

Systematic Review of Radicalization through Social Media

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ABSTRACT

The purpose of this study is to synthesize the literature relating to radicalization on social media, a space with enhanced concerns about nurturing propaganda and conspiracies for violent extremism. Through the systematic review of 82 peer-reviewed studies related to radicalization through social media published in scholarly journals, this paper evidence the growth of robust studies on the usage of social media for radicalization. Nonetheless, the current work hardly discusses radicalization issues through social media and reveals an increasing trend of publication from 2017 with a major contribution from the USA, Germany, and England. The thematic analysis indicated determinants of radicalization and the mitigation measures for the deradicalization of content on social media. However, the knowledge gap persists to understand the effects of radicalization in the different regional settings and further framing of content specific to target populations. Individuals must have critical social media literacy to counteract the rising radicalization through social media. Individual users' political interests are key factors in their radicalization such as citizens losing faith in the government and political parties. Active rather than passive searchers of violent radical material are more likely to engage in political violence. The results indicate that further research using experimental design, grounded theory, and pilot interventions may be relevant to suggest a solution to mitigate radicalization on social media.

Keywords: Social Media, Radicalization, Deradicalization, Violent Extremism.

JEL Classification Codes: D72, D74

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INTRODUCTION

Social conflicts emerge when people are persuaded by different groups of diverse opinions and are trapped in the violent narratives of endorsing an opinion as the right one (Morselli et al., 2020). Social media platforms have offered platforms where people of diverse backgrounds and worldviews can share their opinions in an open and unstructured way, which has revolutionized the channels for extremist groups to radicalize the masses (Gallacher et al., 2021; Ul Rehman et al., 2021). There are various studies in recent times trying to identify extremist content online, particularly on social media platforms, to spread hate speech and radicalize the masses for perpetuating violence (Marcks & Pawelz, 2020; Gallacher et al., 2021). But Marcks & Pawelz (2020) found little effort toward the identification of violent drivers. They found far-right ideologies such as anti-immigration rhetoric as dominant techniques to radically frame their content on social media to normalize the violence against the self-perceived threats of their identity and nationalism.

Since moral intuitions are central to defining human behavior, extremist groups target people's moral intuitions to propagate their ideologies for radicalization and violent extremism (Hopp et al., 2021). ISIS used violent narrative stories appealing to the emotions and desires of potential supporters and recruits to connect with their moral institutions for the justification of violence to impose extreme ideologies (Kruglova et al., 2020). The group heavily utilized visual stories through social media platforms to promote their violent narratives and propagate recruitment.

Fake news and disinformation floating around social media platforms mislead the public, especially youth, to influence the public narratives, manipulate their behaviors, and urge them to support certain political ideologies while opposing others (Akram et al., 2022). Young people, especially between the ages of 15 to 24, are highly vulnerable to being radicalized amidst their higher chances of exposure to hateful and extremist content online (Costello et al., 2020). Schmuck & Tribastone (2020) exposed 143 young Muslims, aged 18 to 37 years, to anti-Islamic right-wing populist social media content,

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and found increased perceived discrimination among them. They further found the young Muslims' non-violent collective action to improve their social status with democratic approaches. The counter-violent extremism efforts are shifting from on the ground to online as the extremists have been increasingly using social media spaces to propagate their ideologies to radicalize the masses (Aziz & Beydoun, 2020). Social media helps the continuity of connection among protesters even after the protest cycle ends which were mobilized and coordinated through social media (Lee et al., 2020). YouTube is the most common and major social media platform among far-right learning users whose viewership peaked in 2017 when Donald Trump started his tenure as U.S. President (Munger & Phillips, 2020).

Though there has been a significant amount of research on radicalization and its different aspects, there is still a lack of consensus on the standardized definition of radicalization (Neumann, 2013). Doosje et al. (2016) view radicalization as a "process through which people become increasingly motivated to use violent means against members of an out-group or symbolic targets to achieve behavioral change and political goals". McCauley & Moskaleiko (2008) identified three levels of radicalization leading toward violence. Radicalization at the individual level results from personal victimization, political grievance, and joining a radical group; radicalization at the group level occurs when extremity shifts in a like-minded group, extreme cohesion happens under isolation or threat, competition for power; and mass radicalization results from conflict with an outgroup as jujitsu politics, hate, and martyrdom. The radicalization process involves behavior (action) and action (aims and perceptions) which do not necessarily depend on each other and do not always result in violent acts but push individuals on the margins of violence (Porta & LaFree (2012). Social media has become an effective tool to radicalize people with a promise of friendship, acceptance, and social networks as users often do not realize when they landed on a radical conversation on their social media feed. For example, Al-Qaida and its affiliates heavily rely on social media to manipulate the grievances of (Muslim) youth and radicalize them for violent extremism under the cover of giving a purpose to their life (Thompson, 2011).

Growing research has been conducted on social media. However, there has been little effort put into compiling the results of radicalization research related to social media platforms. There is a lack of a systematic literature evaluation to describe what is already available or what might be addressed in the future to overcome

the challenges of radicalization on social media. By undertaking rigorous descriptive and thematic analysis to emphasize how many facets of radicalization on social media have been researched and discussed over time, this research aims to complement earlier studies and synthesizes their findings. The motivation of this research is to encourage scholarly work with its possible extension to enhance understanding of radicalization, suggest models for deradicalization, and ways for monitoring, reporting, and preventing radicalization. Using an informetric analysis and bibliometric approach, this study summarized numerous ways for countering radicalization on social media as recommended by authors in the published studies. The purpose of the study is to review a wide range of topics from the perspective of social psychology, political psychology, religion, and related disciplines, where social media has been misused as a hub of radicalization by individuals or groups pursuing to expand their propaganda and ideologies.

The structure of this study is as follows: first, radicalization is defined in terms of social media context; second, research methods opt for this study elaborates with bibliometric analysis technique; third, bibliometric analysis and discussion presents key findings from the synthesis of literature; lastly, trends in research are mentioned, and gaps for future research have been explored.

Theoretical Support for Radicalization Through Social Media

Theory may be used to point the way for delving into difficult issues. In terms of evaluating the concept of radicalization, theoretical support is established from social movement theory which is among the most viable theoretical frameworks for explaining radicalization approaches and violent extremism (Gunning, 2009). A *social movement is defined by McCarthy and Zald (1977) that "A set of opinions and beliefs in a population, which represents preferences for changing some elements of the social structure and/or reward distribution of a society."* The notion is that the movements developed as a result of irrational collective behavior occurring under stressful environmental conditions. Individuals would "join" a movement as a result of their passive submission to these enormous societal pressures. Members of the movement act as "reasonable prospectors" while looking to attract others (Brady, 1999). Movements diagnose issues and assign blame, propose remedies, methods, and tactics (prognostic framing), and provide motivating frames to persuade potential members to become involved (Dalgaard-Nielsen, 2008). In addition to that, some

other integrated theories were used to deal with violent radicalization and extremism such as *General Aggression Model* (DeWall et al., 2011) and *Situational Action Theory* (Wikstrom et al., 2012). These theories can also moderately explain radicalization through moral attitudes, individual propensities, situational influences, and self-control. Hence, there is a need to develop a strong rationale for the formation of the theory of radicalization keeping because of multiple aspects.

Radicalization is *defined* as changes in belief, attitudes, and behavior toward the extremist, requiring violence and sacrifice (McCauley & Moskalenko, 2008). Online radicalization is not the same as online propaganda. Online propaganda spreads disinformation, whereas online radicalization misleads individuals by using their political or religious views (US Department of Justice, 2018). There is no commonly accepted theory of radicalization due to the multiplicity of occurrences and the many disciplinary backgrounds of scholars. Whereas group participation has a strong impact that depicts examples of so-called “self-radicalization” (Meloy & Genzman, 2016). Although several terms of radicalization have been postulated, the processes that may start with ideological interest and progress through group membership to violent action are neither predictable nor consistent (Jensen et al., 2016; Borum, 2011). Social learning, deprivation experience, intolerance of ambiguity, group dynamics, social bonding, identity development, and mental health concerns appear to be particularly significant from a psychological standpoint.

METHODS AND MATERIALS

The purpose of this study is to synthesize the literature related to radicalization through social media. It discusses the link between social media platforms such as Facebook, Twitter, and YouTube, with radicalization and violent extremism. The systematic literature review approach supports developing themes, trends, and feebleness to identify gaps and further research areas (Petticrew & Roberts, 2008; Wright et al., 2007). This approach is widely considered in various fields for the systematic review of the literature (Clark & Creswell, 2015). The systematic literature review was conducted using the “Preferred Reporting Items for Systematic Reviews and Meta-Analyses” (PRISMA) (Moher et al., 2009). It supports finding, selecting, and evaluating relevant research on the researched topic and developing the problem’s solution using the PRISMA technique as mentioned in Figure 1.

