.</p>	<p>Facebook post algorithm to promote mutual and cultural awareness we needed to evaluate the current content categorization of user data on facebook. Using this analogy, we were able to visualize how certain variables like political inclination or geographical background are used to categorize users and groups on Facebook. This will help visualize information share and interactions across Facebook users based on shared interests or similarities, thus relevant to our explanatory challenge.</p>	<p>between spider webs and the internet, similarities were recognized in their complex intertwined structure. Deconstructing the web into longitudes and latitudes, content categorization of user data was visualized based on variables such as political inclination or geographical positioning (longitudes) and Facebook users in the form of latitudes. User data was identified to be stored in intersection points for relevant variables. The network was expanded based on the increasing diameter of the web as it moved outward from the center resulting in groups of more than one user. The importance of this visualization of user content categorization on Facebook was signified as it allows for seamless share of information across multiple user based on shared interests or similarities across variables of the Facebook algorithm (longitude) resulting in seeing post suggestions from people one might not be Facebook friends with, thus relevant to our explanatory challenge.</p>
#algorithms (FA)	<p>ThisHC was applied in the analysis of the Facebook post-suggestion algorithm part and then later on as we propose relevant parameters for fostering cross-cultural understanding by similarity ratio.</p>	<p>Evaluating the digital interactions and how the Facebook platform curates interactive user experience requires evaluating Facebooks' current post-suggestion algorithm to see what variables are currently involved in what goes behind the suggested posts a user might see on their feed. Finally, after such evaluation, to maintain a balance between breaking recursive echo chambers</p>	<p>Facebooks' post suggestion algorithm is evaluated and some variables it takes into consideration to track user data are identified to be related topics, related content, geographical positioning and keywords. Working of the algorithm in taking these variables into consideration and suggesting posts on users' news feeds is elaborated by specific examples like users interacting with keywords "Michael Jackson" or posts from the same page such as Minerva University, have similar further suggestions from the same Minerva page or posts including the relevant keyword. This understanding of Facebook's existing</p>

		<p>and preserving personal identity, we propose two parameters; similarity ratio and similarity index for the post-suggestion algorithm, resulting in better acceptance towards a diverse range of different beliefs and cultures represented on Facebook. Thus, signifying the importance of a detailed algorithmic analysis for our explanatory challenge.</p>	<p>algorithm and our goal of cultural curiosity helped ideate ways to bridge these two concepts to highlight suggested amendments and how they may be implemented algorithmically. This leads on to the proposal of two new parameters being similarity index and similarity ratio. The similarity index evaluates similarity of individual posts, e.g. moderately high similarity due to mutual follower and similar topic. Similarly, the similarity ratio moderates the entire feed composition at the macro level. Finally, the setting of these parameters is tested by a sequential step by step procedural genetic algorithm which randomly assigns the parameters, tests on 30 posts and ranks based on retention and comments, described as metrics for user engagement. This loop is used to assign values to the two similarity parameters efficiently. Finally, justification is provided for using the middle 20 posts and discarding top and last 5 based on being highly polarizing and controversial or too boring for user engagement with the post. This provides a more balance to the post-sorting algorithm in the hope to foster more cultural curiosity online, relevant to our explanatory challenge.</p>
#interpretivelens (MC)	<p>Throughout the paper, we look at how people's past experiences make it harder for them to be open to new ideas. Additionally, in the end, we look at how current social media platforms are enforcing a new interpretive lens about what news feeds should look like.</p>	<p>Although we had the of #biasmitigation, we decided that it was important to include this HC as well. Considering interpretive lenses helped us focus on exactly what it was that was impacting the user's perspectives. Without this, we would have been working under a limited assumption that there simply <i>was</i> a bias</p>	<p>This requires an explanation of how past experiences influence our understanding of present events. We had an effective application of this because we looked at how one's cultural norms and experiences online influence their reception to new posts. We explained how suddenly encountering new ideas without being accustomed to considering multiple truths can be shocking and push people to defensive, instead of curious, reactions.</p>

