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‘WHAT KIND OF MOTHER ARE YOU?!’ AI-SUPPORTED PSYCHOLOGICAL ANALYSIS OF THE PHENOMENON OF ONLINE HATE SPEECH AGAINST WOMEN GIVING BIRTH BY CAESAREAN SECTION



Women for women

INTRODUCTION

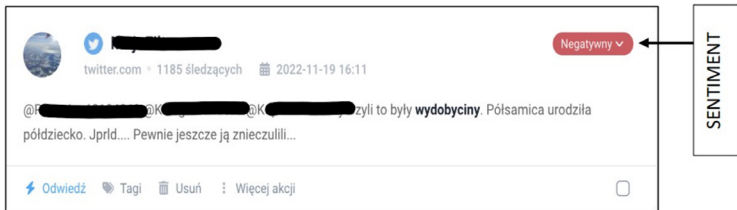
In recent years, Poland has seen the emergence of online hate speech against women giving birth by caesarean section (CS). This phenomenon appears to warrant exploration, given the possible negative impact it may have both on women who have already given birth in this way and on those who are about to choose how to give birth (see: <https://www.edziecko.pl/rodzice/7,79361,26245989,cesarka-to-nie-porod-a-wydobyciny-matki-lepszej-i-gorszej.html>). It should be noted that no reports are available in the literature concerning either the scale/prevalence of this phenomenon or its structure and nature, either in Poland or in other countries.

The use of CS has steadily increased worldwide and will continue increasing over the current decade. The data show that almost every second baby in Poland is born by CS, a tendency characteristic of various other countries, too (Amyx et al., 2023; Boerma et al., 2018; <https://ezdrowie.gov.pl/portal/home/badania-i-dane/zdrowe-dane/monitorowanie/porody-opieka-okoloprodowa>). The statistics for this procedure are unlikely to change in the following years (Betrán et al., 2009; 2016, 2021; Boatín et al., 2018; Johansson et al., 2024; Latham, Norwitz, 2009; McFarlin, 2004; Vadnais, Sachs, 2006; Vogel et al., 2015). With this in mind, it appears important to address the psychological condition of women choosing this option while simultaneously taking information and education measures to prevent any possible discriminatory behaviour towards mothers of children born by CS (Michałowska-Zych, 2020).

'Taken out of the womb, not born'? There is some discussion (doubt) on the Polish Internet about whether CS is childbirth or not. Those who express their opinion – some women who describe themselves as mothers, but also men – hold that CS is not a childbirth, but rather an easy way for a child to be brought into the world. Accordingly, mothers who did not give birth naturally are viewed as inferior and not entitled to say that they have given birth. These groups spread mindless hate speech, reproducing content (messages) that rely on simplistic and one-sided mental representations of this social category, often categorising mothers based on the method of delivery

and giving themselves the right to deny the status of mother to those women who, for various reasons, have decided to have a CS, referred to in the cruel language of internet users as ‘*wydobyciny*’ (a derogatory neologism formed by combining the Polish words for ‘extraction’ and ‘birth’, could be translated as *sunroof delivery*, too) (Wileczek, Raczyński, 2021). For centuries, the only way to deliver a live baby was through a natural childbirth; today, the alternative is a surgical delivery via CS. Still, women who cannot or do not want to give birth naturally are often told, mainly by other mothers, that they are inferior because of this. Figure 1 shows an example of a hateful comment addressed to women using CS. Considering the significance of these issues, it is advisable to determine the *extent and nature of online hate speech addressed to women giving birth by caesarean section*.

Figure 1. Example of a hateful comment addressed to women using CS, with the sentiment (negative) labelled by Brand24



Translation: ‘So this was a mere birth by extraction (Polish: *wydobyciny*). A half-female gave birth to a half-child. Holy shit ... And they probably anaesthetised her.’

The Council of Europe defines *hate speech* as the use of language to incite, promote or justify hatred, violence and discrimination against individuals or groups of people. Its criminogenic potential is also emphasised: while causing humiliation and harm, *hate speech* can also lead to hate crimes (Council of Europe, 2022). Szczepaniak-Kozak and Lankiewicz assert that hate speech can take any form and type of expression (written, oral, formal, informal, specialised and non-specialised), their common feature being the purpose they serve: to insult, humiliate, mock, slander, accuse, ridicule, incite or foster hostility and hatred towards individuals or an individual for reasons partly beyond their control (Buckels et al., 2014; Szczepaniak-Kozak, Lankiewicz, 2017).