In the first step, scholarly journals were identified using the Web of Science (WoS) Core Collection Database. The rationale for selecting the WoS database is based on two reasons. First, it has a broad international scope of the bibliography. It grew to be the most prominent bibliographic data source for journal selection, research appraisal, bibliometric analysis, and other activities throughout time (Li et al., 2018; Pranckutė, 2021). For more than 40 years, WoS was the first source of bibliographic records until Elsevier introduced Scopus in 2004 (Baas et al., 2020). Secondly, WoS is a selective and multidisciplinary database comprised of several organized and specialized indexes in terms of subject matters for research. Hence, the key component of WoS is based on the core collections (Pranckutė, 2021).

Social media platforms have become a source of news and information (Rhodes & Akram, 2022). An advanced search tool was used to identify the research studies by using search terms “social media with inclusion of Twitter, Facebook, Instagram and YouTube” with “radicalization”. The search terms filter was set to title and abstract with three indexes namely “Science Citation Index Expanded”, “Social Sciences Citation Index”, and “Arts and Humanities Citation Index” from 2005 to May 2021. We chose to start from 2005 as Facebook was launched a year before (2004) and Twitter has launched a year after (2006), the two platforms most widely being used for news stories and being misused for influencing the narratives. Inclusion criteria were set to peer-reviewed articles published in the English language.

In the second step, 82 research studies were identified from the database. All the studies were reviewed thoroughly to evaluate whether they meet the inclusion and exclusion criteria (Table 1). Hence, no study was excluded as all 82 articles met the inclusion criteria for the systematic review of radicalization on social media.

In the third step, informatic analysis with bibliometric techniques was performed on selected articles using VOSviewer software version 1.6.16 (www.vosviewer.com) (Van Eck & Waltman, 2010). Authorship, geographical affiliation, time, sources, and institutions are all included in the bibliometric analysis of selected studies. It includes the scientific mapping and display of datasets that have been extracted for a systematic review (Van Eck & Waltman, 2010). Three types of bibliometric analyses were performed: a) co-citation of cited sources, b) co-occurrence of keywords and c) citation of countries. A similar approach to bibliometric analysis has been applied

Table 1. Inclusion and Exclusion Criteria

No.	Included	Excluded
1	Articles published in peer-reviewed journals from indexes: Science Citation Index Expanded, "Social Sciences Citation Index" and "Arts and Humanities Citation Index"	Non-peer-reviewed articles, Conference proceedings, magazines, news reports, dissertations
2	Articles with a focus domain on radicalization and social media	Articles with focus on radicalization but skip segment of social media
3	Articles discuss radicalization through popular social media platforms namely: Facebook, Twitter, Instagram, and YouTube.	Articles with a focus on radicalization and print media
4	Articles in English	Articles in other languages (Chinese, Spanish, etc.)
5	Articles in the field of "Arts and Humanities, Social Science and Technology"	Articles belong to Arts fields such as "Music, Medical, Language, and History"

in the studies using systemic review methodology (Wang et al., 2019; Naeem et al., 2020; Borges-Tiago et al., 2020). In addition, thematic analysis was conducted using qualitative analysis and data management software NVivo version 12.

In the fourth step, the results were extracted and presented in the discussion section. Critical social media literacy was compared to understand the differences in content acceptability, voice multiplication, radicalization dissemination tendencies, and denial or acceptance arguments. A thorough content analysis was carried out. Later, recommendations are offered to improve people's critical social media literacy to combat radicalization content on social media. It also includes potential research topics for the future which include, but are not limited to, radical framing of content on social media, cognitive inability to let propagandas and conspiracies influence perceptions of social media users, factors of sociopolitical psychology nurturing the radical attitudes offline, and search for common grounds to protect freedoms of expression while countering hateful and radical content online.

Relevance of Bibliometric Analysis

Researchers can use bibliometric reviews to acquire insight into a particular field of study. The research interactions in the specific topic may also be quantified using bibliometric analysis. As a result, this bibliometric review will provide quantitative insights to scholars in the field of radicalization through social media. Gaikwad et al. (2020) have considered the bibliometric analysis of online extremism research. The authors investigated

the trends of publications on the issue of radicalization through social media using Clarivate Analytics as a main source of data. The authors assert and conclude that radicalization is not yet a distinct field of inquiry. However, it could be aligned with social media as this is the main medium of interaction among people. Keeping this in view, the bibliometric review mainly focuses on computational techniques for analyzing radicalization through social media. Social media has grown in importance as a weapon for spreading radicalization and violent extremism as a result of its ever-increasing use. The computational classification approach to deal with radicalization through social media is growing as a field of research that requires attention to properly assess, identify, and reduce the adverse impacts.

BIBLIOMETRIC ANALYSIS

Lee & Su (2010) stated that keywords depict the basic content of the research papers and describe knowledge areas within a specific domain. Given this methodology, 82 selected articles were imported into the VOSviewer software using .txt format to produce a keywords network. It shows a precise picture that elaborates on patterns and connections of words with each other (Van Eck & Waltman, 2014). Web of Science provides two types of keywords: one is mentioned by authors in the article and others are keyword plus that is extracted from the title and abstract of the articles. According to Lee & Su (2010), keyword plus indicates new themes with a co-occurrence network. To examine published papers, normalization using fractional counting was used as per the recommendation of Van Eck & Waltman

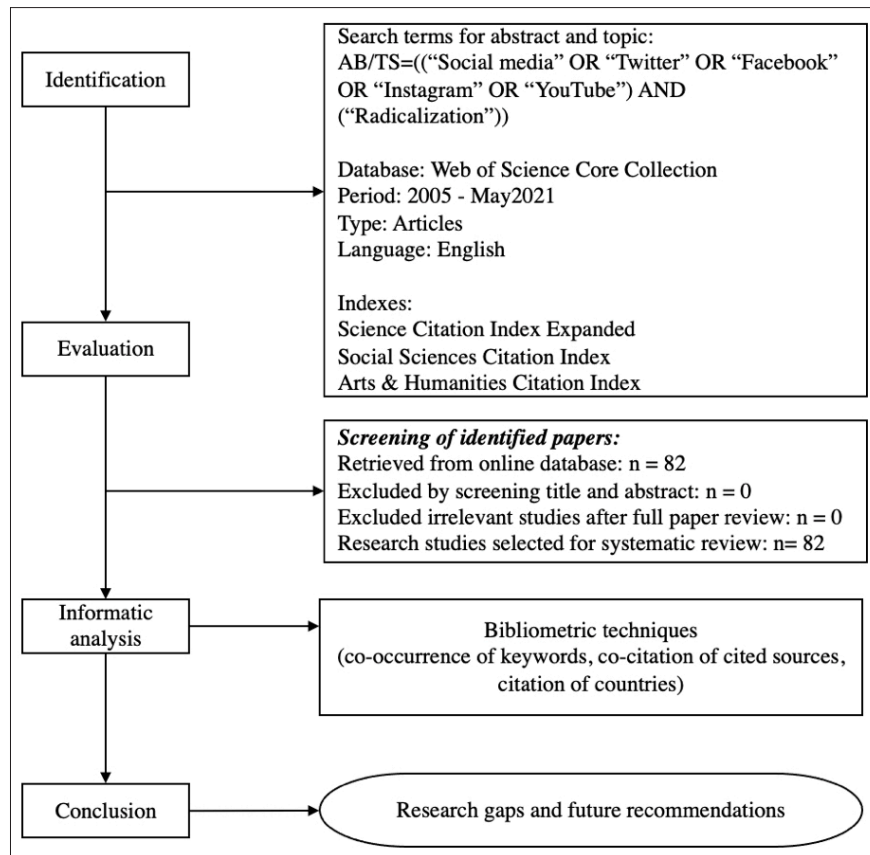


Figure 1. PRISMA chart for Systematic Review

Table 2. Occurrence of Keywords

No.	Keyword	Occurrences	Total link strength
1	Radicalization	39	78
2	Social media	19	47
3	Internet	13	39
4	Terrorism	16	38
5	Media	15	28
6	Extremism	12	27
7	Collective action	5	16
8	Islamic State	6	16
9	ISIS	5	15
10	Twitter	6	14

(2014). VOSviewer software supports to creation co-occurrence map that depends on the bibliographic data. Considering the inherent limitation of mapping tools, the co-occurrence of keywords was run through the Web of Science .txt file only. The occurrence of keywords and the total link strength are shown in Table 1. As the output is in the form of a cluster diagram, it shows the distance between nodes as a function of their proximity.

Moreover, font size presents the level of concentration on the particular domain (Van Eck & Waltman, 2014).

To generate a map, the requirement for co-occurrence keywords was set for a minimum of two times, resulting in 89 keywords appearing within eight clusters that met the minimal level. The criterion selection has a big impact on the results. The lesser amount would result in several meaningless keywords. The larger the number, the fewer the keywords, making analysis more difficult.