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References

- Airoidi, M., Beraldo, D., & Gandini, A. (2016). Follow the algorithm: An exploratory investigation of Music on YouTube. *Poetics*, 57, 1–13.
<https://doi.org/10.1016/j.poetic.2016.05.001>
- Bail, C. A., Argyle, L. P., Brown, T. W., Bumpus, J. P., Chen, H., Hunzaker, M. B. F., Lee, J., Mann, M., Merhout, F., & Volfovsky, A. (2018). Exposure to opposing views on social media can increase political polarization. *Proceedings of the National Academy of Sciences of the United States of America*, 115(37), 9216–9221.
<https://www.jstor.org/stable/26531294>
- Carneiro, D., Gomes, M., Costa, Â., Novais, P., & Neves, J. (2017). Enriching conflict resolution environments with the provision of context information. *Expert Systems*, 34(5), n/a-N.PAG. <https://doi.org/10.1111/exsy.12049>
- Coleman, P. T. (2000). Fostering Ripeness in Seemingly Intractable Conflict: An Experimental Study. *International Journal of Conflict Management*, 11(4), 300.
<https://doi.org/10.1108/eb022843>
- Davidson, J., & Wood, C. (2004). A Conflict Resolution Model. *Theory Into Practice*, 43(1), 6–13. https://doi.org/10.1207/s15430421tip4301_2
- De Kosnik, A. (2019). #CancelColbert: Popular Outrage, Divo Citizenship, and Digital Political Performativity. In A. De Kosnik & K. P. Feldman (Eds.), *#identity: Hashtagging Race, Gender, Sexuality, and Nation* (pp. 203–217). University of Michigan Press.
<http://www.jstor.org/stable/j.ctvndv9md.16>

- Khazraie, M., & Talebzadeh, H. (2020). “Wikipedia does NOT tolerate your babbling!”: Impoliteness-induced conflict (resolution) in a polygonal collaborative online community of practice. *Journal of Pragmatics*, 163, 46–65.
<https://doi.org/10.1016/j.pragma.2020.03.009>
- Marder, B., Joinson, A., Shankar, A., & Houghton, D. (2016). The extended “chilling” effect of Facebook: The cold reality of ubiquitous social networking. *Computers in Human Behavior*, 60, 582–592. <https://doi.org/10.1016/j.chb.2016.02.097>
- Meta Business Help Center. (2022). Suggested Posts on Facebook Feed. Meta.
<https://www.facebook.com/business/help/1082519118875784>
- Oglesby, N. D. (2021, November 15). *Facebook and the true meaning of 'meta'*. BBC Future. Retrieved April 22, 2022, from
<https://www.bbc.com/future/article/20211112-facebook-and-the-true-meaning-of-meta>
- Olson, G. (2020). Love and Hate Online: Affective Politics in the Era of Trump. In S. Polak & D. Trottier (Eds.), *Violence and Trolling on Social Media: History, Affect, and Effects of Online Vitriol* (pp. 153–178). Amsterdam University Press.
<https://doi.org/10.2307/j.ctv1b0fvrn.11>
- Pruitt, D.G., & Olczak, P. (1995). Beyond hope: Approaches to resolving seemingly intractable conflict.
- Raza, A., Usman, M., & Ali, M. (2022). Examining how and when Facebook intensive use shapes users’ online pro-social behaviors. *Telematics and Informatics*, 67, 101753.
<https://doi.org/10.1016/j.tele.2021.101753>
- Romano, A. (2016, April 13). The Guardian analyzed 75 million internet comments. What it found explains an entire culture war. *Vox*; *Vox*.

<https://www.vox.com/2016/4/13/11414608/guardian-comments-analysis-online-harassment>

Schneider, J., & Von der Emde, S. (2005). Conflicts in cyberspace: From communication breakdown to intercultural dialogue in online collaborations.

Scholarspace.manoa.hawaii.edu, 2005, 178–206.

<https://scholarspace.manoa.hawaii.edu/handle/10125/69624>

Thomas, K. W., & Kilmann, R. H. (n.d.). Thomas-Kilmann Conflict Mode Instrument.

PsycTESTS Dataset. <https://doi.org/10.1037/t02326-000>

Watson, N. T., Rogers, K. S., Watson, K. L., & Liao, H. Y. C. (2019). Integrating social justice-based conflict resolution into higher education settings: Faculty, staff, and student professional development through mediation training. *Conflict Resolution Quarterly*, 36(3), 251–262. <https://doi.org/10.1002/crq.21233>

Woodward, W. (2016, January 12). *Why Personality Matters in the Workplace*. FOXBusiness.

<https://www.foxbusiness.com/features/why-personality-matters-in-the-workplace>