Hate speech may refer to, for example, an idea, or a group of people pursuing a certain profession or being of a certain stature.

The large number of recipients (audiences) and the fact that there is often no lasting way to escape cyberbullying present a number of risks (Matamoros-Fernández, Farkas, 2021; Rigby, 2016; Bilewicz, Soral, 2020; Gracia-Calandín, Suárez-Montoya, 2023). In this study, hate speech is defined as online verbal violence against a specific group of people that is emotionally motivated by contempt and that inspires anger and disgust (Winiewski et al., 2017; Wypych, Bilewicz, 2024) and contains the expressed belief of the sender of the message that some group of people is inferior to others and deserves inferior treatment (Linde-Usiekniewicz, 2015). Although quantitative analyses demonstrate that aggressive, abusive and hateful comments account for only 1–2.5% of all online speech (Wajs, 2016), their impact is much stronger and seriously distorts the true picture of interpersonal relations.

RESEARCH METHODS

BRAND24 METHOD

Two tools were used to analyse the web space for offensive behaviour online. The first of these is Brand24 (version *Individual*), a comprehensive AI tool for media monitoring, gathering available instances of pre-defined content, including from social media channels. It can be employed to monitor anything published on the Internet about a particular behaviour, public reactions, opinions about a particular brand and more. Its key functionality consists of automatic statistics on any keywords (in the present study, these were words related to negative opinions about mothers who have chosen a particular method of delivery). Brand24 offers options such as an *influence score* (a proprietary indicator for identifying key sources), a *stream of mentions* and a *discussion volume chart* (Brand24.pl, 2022). Given the limited size of this study, however, only the most important analyses, concerning the epidemiology of the phenomenon in question, will be presented in this article.

As a result of the semantic analysis, conducted using peer judges, 50 phrases were collected, to prepare a catalogue of 50 keywords: (1) *Antimother*, (2) *Bad mother*, (3) *Badmother*, (4) *Birth by being pulled out*, (5) *Birth by*

extraction (sunroof delivery), (6) Breakmother, (7) Broken mother, (8) Caesarean section is a disgrace, (9) Defect mother, (10) Defective woman, (11) Defect-mother, (12) Deficient mother, (13) Easy birth, (14) Easy ride, (15) Easy way, (16) Effortless birth, (17) Egoist, (18) Faulty mother, (19) Flawed mother, (20) Guilty, (21) Hag, (22) Half-assed mom, (23) Half-mother, (24) Incomplete mother, (25) Inferior mother, (26) Irregular mother, (27) Lazy woman, (28) Mother of a worse category, (29) Mother with a defect, (30) Neglectful mother, (31) Non-born, (32) Non-mother, (33) Not a birth mother, (34) Not a real mother, (35) Not a real mother, (36) Not a real woman, (37) Poor mother, (38) Poor-quality mother, (39) Second rate mother, (40) Shame, (41) Stupid mother, (42) Substandard mother, (43) Tacky mother, (44) Terminated with pregnancy, (45) Took the easy way out, (46) Un-born children, (47) Unnatural mother, (48) Worse mother, (49) Worthless mother, and (50) You were pregnant but you didn't give birth! It should be added, however, that not all such terms from Polish can be literally translated into English (slang or *street talk* has its own rules).

In order to analyse the web space, the keywords were introduced into Brand24 (each as a separate phenomenon with all the possible variations, e.g. upper and lower case, case variation, singular and plural, etc.). In the programme options, all mentions with a positive, negative and neutral notation were selected. The researchers further analysed the subsequent results in terms of whether Brand24 attributed them in a correct way (e.g. the commentator used sarcasm or paraphrasing). When a mention occurred, the selected keywords were reported on a weekly basis, and the information was sent to the researcher's email. Information about any mentions that appeared was added to the activities in Brand24. The algorithms used made it possible to select negative comments in the context of the chosen method of delivery. As a courtesy of Brand24's management, the researchers were given the opportunity to use the free Individual version with the option of entering 50 keywords (the standard version allows 4 keywords). In order to prepare the catalogue of keywords, dozens of websites, blogs and online communities were analysed for phrases with a negative notation regarding mothers or the type of delivery they choose (e.g. Facebook, Instagram, X, YouTube, TikTok, Twitch, microblogs, etc.). The range of utterances examined is 5,000 posts, analysed from October 2022 to late January 2023.