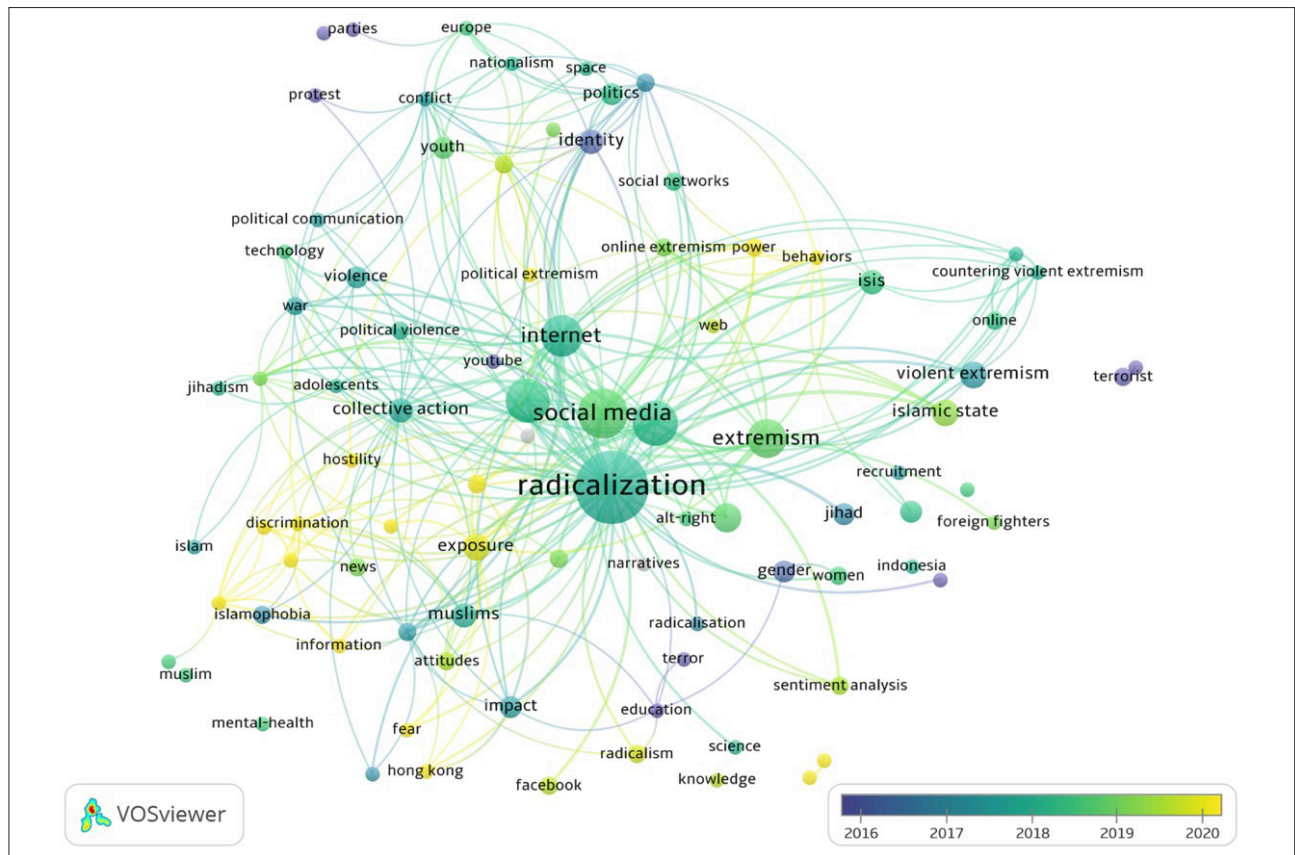


Figure 2. Co-occurrence network of all keywords

Figure 2 shows the bibliometric mapping from 2016 to 2020 based on all term co-occurrences and a temporal scale. When scores were determined on average normalized citations, the network depiction was based on the strength of links. The word font size denotes the number of times a keyword appears; the higher the size, the more influential the phrases are. The most recurring keywords were “radicalization” followed by “social media”, “internet”, “extremism”, “collective action”, “violence” and “Islamophobia”. It indicates a clear connection between radicalization through social media. As most of the studies pointed out the issue of religion (Gagnon, 2019; Baugut & Neumann, 2020a), politics (Baumann et al., 2020), extremism (Davies, 2014; Cohen, 2016), and social media protest (Lee et al., 2020). Conspiracy theories and propaganda increasingly use social media to radicalize people by influencing their perceptions, attitudes, and abilities.

Figure 3 reflects the stronger association of radicalization towards the keywords of “terrorism” and “social media”, followed by “extremism”. It denotes that the radicalization resulting from social media content or activity may lead to acts of extremism and terrorism. The other factors pouring into the radicalization through social media are identity crisis, sense of community

or belonging, islamophobia, and propaganda. The keywords of exposure, attitudes, and sentiments reflect the psychological aspects of radicalization through social media activity and content.

Figure 4 shows citation analysis by giving a weighted degree of cited documents. The full counting was used in creating a bibliographic map with a minimum of one citation and 64 met the thresholds. The thickness of links reflects the level of linkage among articles, while the size of nodes denotes a highly cited item. The various color intensities depict the strength of relationships based on multiple citations. It indicates citations from 2016 to 2020 with significant growth in research from 2018 on radicalization-related issues through social media.

Figure 5 shows a country analysis based on author affiliation and the location of research produced on radicalization and social media. This data is gathered to direct scholars, policymakers, solution providers, and seekers to address the issues on different platforms. Van Eck & Waltman (2014) advocate creating a bibliometric map and displaying the link strength to achieve this. The big node and font indicate that countries have contributed more research on radicalization and social media. The USA appears to be the most influential node