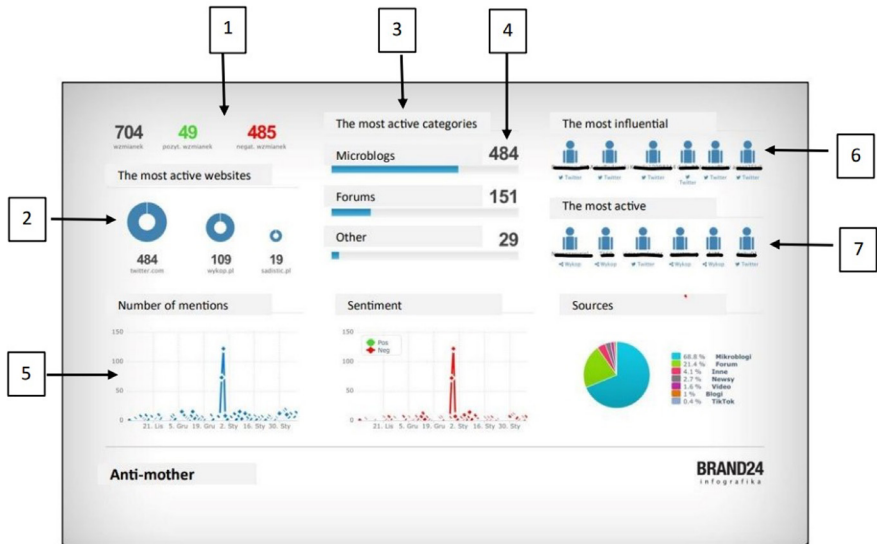
WORDITOUT

Once a set had been created and the keywords analysed on the web based on Brand24, the other tool, i.e. Worditout, was employed. Worditout is a word cloud generator. It generates a professional visualisation of the most frequent words (in this research, negative expressions addressed to mothers due to their choice of delivery method). Depending on the frequency of the words in question, expressiveness will be presented according to the intensity of a specific word (Worditout.com, 2022). By visualising the data collected in these two tools, it is possible to present the sequence of information as concisely and attractively as possible. A word cloud is a visual representation of a set of keywords forming a text of different shapes, sizes and colours. Worditout makes it possible to organise and synthesise selected words, tagged with given *tags*, i.e. selected tags as keywords related to hate speech in the web space (Sanchez, 2022).

RESULTS

ANALYSIS OF DASHBOARD REPORTS

Figure 2. Analysis of dashboards (example)



The analysis in Brand24 made it possible to present the results in a dashboard (a specific type of report), which shows: (1) the number of mentions with the corresponding notation (negative, positive and neutral); (2) a chart of the number of mentions during the period analysed; (3) the most active categories (e.g. microblogs, forums, other); (4) a chart of sources (e.g. blogs, Tiktok, News, etc.); (5) a chart of sentiment (positive, negative); (6) the most influential commentators by nickname and source; (7) the most active commentators by nickname and source. Example of selected analyses for the most frequent keyword is shown in Figure 2.

For the project at hand, data on the frequency of specific phrases are of paramount importance. Also, the authors decided to conduct a simple percentage analysis, considering the number of 5,000 posts examined). It should be emphasised that even the most efficient AI method is not sufficient to determine the meaning of individual terms, which is why the decision was made to have words assigned to specific psychological categories by peer judges. Bühler's (2004, Sebeok, 1987) and Jakobson's (1960) classical approach was used to create a catalogue of categories of the functions performed by the phrases analysed (expressives are all those elements of an utterance that reveal the speaker's attitude to the content of the message; impressives are utterances intended to influence the recipient. As can be observed, it is impossible to separate these functions in the phrases analysed. Representational (referential) elements define the world and the phenomena that take place in it), while the linguistic phenomena involved (the measures used) were described in line with the relevance theory of language (Linde-Usiekiewicz, 2015), which describes the mechanisms of the human mind at work in the communication process and addresses both the consequences of the choice of linguistic measures used to convey the content and the context needed to understand the message. The frequency of keywords is shown in Table 1.