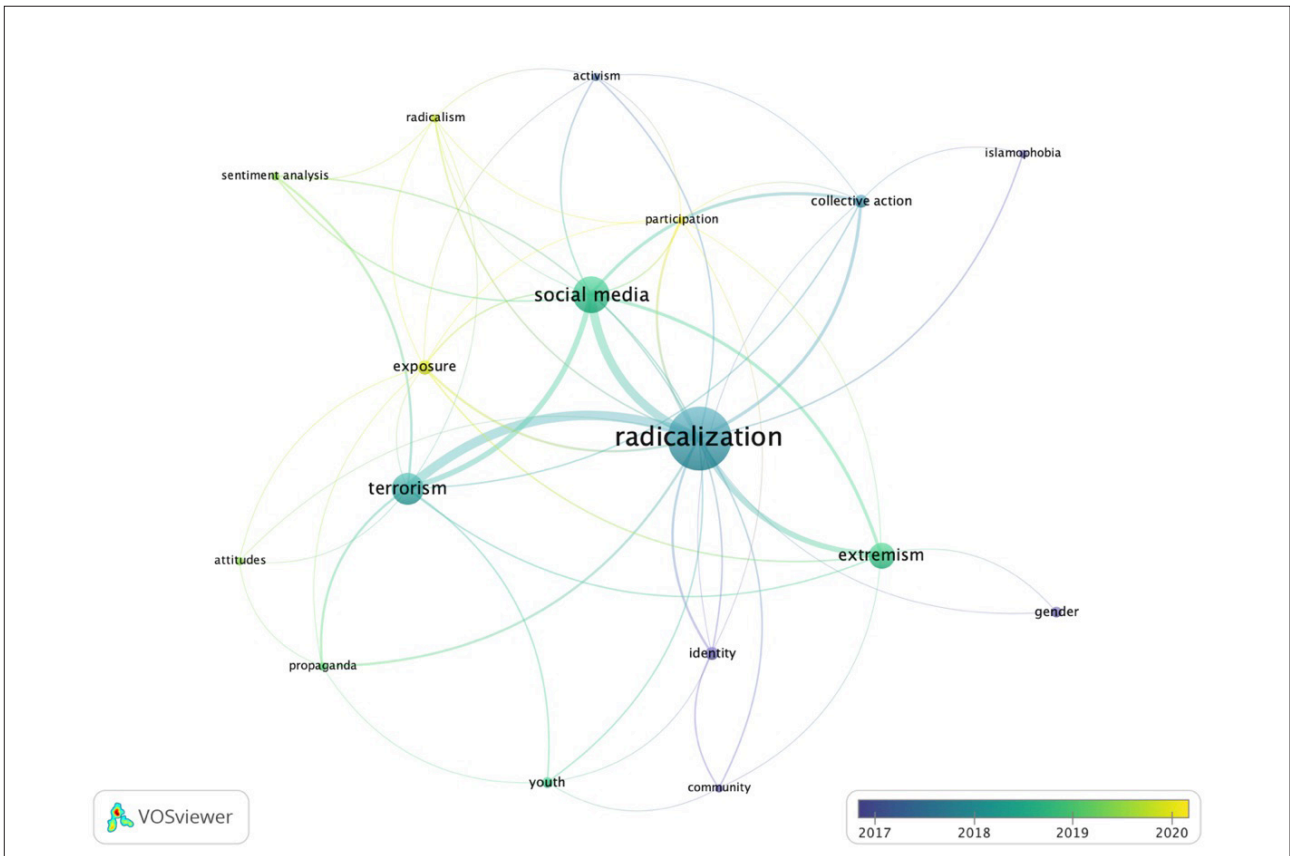


Figure 3. Co-occurrence network of keywords specific to social sciences

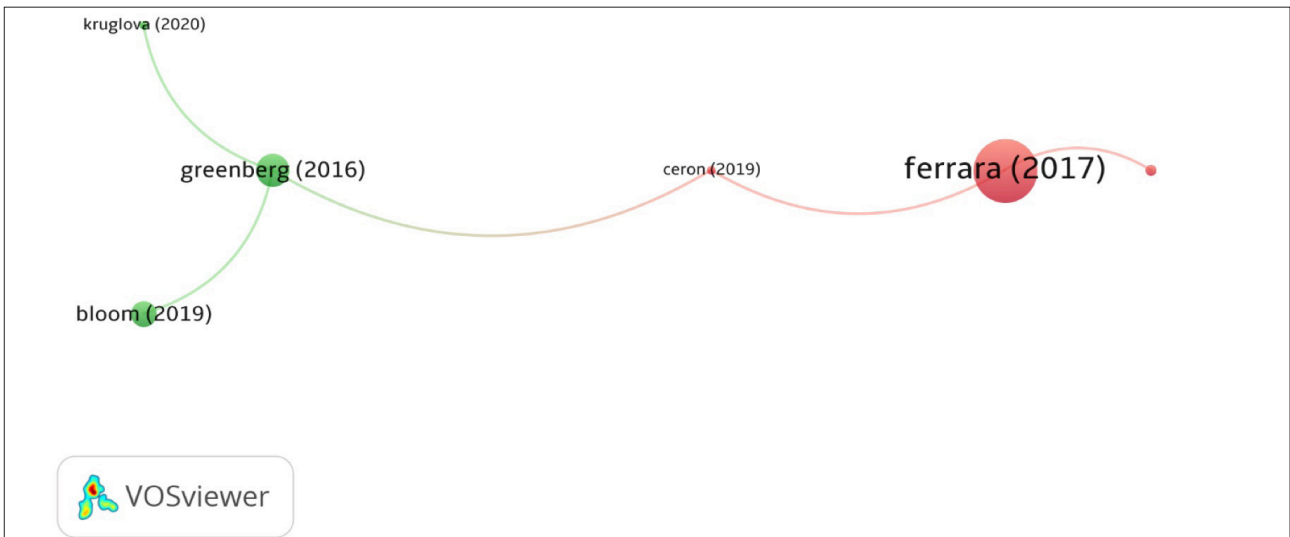


Figure 4. Co-citation analysis

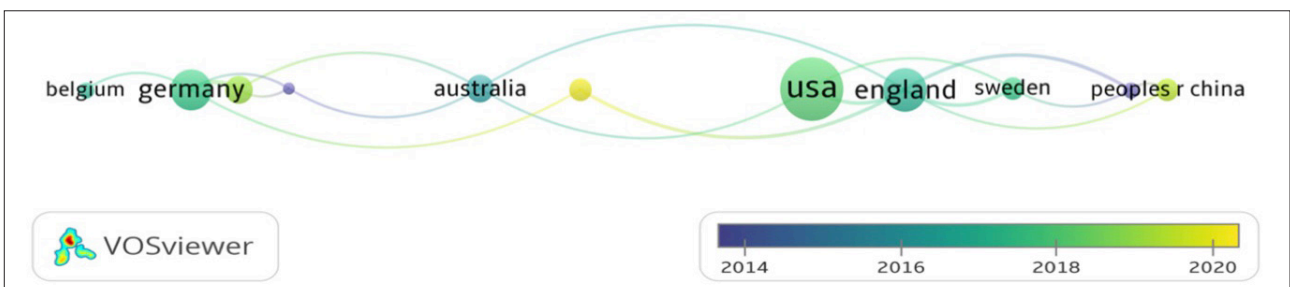


Figure 5. Country analysis subject to authors association and research produced

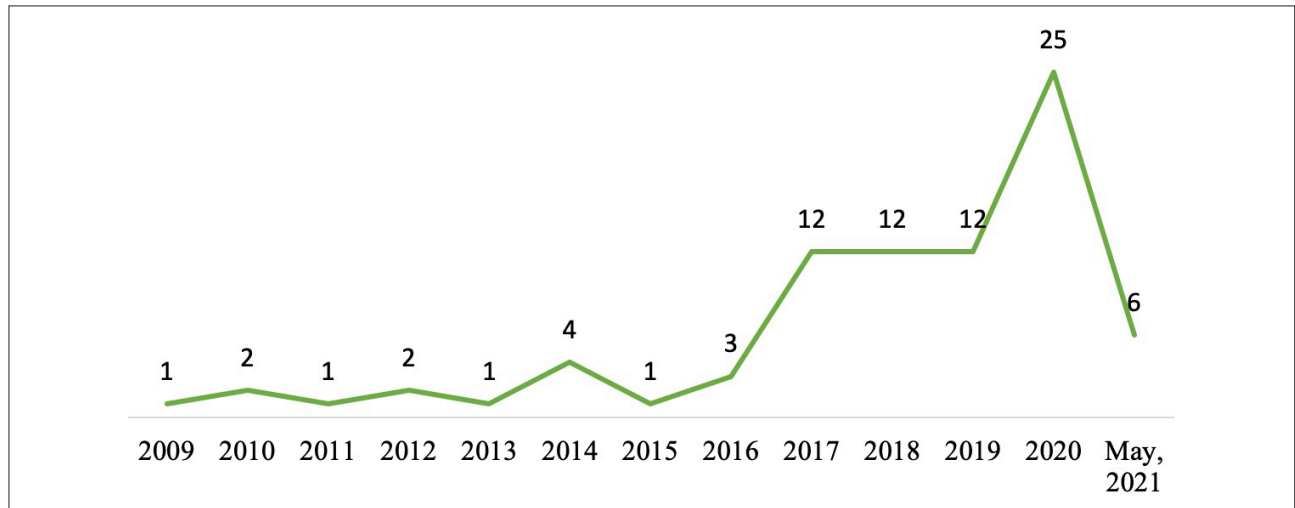


Figure 6. The yearly trend of published articles

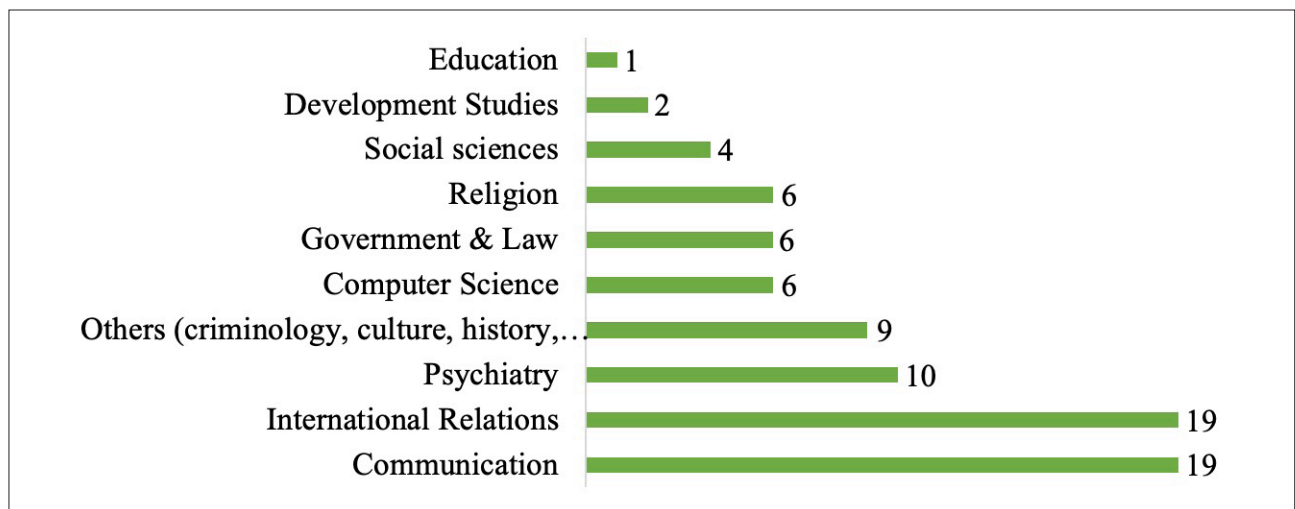


Figure 7. Article published as per WoS categories

with its more significant role in advancing radicalization research. A strong link occurred between the USA and England, Australia, Germany, and Sweden for collaboration on radicalization research.

Figure 6 depicts the yearly publication trend in radicalization on social media from 2009 to May 2021. However, a database search was performed from 2005 to May 2021. From 2017 onwards, it shows increasing trends. However, research on radicalization still needs to be investigated from multiple aspects. Figure 6 depicts articles published as per Web of Science categories. Most of the articles are related to the communication and international relation field. Table 2 depicts a list of the top 10 journals where most of the articles were published, *Terrorism and Political Violence* journal comes first. Table 3 shows a list of the top 10 most cited articles, Githens-Mazer & Lambert (2010) secured 61 citations as per the

WoS database. Table 4 shows a sample of 15 articles out of 82 published on radicalization on social media. The articles with a major focus on radicalization were selected purposefully.

The radicalization through social media platforms received the increasing focus of research from 2017 when many political incidents in the global spectrum were associated with social media. Examples of such incidents include the usage of Facebook to spread hatred against Rohingya Muslims in Myanmar which led to their genocide (Stevenson, 2018), the change of the political landscape through social media amidst the Presidential elections in 2018 (Gualtieri, 2021), and increased use of social media such as WhatsApp to carry out the mob violence by cow vigilantes in India (Akram et al., 2021).

Table 3. List of top 10 journals where articles published

No.	Name of journals	Total papers published out of 82
1	Terrorism and Political Violence	7
2	Studies in Conflict & Terrorism	6
3	International Journal of Communication	4
4	Annals of the American Academy of Political and Social Science	2
5	Chinese Journal of Communication	2
6	Information Communication & Society	2
7	International Journal of Conflict and Violence	2
8	New Media & Society	2
9	Political Communication	2
10	Psychiatry Psychology and Law	2

Table 4. List of top 10 most cited articles

No.	Authors	Title of the article	Year	Citation by WoS	WoS categories	Journal
1	Githens-Mazer, J; Lambert, R	Why conventional wisdom on radicalization fails: the persistence of a failed discourse	2010	61	International Relations	International Affairs
2	Conway, M	Determining the role of the internet in violent extremism and terrorism: Six suggestions for progressing research	2017	52	International Relations; Government & Law	Studies in Conflict & Terrorism
3	Bondes, M; Schucher, G	Derailed emotions: The transformation of claims and targets during the Wenzhou online incident	2014	33	Communication; Sociology	Information Communication & Society
4	Porter, LE; Kebbell, MR	Radicalization in Australia: Examining Australia's convicted terrorists	2011	29	Criminology & Penology; Government & Law; Psychiatry; Psychology	Psychiatry Psychology and Law
5	Ferrara, E	Contagion dynamics of extremist propaganda in social networks	2017	27	Computer Science	Information Sciences
6	Zeitsoff, T	How social media is changing conflict	2017	21	International Relations; Government & Law	Journal of Conflict Resolution
7	Rudner, M	Electronic Jihad: The internet as Al Qaeda's catalyst for global terror	2017	21	International Relations; Government & Law	Studies in Conflict & Terrorism
8	Reynolds, SC; Hafez, MM	Social network analysis of German foreign fighters in Syria and Iraq	2019	18	International Relations; Government & Law	Terrorism and Political Violence
9	Post, JM	When hatred is bred in the bone: the social psychology of terrorism	2010	17	Neurosciences & Neurology; Psychiatry	Psychiatric and Neurologic Aspects of War
10	Bhui, K; Ibrahim, Y	Marketing the radical: Symbolic communication and persuasive technologies in jihadist websites	2013	16	Anthropology; Psychiatry	Transcultural Psychiatry

Table 5. Sample of 10 articles out of 82 and their key findings

No.	Authors	Title of the article	Year	Key Findings
1	Andersson, L	What's left of the radical left on-line? Absence of communication, political vision, and community in autonomist web milieus in Sweden	2018	This article argues to reevaluate the findings of the Swedish Media Council and establishes the case that propaganda and conspiracies on social media do have a role in youth radicalization.
2	Bastug, MF; Douai, A; Akca, D	Exploring the demand side of online radicalization: Evidence from the Canadian context	2020	It confirmed the role of social media to radicalize extremists who were already convicted of extremism in the Canadian courts.
3	Baugut, P; Neumann, K	Describing perceptions of media influence among radicalized individuals: The case of Jihadists and non-violent Islamists	2020a	Individuals get radicalized both by news media and social media, as the sense of deprivation and political alienation play a role in radicalization.
4	Ferrara, E	Contagion dynamics of extremist propaganda in social networks	2017	After analyzing the online activity of 25,000 social media users, this article investigated the dynamics of radicalization for ISIS support on social media.
5	Greenberg, KJ	Counter-radicalization via the internet	2016	Based on various ways the terrorist groups radicalize youth on social media, policies must focus on the internet to identify and counter such activity online.
6	Huttermann, J	Neighborhood effects on Jihadist radicalization in Germany? Some case-based remarks	2018	The living space and peers play a lead role to radicalize youth as such experiences significantly influence perceptions and worldviews.
7	Jones, E	The reception of broadcast terrorism: recruitment and radicalization	2017	Internet – broadly, and social media – specifically have become the tools of terrorist groups like ISIS to radicalize people even to give up their life for terrorist activity.
8	Mythen, G; Walklate, S; Peatfield, EJ	Assembling and deconstructing radicalization in PREVENT: A case of policy-based evidence-making?	2017	Religious ideology blended with political grievances adds up to the radicalization of violent extremism.
9	Pedersen, W; Vestel, V; Bakken, A	At risk for radicalization and jihadism? A population-based study of Norwegian adolescents	2018	Poor schooling and misconduct attitudes among teens build their liking of radicalization and political violence.
10	Ul Rehman, Z; Abbas, S; Khan, MA; Mustafa, G; Fayyaz, H; Hanif, M; Saeed, MA	Understanding the language of ISIS: An empirical approach to detect radical content on Twitter using machine learning	2021	After discussing the radicalization process on social media platforms, this article suggests an expanded list of terms to be labeled as radical content online.

DISCUSSION

It was found that the reviewed papers mainly discussed two major aspects of radicalization through social media: determinants of radicalism on social media, and mitigation measures to deradicalize the social media space. This systematic review has found that radicalization through social media spread due to psycho-political factors, personal experiences or aspirations, anti-social or rebellious attitudes or personalities, and freely available

radical content like games, videos, and images floating around social media.

Determinants of Radicalism on Social Media

Psychological Factors

Social media platforms have been massively used by extremist groups to influence individual cognitions to radicalize them by flooding extremist content online

(Ul Rehman et al., 2021). Such content on social media facilitates extremist groups to propagate extremist agendas, perpetuate psychological warfare, and recruit radicalized individuals for direct or indirect violence. Internet or social media addiction and fear of missing out on the feeds are psychological factors pushing users at higher risks of encountering radical content online and being persuaded to violence to justify their worldviews (Tang et al., 2020). Internet addiction causes depression which influences the individuals' cognition and creates space for radical political attitudes (Tang et al., 2020). Extended interaction with social media often brings negative psychological changes such as radicalization (Smith et al., 2020).

Since human beings seek a sense of belonging and connectedness, individuals with social exclusions or individuals at risk of being excluded are prone to radicalization (Renström et al., 2020). Such individuals tend to spend more time online which enhances the probability of encountering hate speech for radicalization. Identity formation and self-realization are processed at the adolescent age (Nienierza et al., 2019). Adolescent youth spend a significant amount of time on social media which potentially plays a role in their identity formation. There is limited evidence-based research on the frequency of adolescents encountering extremist content online, their ability to identify the extremist content online, and the intensity of their being radicalized. Nuraniyah (2018) has studied the factors urging women to join terrorist groups like ISIS and found that most of the women joined the group on their own. The factors urging women to join ISIS were grievances from family, society, and economic conditions which directed them to seek religious satisfaction. Since women with less social exposure spend more time on social media and ISIS was heavily using social media misusing religious notions for violent extremism, the women anticipated acceptance and empowerment for joining ISIS.

Political Factors

Windsor (2020) views that individual, social, and political dynamics facilitate the process of radicalization amidst computer-generated communication tools such as social media platforms. The usage and typology of language on social media or other online accounts reveal the process and steps of being radicalized if someone is engaged in extremism or terrorism activity. Costello et al. (2020) also confirmed more engagement with social media to advocate for political opinions online pose higher chances of exposure to hate speech and being

radicalized. Baugut & Neumann (2020b) found a direct influence of online propaganda and news media on the radicalization of Islamist prisoners and former Islamists in Austria and Germany. Their cognition was radicalized through propaganda blaming non-Muslims and Western politics as being responsible for Muslims' sufferings. Such online propaganda urged Islamists even to justify the use of violence.

Based on the analysis of publicly non-affiliate but jihad-advocating social media accounts, Boko et al. (2021) found that radicalization content on those accounts was derived from emotionally sensitive intense crisis constructs or simplistic solutions to personalized issues. Radicalization posts on those social media accounts were not trying to convince the readers but polarizing certain narratives. Islamic State used the natural, biological, and supernatural force metaphors to recruit women to serve as brides of their fighters (Jackson, 2019). Social media platforms like Twitter offers confrontation space to the politically opposite groups to promote extreme hostilities online which have significant chances of violent confrontation if such groups meet in-person (Klein, 2019). The 2017 Unite the Right rally in Charlottesville, Virginia, United States, is such an example.

Art and Games for Radicalization

There has been a significant increase in the usage of social media platforms to post hateful material, comment on violent speech, and even post videos to radicalize and propagate violent extremism (Sharif et al., 2019). Though the production of extremists and terrorists championing games have been declined since the 2000s, such production still has significant prevalence and social media has become a handy tool for wider circulation and youth engagement (Robinson & Whittaker, 2020). Grosholz & Pieri (2020) analyzed 337 white power songs from seven white power bands in the U.S. and found that such music mobilizes for extreme violence and vigilante justice considering threats from immigration, Jewish-controlled media, and liberalism. The authors recognize that extremism in the U.S. has not received much scholarly attention due to its dominant nature of nonviolence.