Table 1. Frequency and psychological characteristics of keyword occurrences for mothers giving birth via CS, determined using Brand24

Phrase	Frequency		Function	Linguistic measure	Psychological effect
	n	%			
<i>Antimother (Antymadka)</i>	485	9.7	Expressive and impressive	Offensive term (modern lexeme)	Depersonification
<i>Second rate mother (Matka drugiej kategorii)</i>	322	6.44	Expressive and impressive	Moral valuation	Stigmatisation
<i>Birth by extraction/ Sunroof delivery (Wydobyciny)</i>	109	2.18	Expressive and impressive	Offensive term (modern lexeme)	Dehumanisation
<i>Shame (Wstyd)</i>	84	1.68	Expressive and impressive	Emotional valuation	Stigmatisation
<i>Egoist (Egoistka)</i>	49	0.98	Expressive and impressive	Moral valuation	Stigmatisation
<i>Neglectful mother/unfit mother (Wyrodna matka)</i>	43	0.86	Expressive and impressive	Moral valuation	Stigmatisation
<i>Tacky mother (Tandetna matka)</i>	43	0.86	Expressive and impressive	Moral valuation	Stigmatisation
<i>Bad mother (Zła matka)</i>	37	0.74	Expressive and impressive	Moral valuation	Stigmatisation
<i>Easy ride (Łatwizna)</i>	30	0.6	Representational /referential	Moral valuation	Stigmatisation
<i>Matka złej jakości (Poor-quality mother)</i>	28	0.56	Expressive and impressive	Moral valuation	Stigmatisation
<i>Irregular woman (Wybrakowana kobieta)</i>	27	0.54	Expressive and impressive	Moral valuation	Stigmatisation
<i>Incomplete mother (Niekompletna matka)</i>	26	0.52	Expressive and impressive	Moral valuation	Stigmatisation
<i>Stupid mother (Głupia matka)</i>	21	0.42	Expressive and impressive	Moral valuation	Stigmatisation
<i>Easy birth (Poród fraszka)</i>	20	0.4	Representational /referential	Offensive term	Stigmatisation
<i>Bad-mother (Matka-zła)</i>	17	0.34	Expressive and impressive	Moral valuation	Stigmatisation
<i>Not a birth mother (Nierodzicielka)</i>	16	0.32	Expressive and impressive	Offensive term (modern lexeme)	Depersonification
<i>Guilty (Winna)</i>	15	0.3	Expressive and impressive	Moral valuation	Stigmatisation
<i>Easier thing (Łatwiejsza sprawa)</i>	15	0.3	Representational /referential	Content characteristics	Stigmatisation
<i>You were pregnant but you didn't give birth! (Byłaś w ciąży nie rodziłaś!)</i>	15	0.3	Representational /referential	Moral valuation	Stigmatisation
<i>Effortless birth (Poród igraszka)</i>	15	0.3	Representational /referential	Content characteristics	Stigmatisation
<i>Non-born children (Dzieci nieurodzone)</i>	15	0.3	Representational /referential	Content characteristics	Stigmatisation
<i>Lazy woman (Leniwa baba)</i>	13	0.26	Expressive and impressive	Moral valuation	Stigmatisation
<i>Worse mother (Gorsza matka)</i>	12	0.24	Expressive and impressive	Moral valuation	Stigmatisation
<i>Non-mother (Niematka)</i>	11	0.22	Expressive and impressive	Moral valuation	Depersonification
<i>Not a real mother (Nieprawdziwa matka)</i>	11	0.22	Expressive and impressive	Moral valuation	Stigmatisation