Defiance of Mainstream Structures

Modern terrorist groups heavily rely on the internet to spread their propaganda and recruitment purposes (Araque & Iglesias, 2020). Extremists use social media for various purposes ranging from propagating their extremist ideologies to recruitment (Ganesh & Bright,

2020). Such wide-ranging usage of social media by extremists depicts regulatory flaws for governments, civil society, and even the social media service providers such as Facebook and Twitter. The radicalized individuals live in a bubble that news media cannot influence but has a strong effect on the public including political governments and people serving in the judiciary (Baugut & Neumann, 2020b). Such perceptions often represent radicalization which results from their evidence-less allegations of the media being propaganda machines. The confrontation between opposition groups on online platforms like social media is directly associated with violence if those groups face each other in person (Gallacher et al., 2021). Due to the unstructured nature of communication on the internet including social media, the opposite groups with different narratives or political views have a higher probability of violent confrontation if they face each other in person. Unstructured communication plays a significant role in radicalization for violent extremism.

Trends in Online Radicalization

Though there have been an increase in counter-violent extremism (CVE) campaigns to curb threats of online propaganda and radicalization, there is limited evidence to measure the effectiveness of CVE online campaigns (Monaci, 2017). Law enforcement is also shifting to online spaces (Aziz & Beydoun, 2020). Since laws are not coping with rapidly changing trends and the utilization of social media platforms, their undefined policing of social media may restrict the freedom of expression, particularly for marginalized groups. The virtual extremist landscape has been changed from password protections and static portals to dynamic websites, videos, and on handy public social media platforms like Facebook and YouTube (Winter et al., 2020). Bloom et al. (2019) found the major role of Telegram in the recruitment of ISIS fighters and further coordination for terror attacks in Europe as Telegram has comparatively fewer measures established to monitor and down the content related to extremism and terrorism.

Radicalization Happens at 'Onlife Spaces'

Valentini et al. (2020) argue that radicalization happens in 'on-life spaces', because of an individual's online interactions with conspiracy theories or disinforming propaganda and offline experiences of viewing one's life. Social media algorithms track their users' offline activities to feed in relevant content, often unauthentic. When Reynolds & Hafez (2019) studied the reasons for Westerners joining civil conflicts like ISIS, they found

both the in-person and online factors in radicalization and mobilization for violent extremism. For Reynolds and Hafez, interpersonal ties and peer-to-peer networks were the major factors for German foreign fighters to join ISIS and social media also played a role in spreading the word. Ceron et al. (2019) identified that the geographic locations originating more content on social media in support of ISIS had more trends of foreign fighters joining ISIS.

Mitigation Measures for Deradicalization on Social Media

Understanding Radicalization Tactics Online

Bouko et al. (2021) argue for understanding the methods and tactics of extremists' communication on social media, in addition to what they communicate, which will help to identify the psychological traits of those being radicalized. Since individuals prefer to learn and adapt behaviors that they observe visually as an example, counter-violent extremism interventions need to focus on such visual strategies to influence radical narratives and perceptions (Grady et al., 2021). Robinson & Whittaker (2020) highlight the videogames, often available on different social media platforms, being used to propagate violent narratives. Such games build in the violent roles of players and assess to influence the persons' psychological traits for admiring and engaging in violence. Munger & Phillips (2020) urge us to understand the dynamics right-wing video game developers utilize in their production for like-minded consumers. The counter-narrative efforts could understand the victimhood factors of extremists which urge them to justify and engage in violent extremism (Marcks & Pawelz, 2020).

Detecting Radical Content on Social Media

Ul Rehman et al. (2021) identified four areas to identify or detect violent narratives on social media platforms. The development of a new dataset of the latest terms related to radicalization, cross-analysis of new and previous such datasets to cope with altered narratives of extremist groups, building the capacity of social media teams, and identifying the ways of radical or extremist words usage on social media. The regular update of keywords or search directories, including terms from religious texts, could help identify extremist content on social media in real-time which may help the authorities to respond with counter-extremism approaches employed per situation. Araque & Iglesias (2020) also urge for an updated dataset to detect the radicalization content on social media which targets the emotional and cognitive grounds of an individual.

Strategic communication with moderated or focused content may help not only to detect radical content online but the strategies of content delivery and engagement with the target audience can also be exposed and then countered (Ganesh & Bright, 2020). For example, the counter-extremism interventions may want to identify the online content blaming the mainstream media platforms as biased or propaganda machines as this notion is one of the justifications radical groups tend to invite people to follow their channels on social media (Baugut & Neumann, 2020a). Derbas et al. (2020) talked about SafApp, a technological tool that helps identify radical and extremism online particularly on social media platforms.

Adaptability to Counter Radicalization

Since radicalization results from extremist groups' integrated propagation through online radical content and offline interactions or communication, both spaces must be considered in counter-extremism interventions (Kumar, 2017; Valentini et al., 2020). Social media companies could embed the adaptable and latest technological systems to detect, track, and curb the spread of radicalization content on their platforms. The counter-terrorism or counter-extremism measures need to adopt focused strategies specific to the targeted audience such as women and youth (Nuraniyah, 2018). It requires understanding the content and strategies extremist groups employ to brainwash their audience for radicalization and violent extremism.

Due to the instant and significant increase in radical and extremist content online amidst intensified hate speech and conspiracies online, many countries have drafted and implemented laws to tackle radicalized content (Niemi et al., 2018). Since radical content and hate speech online have become a real threat to the countries' national security, some countries have adopted different educational programs to prepare their citizens to detect and deal with radical content online without being radicalized. Hence, national educational strategies and syllabi are needed to consider threats of radicalization and strategize their content and its delivery accordingly.

Utilizing Religion and Spirituality

Schmidt (2021) outlined the example of Nahdlatul Ulama in Indonesia which tend to challenge the radical interpretation of the Quran, and the identification of radicalization content on social media to act as an antidote against radicalism. Further, the counter-extremism strategies may consider the ethical notion

to devise their strategies, since extremist groups often try to radicalize individuals for violent extremism by targeting their religious and ethical values or behavior (Hopp et al., 2021). Cherblanc & Tremblay (2019) argued for the integration of spirituality in efforts of prevention or countering violent extremism into the public school system of Quebec, Canada. Since spirituality is the human trait being targeted by extremist groups to mobilize their support in public narratives, the positive side of the similar concept of spirituality can prevent school children from being radicalized but focus on development and just learning. Based on this review and discussion, the authors of this paper define radicalization through social media as "the activity process or content on social media deliberately influencing others' political, religious, or social views to establish, expand, or strengthen radical ideologies or groups online and in-person".

CONCLUSION

Concerns about the radicalization on social media have grown significantly as the number of internet user have increased rapidly. Social media platforms were launched to provide internet users with social networking experiences online. However, it is being misused for narrative building, conspiracies, and propaganda by political and religious groups. The synthesis of the literature indicated that political interests are crucial factors in the radicalization of individuals through social media platforms and radicalization increases when citizens lack trust in government and political parties. Such lack of trust is framed to name the mainstream media as agents of corrupt governments and groups which urge people to follow current affairs on social media platforms. Radical and extremist groups tend to fill in the online space of social networks with radical content aligned with trending stories or news to grab the public attention toward their end goal of radicalization for violent extremism. The increased interaction and time of users on social media platforms increase the chances of radical victimization. When people's life experiences of prejudice, inequality, oppression, or lack of opportunity are multiplied with hateful and radical content online, they tend to justify extreme and violent behaviors of being accepted in society. The extremists establish their narratives, proxies, and propaganda by spreading hoaxes and rumors about community-interest events or news.

This review paper will serve as a resource for academic scholars and practitioners with summarized findings extracted from the WoS core collection database. The figures and tables in the bibliometric analysis present the key themes and timelines of radicalization through social

media platforms which will guide the policymakers to identify the year radicalization took off spreading through social media and further themes or areas researchers focused upon. It will invite them to take policy actions. This article will also be a good resource for academic scholars working on radicalization issues through social media to cite it and further snowball to the additional resources through its rich list of references. This study is limited to the published articles indexed in one database, i.e., Web of Science, which may have not covered all the literature published on the issues of radicalization through social media. Though there could be more relevant literature, this study chose one database which directs the focus of this review to be more systematic. Furthermore, there can be some updates or changes in the search algorithm of the Web of Science in the future which may generate different results.

To combat the growing radicalization through social media, individuals must have critical social media literacy. This review raised certain questions such as, what factors enable radicalization on social media? What would be some effective countermeasures to prevent radicalization on social media? What personality traits allow the acceptance of radical content from social media? Given that, it opens new research avenues to explore and empirically measure factors causing radicalization on social media at the intersection of sociopolitical psychology. The results indicate that further research using experimental design, expanded coverage for case studies, context-specific grounded theories, and pilot intervention may be relevant to suggest a possible solution to mitigate radicalization through social media. Apart from understanding the process of radicalization through social media, there is a need for extensive research on techniques and methods the extremist or terrorist groups in different regions employ to gauge the attitudes and personalities of social media users as potential targets of their radicalization propaganda online.

Conflict of Interest

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REFERENCES

- Akram, M., Nasar, A., & Arshad-Ayaz, A. (2022). A bibliometric analysis of disinformation through social media. *Online Journal of Communication and Media Technologies, 12*(4), 1-17, e202242. <https://doi.org/10.30935/ojcm/12545>
- Akram, M., Nasar, A., & Safdar, M. R. (2021). Holy cow in India: A political discourse and social media analysis for restorative justice. *TRAMES Journal of Social Sciences, 25*(75/70), 2, 219–237. DOI: 10.3176/tr.2021.2.04.
- Andersson, L. (2018). What's left of the radical left online? Absence of communication, political vision, and community in autonomist web milieus in Sweden. *New Media & Society, 20*(1), 384-398.
- Araque, O., & Iglesias, C. A. (2020). An approach for radicalization detection based on emotion signals and semantic similarity. *IEEE Access, 8*, 17877-17891.
- Aziz, S. F., & Beydoun, K. A. (2020). Fear of a Black and Brown internet: Policing online activism. *BUL Rev., 100*, 1151.
- Bastug, M. F., Douai, A., & Akca, D. (2020). Exploring the "demand side" of online radicalization: Evidence from the Canadian context. *Studies in Conflict & Terrorism, 43*(7), 616-637.
- Baugut, P., & Neumann, K. (2020a). Describing perceptions of media influence among radicalized individuals: The case of jihadists and non-violent Islamists. *Political Communication, 37*(1), 65-87.
- Baugut, P., & Neumann, K. (2020b). Online news media and propaganda influence on radicalized individuals: Findings from interviews with Islamist prisoners and former Islamists. *New Media & Society, 22*(8), 1437-1461.
- Baumann, F., Lorenz-Spreen, P., Sokolov, I. M., & Starnini, M. (2020). Modeling echo chambers and polarization dynamics in social networks. *Physical Review Letters, 124*(4), 048301.
- Bhui, K., & Ibrahim, Y. (2013). Marketing the "radical": Symbolic communication and persuasive technologies in jihadist websites. *Transcultural psychiatry, 50*(2), 216-234.
- Bloom, M., Tiflati, H., & Horgan, J. (2019). Navigating ISIS's preferred platform: Telegram1. *Terrorism and Political Violence, 31*(6), 1242-1254.
- Baas, J., Schotten, M., Plume, A., Côté, G., & Karimi, R. (2020). Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative Science Studies, 1*(1), 377-386.
- Bondes, M., & Schucher, G. (2014). Derailed emotions: The transformation of claims and targets during the Wenzhou online incident. *Information, Communication & Society, 17*(1), 45-65.
- Bouko, C., Naderer, B., Rieger, D., Van Ostaeyen, P., & Voué, P. (2021). Discourse patterns used by extremist Salafists on Facebook: identifying potential triggers to cognitive biases in radicalized content. *Critical Discourse Studies, 1-22*.
- Borum, R. (2011). Radicalization into violent extremism II: A review of conceptual models and empirical research. *Journal of Strategic Security, 4*(4), 37-62.
- Borges-Tiago, T., Tiago, F., Silva, O., Guaita Martínez, J. M., and Botella-Carrubi, D. (2020). Online users' attitudes toward fake news: Implications for brand management. *Psychology & Marketing, 37*(9), 1171-1184.
- Brady, H. E., Schlozman, K. L., & Verba, S. (1999). Prospecting for participants: Rational expectations and the recruitment of political activists. *American Political Science Review, 93*(1), 153-168.
- Ceron, A., Curini, L., & Iacus, S. M. (2019). ISIS at its Apogee: The Arabic discourse on Twitter and what we can learn from that about ISIS support and foreign fighters. *Sage Open, 9*(1), 2158244018789229.
- Cherblanc, J., & Tremblay, S. (2019). Face aux radicalismes religieux et laïc, quelle place et quel rôle pour la spiritualité dans les écoles publiques du Québec? *Studies in Religion/Sciences Religieuses, 48*(4), 612-633.
- Clark, V. L. P. and Creswell, J. W. (2015). *Understanding Research: A Consumer's Guide*. Second Edition, Pearson Publisher.
- Cohen, J. D. (2016). The next generation of government CVE strategies at home: Expanding opportunities for intervention. *The ANNALS of the American Academy of Political and Social Science, 668*(1), 118-128.

- Conway, M. (2017). Determining the role of the internet in violent extremism and terrorism: Six suggestions for progressing research. *Studies in Conflict & Terrorism*, 40(1), 77-98.
- Costello, M., Barrett-Fox, R., Bernatzky, C., Hawdon, J., & Mendes, K. (2020). Predictors of viewing online extremism among America's youth. *Youth & Society*, 52(5), 710-727.
- Dalgaard-Nielsen, A. (2008). *Studying violent radicalization in Europe I: The potential contribution of social movement theory* (No. 2008: 2). DIIS Working Paper.
- Davies, L. (2014). Interrupting extremism by creating educative turbulence. *Curriculum Inquiry*, 44(4), 450-468.
- Derbas, N., Dusserre, E., Padró, M., & Segond, F. (2020). Eventfully SAFAPP: Hybrid approach to event detection for social media mining. *Journal of Ambient Intelligence and Humanized Computing*, 11(1), 87-95.
- DeWall, C. N., Anderson, C. A., & Bushman, B. J. (2011). The general aggression model: Theoretical extensions to violence. *Psychology of Violence*, 1, 245-258. DOI: 10.1037/a0023842.
- Doosje, B., Moghaddam, F. M., Kruglanski, A.W, et al. (2016). Terrorism, radicalization and de-radicalization. *Current Opinion in Psychology*, 11, 79-84. DOI: 10.1016/j.copsyc.2016.06.008.
- Ferrara, E. (2017). Contagion dynamics of extremist propaganda in social networks. *Information Sciences*, 418, 1-12.
- Gagnon, A. (2019). The sick France and its stories" Islamization" of society and" radicalization" of the individual in five contemporary French novels (2012-2016). *Etudes Francaises*, 55(1), 137-+.
- Gaikwad, M., Ahirrao, S., Phansalkar, S. P., & Kotecha, K. (2020). A bibliometric analysis of online extremism detection. *Library Philosophy and Practice*, 1-16.
- Gallacher, J. D., Heerdink, M. W., & Hewstone, M. (2021). Online engagement between opposing political protest groups via social media is linked to physical violence of offline encounters. *Social Media+ Society*, 7(1), 2056305120984445.
- Ganesh, B., & Bright, J. (2020). Countering extremists on social media: challenges for strategic communication and content moderation.
- Githens-Mazer, J., & Lambert, R. (2010). Why conventional wisdom on radicalization fails: the persistence of a failed discourse. *International Affairs*, 86(4), 889-901.
- Grady, C., Iannantuoni, A., & Winters, M. S. (2021). Influencing the means but not the ends: The role of entertainment-education interventions in development. *World Development*, 138, 105200.
- Greenberg, K. J. (2016). Counter-radicalization via the internet. *The Annals of the American Academy of Political and Social Science*, 668(1), 165-179.
- Grosholz, J. M., & Pieri, Z. P. (2020). A skinhead at heart with a hate-filled mind: Understanding the themes present in the white power music scene. *Studies in Conflict & Terrorism*, 1-17.
- Gualtieri, A. (2021). The Brazilian case: The effect of social media on a democratic regime of today. *Democracy and Globalization. Economic Analysis of Law in European Legal Scholarship*, 10, 149-169. DOI: 10.1007/978-3-030-69154-7_7.
- Gunning, J. (2009). Social movement theory and the study of terrorism. In *Critical terrorism studies* (pp. 170-191). Routledge.
- Hopp, F. R., Fisher, J. T., Cornell, D., Huskey, R., & Weber, R. (2021). The extended Moral Foundations Dictionary (eMFD): Development and applications of a crowd-sourced approach to extracting moral intuitions from text. *Behavior Research Methods*, 53(1), 232-246.
- Hüttermann, J. (2018). Neighbourhood effects on jihadist radicalisation in Germany? Some case-based remarks. *International Journal of Conflict and Violence (IJCV)*, 12, a649-a649.
- Jackson, L. B. (2019). Framing British 'Jihadi Brides': Metaphor and the social construction of IS women. *Terrorism and Political Violence*, 1-19.
- Jensen, M., LaFree, G., James, P. A., Atwell-Seate, A., Pisiou, D., Stevenson, J., & Picarelli, J. (2016). Final Report: Empirical assessment of domestic radicalization (EADR). Report to the National Institute of Justice, Office of Justice Programs. Washington, DC: U.S. Department of Justice. Retrived from: <https://www.ojp.gov/pdffiles1/nij/grants/250481.pdf>
- Jones, E. (2017). The reception of broadcast terrorism: recruitment and radicalisation. *International Review of Psychiatry*, 29(4), 320-326.

- Klein, A. (2019). From Twitter to Charlottesville: Analyzing the fighting words between the alt-right and Antifa. *International Journal of Communication*, 13, 22.
- Kruglova, A. (2020). "I Will Tell You a Story about Jihad": ISIS's propaganda and narrative advertising. *Studies in Conflict & Terrorism*, 1-23.
- Kumar, P. (2017). Radicalizing community development: the changing face of the queer movement in Hyderabad City. *Community Development Journal*, 52(3), 470-487.
- Lee, F. L., Chan, M., & Chen, H. T. (2020). Social media and protest attitudes during movement abeyance: A study of Hong Kong University students. *International Journal of Communication*, 14, 20.
- Lee, P.-C. and Su, H.-N., (2010). Investigating the structure of regional innovation system research through keyword co-occurrence and social network analysis. *Innovation* 12(1), 26-40.
- Li, K., Rollins, J., & Yan, E. (2018). Web of Science use in published research and review papers 1997-2017: A selective, dynamic, cross-domain, content-based analysis. *Scientometrics*, 115(1), 1-20.
- Marcks, H., & Pawelz, J. (2020). From myths of victimhood to fantasies of violence: How far-right narratives of imperilment work. *Terrorism and Political Violence*, 1-18.
- McCauley, C. and Moskalkenko, S. (2008). Mechanisms of political radicalization: Pathways toward terrorism. *Terrorism and Political Violence*, 20(3), 415-433. DOI: 10.1080/09546550802073367.
- McCarthy, J. D., & Zald, M. N. (1977). Resource mobilization and social movements: A partial theory. *American journal of sociology*, 82(6), 1212-1241.
- Meloy, J. R., & Genzman, J. (2016). The clinical threat assessment of the lone-actor terrorist. *Psychiatric Clinics of North America*, 39(4), 649-662.
- Monaci, S. (2017). Explaining the Islamic state's online media strategy: A transmedia approach. *International Journal of Communication*, 11, 19.
- Moher D, Liberati A, Tetzlaff J et al. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine* 151(4): 264-269.
- Morselli, D., Passini, S., & McGarty, C. (2020). Sos Venezuela: an analysis of the anti-Maduro protest movements using Twitter. *Social Movement Studies*, 1-22.
- Munger, K., & Phillips, J. (2020). Right-Wing YouTube: A supply and demand perspective. *The International Journal of Press/Politics*, 1940161220964767.
- Mythen, G., Walklate, S., & Peatfield, E. J. (2017). Assembling and deconstructing radicalization in PREVENT: A case of policy-based evidence-making? *Critical Social Policy*, 37(2), 180-201.
- Naeem, S. B., Bhatti, R., & Khan, A. (2020). An exploration of how fake news is taking over social media and putting public health at risk. *Health Information & Libraries Journal*.
- Neumann, P. R. (2013). The trouble with radicalization. *International Affairs*, 89(4), 873-893. <https://rucforsk.ruc.dk/ws/portalfiles/portal/57585046/Appendix.pdf>
- Niemi, P. M., Benjamin, S., Kuusisto, A., & Gearon, L. (2018). How and why education counters ideological extremism in Finland. *Religions*, 9(12), 420.
- Nienierza, A., Reinemann, C., Fawzi, N., Riesmeyer, C., & Neumann, K. (2019). Too dark to see? Explaining adolescents' contact with online extremism and their ability to recognize it. *Information, Communication & Society*, 1-18.
- Nuraniyah, N. (2018). Not just brainwashed: understanding the radicalization of Indonesian female supporters of the Islamic State. *Terrorism and Political Violence*, 30(6), 890-910.
- Pedersen, W., Vestel, V., & Bakken, A. (2018). At risk for radicalization and jihadism? A population-based study of Norwegian adolescents. *Cooperation and Conflict*, 53(1), 61-83.
- Petticrew, M. & Roberts, H. (2008). *Systematic reviews in the social sciences*. Systematic Reviews in the Social Sciences, Blackwell Publishing.
- Porta, D. D. and LaFree, G. (2012). Processes of radicalization and de-radicalization. *International Journal of Conflict and Violence*, 6(1), 4-10.
- Porter, L. E., & Kebbell, M. R. (2011). Radicalization in Australia: Examining Australia's convicted terrorists. *Psychiatry, Psychology and Law*, 18(2), 212-231.

- Post, J. M. (2010). When hatred is bred in the bone: the social psychology of terrorism. *Annals of the New York Academy of Sciences*, 1208(1), 15-23.
- Pranckutė, R. (2021). Web of Science (WoS) and Scopus: The titans of bibliographic information in today's academic world. *Publications*, 9(1), 12.
- Ul-Rehman, Z. U., Abbas, S., Khan, M. A., Mustafa, G., Fayyaz, H., Hanif, M., & Saeed, M. A. (2021). Understanding the language of ISIS: An empirical approach to detect radical content on Twitter using machine learning. *CMC-Computers Materials & Continua*, 66(2), 1075-1090.
- Renström, E. A., Bäck, H., & Knapton, H. M. (2020). Exploring a pathway to radicalization: The effects of social exclusion and rejection sensitivity. *Group Processes & Intergroup Relations*, 23(8), 1204-1229.
- Reynolds, S. C., & Hafez, M. M. (2019). Social network analysis of German foreign fighters in Syria and Iraq. *Terrorism and Political Violence*, 31(4), 661-686.
- Rhodes, G., & Akram, M. (2022). Conflict analysis, learning from practice. *Conflict Resolution Quarterly*, 1-23. <https://doi.org/10.1002/crq.21371>
- Robinson, N., & Whittaker, J. (2020). Playing for hate? Extremism, terrorism, and video games. *Studies in Conflict & Terrorism*, 1-36.
- Rudner, M. (2017). "Electronic Jihad": The internet as Al Qaeda's catalyst for global terror. *Studies in Conflict & Terrorism*, 40(1), 10-23.
- Schmidt, L. (2021). Aesthetics of authority: 'Islam Nusantara' and Islamic 'radicalism' in Indonesian film and social media. *Religion*, 1-22.
- Schmuck, D., & Tribastone, M. (2020). Muslims take action. How exposure to anti-Islamic populist political messages affects young Muslims' support for collective action: A longitudinal experiment. *Political Communication*, 37(5), 635-655.
- Sharif, W., Mumtaz, S., Shafiq, Z., Riaz, O., Ali, T., Husnain, M., & Choi, G. S. (2019). An empirical approach for extreme behavior identification through tweets using machine learning. *Applied Sciences*, 9(18), 3723.
- Smith, L. G., Wakeford, L., Cribbin, T. F., Barnett, J., & Hou, W. K. (2020). Detecting psychological change through mobilizing interactions and changes in extremist linguistic style. *Computers in Human Behavior*, 108, 106298.
- Stevenson, A. (2018). Facebook admits it was used to incite violence in Myanmar. *The New York Times*. Retrieved June 19, 2021, from www.nytimes.com/2018/11/06/technology/myanmar-facebook.html
- Tang, G., Hung, E. P., Au-Yeung, H. K. C., & Yuen, S. (2020). Politically motivated internet addiction: Relationships among online information exposure, internet addiction, FOMO, psychological well-being, and radicalism in massive political turbulence. *International Journal of Environmental Research and Public Health*, 17(2), 633.
- Thompson, R. (2011). Radicalization and the use of social media. *Journal of Strategic Security*, 4(4), 167-190. DOI: 10.5038/1944-0472.4.4.8.
- US Department of Justice. (2018). Awareness brief? Online radicalization to violent extremism. Accessed online: <https://www.theiacp.org/sites/default/files/2018-07/RadicalizationtoViolentExtremismAwarenessBrief.pdf>
- Valentini, D., Lorusso, A. M., & Stephan, A. (2020). Online extremism: Dynamic integration of digital and physical spaces in radicalization. *Frontiers in Psychology*, 11.
- Van Eck, N.J. and Waltman, L., 2010. Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84 (2), 523-538.
- Wang, Y., McKee, M., Torbica, A., and Stuckler, D. (2019). Systematic literature review on the spread of health-related misinformation on social media. *Social Science & Medicine*, 240, 112552.
- Windsor, L. (2020). The language of radicalization: Female Internet recruitment to participation in ISIS activities. *Terrorism and Political Violence*, 32(3), 506-538.
- Winter, C., Neumann, P., Meleagrou-Hitchens, A., Ranstorp, M., Vidino, L., & Fürst, J. (2020). Online extremism: research trends in internet activism, radicalization, and counter-strategies. *International Journal of Conflict and Violence (IJCV)*, 14(2), 1-20.
- Wright, R.W., Brand, R.A., Dunn, W. and Spindler, K.P. (2007). How to write a systematic review. *Clinical Orthopaedics and Related Research*, 455, 23-29.
- Wikstrom, P.-O., Oberwittler, D., Treiber, K., & Hardie, B. (2012). Breaking rules: The social and situational dynamics of young people's urban crime. Oxford, UK: Oxford University Press.
- Zeitsoff, T. (2017). How social media is changing conflict. *Journal of Conflict Resolution*, 61(9), 1970-1991.