<i>Hag (Matczysko)</i>	11	0.22	Expressive and impressive	Offensive term (modern lexeme)	Dehumanisation
<i>Terminated with pregnancy (Zakończeni ciąży)</i>	11	0.22	Representational /referential	Content characteristics	Stigmatisation
<i>Half-mother (Pół matka)</i>	11	0.22	Expressive and impressive	Offensive term (modern lexeme)	Dehumanisation
<i>Flawed mother (Ułomna matka)</i>	11	0.22	Expressive and impressive	Moral valuation	Stigmatisation
<i>Inferior mother (Podrzędna matka)</i>	11	0.22	Expressive and impressive	Moral valuation	Stigmatisation
<i>Half-assed mom (Matka drugiej klasy)</i>	11	0.22	Expressive and impressive	Moral valuation	Stigmatisation
<i>Birth by being pulled out (Wyciągnięcin)</i>	11	0.22	Expressive and impressive	Offensive term (modern lexeme)	Dehumanisation
<i>Caesarean is a disgrace (Cesarka to wstyd)</i>	10	0.2	Expressive and impressive	Emotional valuation	Stigmatisation
<i>Worthless mother (Bewartościowa matka)</i>	10	0.2	Expressive and impressive	Moral valuation	Stigmatisation
<i>Not a real woman (Nieprawdziwa kobieta)</i>	10	0.2	Expressive and impressive	Moral valuation	Stigmatisation
<i>Not a real mother (Nieprawdziwa matka)</i>	10	0.2	Expressive and impressive	Moral valuation	Stigmatisation
<i>Took the easy way out (Łatwe wyjście)</i>	10	0.2	Representational /referential	Moral valuation	Stigmatisation
<i>Defect mother (Defektmatka)</i>	10	0.2	Expressive and impressive	Offensive term (modern lexeme)	Dehumanisation
<i>Mother with a defect (Matka z defektem)</i>	10	0.2	Expressive and impressive	Moral valuation	Stigmatisation
<i>Defective mother (Wadliwa matka)</i>	10	0.2	Expressive and impressive	Moral valuation	Stigmatisation
<i>Mother of a worse category (Matka gorszego sortu)</i>	10	0.2	Expressive and impressive	Moral valuation	Stigmatisation
<i>Substandard mother (Pozagatunkowa matka)</i>	10	0.2	Expressive and impressive	Moral valuation	Depersonification
<i>Poor mother (Mama matka)</i>	10	0.2	Expressive and impressive	Moral valuation	Stigmatisation
<i>Faulty mother (Zdefektowana matka)</i>	10	0.2	Expressive and impressive	Moral valuation	Stigmatisation
<i>Defect mother (Matka-defekt)</i>	10	0.2	Expressive and impressive	Offensive term (modern lexeme)	Dehumanisation
<i>Defective woman (Defekciara)</i>	10	0.2	Expressive and impressive	Offensive term (modern lexeme)	Dehumanisation
<i>Broken mother (Zepsuta matka)</i>	10	0.2	Expressive and impressive	Moral valuation	Stigmatisation
<i>Breakmother</i>	10	0.2	Expressive and impressive	Offensive term (modern lexeme)	Dehumanisation
<i>Unnatural mother (Antyrodzicielka)</i>	10	0.2	Expressive and impressive	Moral valuation	Depersonification
<i>Non-born (Nierodzen)</i>	10	0.2	Representational /referential	Content characteristics	Dehumanisation

The analysis of the collected material suggests that the intensification of hateful phrases may relate to as much as 9.7% of the content of the area analysed of the 5,000 comments. This is particularly true of certain terms, such as 'Anti-mother' (Polish: *Antymadka*) (9.7%), 'Second category mother' (*Matka drugiej kategorii*) (6.44%) and 'Birth by extraction/sunroof delivery' (*Wydobyciny*) (2.18%). The utterances were intended to seriously disparage mothers giving birth by CS and to highlight their deficiency in their roles as women and mothers, often using extremely offensive terms (which are 'new words', not previously functioning in the Polish language, and created specifically for the situation). As far as emotions associated with CS are concerned, the most frequently indicated category was *shame* (1.68%), which is what women should feel after CS, according to the commentators. As can be seen, utterances, irrespective of their form, correspond to certain physiological and psychological characteristics of the speaker and send signals to the recipient (expressive function). What is vitally characteristic of them, however, is that they knowingly contain the intention to affect the reader so as to make him or her react in a specific way (impressive function). They are intended to affect the addressee, inspiring a sense of discomfort. Representational (referential) utterances, defining the significance of an event/phenomenon, were relatively the rarest (0.6–0.25). Still, they described CS as something easy while stressing that babies delivered via CS could not be called 'born'.

WORD CLOUD

The semantic structure and frequency of a given keyword allowed a word cloud to be generated as a graphical representation of the intensity of a given phrase. Some visual examples generated in Worditout are shown below (Figure 3).

Figure 3. Worditout-generated word cloud examples (A) and translation (B)



DISCUSSION AND CONCLUSIONS

How can hate speech affect women giving birth by CS? How can it disrupt, shape and verify their sense of self? As argued by Keipi et al. (2016), hate speech can cause harm both on a personal level, such as trauma symptomatology or victimisation (Dreißigacker et al., 2024; Mitchell et al., 2007, 2011; Räsänen et al., 2016), and on a group level, for instance the long-term effects of exposure to hateful online material can include the reinforcement of discrimination against vulnerable groups, can lead to prejudice, dehumanization, and lack of empathy towards members of outgroups

(Gracia-Calandín, Suárez-Montoya, 2023; Foxman, Wolf, 2013; Leets, Giles, 1997; Pluta et al., 2023; Tynes, 2006; Wypych, Bilewicz, 2023). This can cause victims to develop defensive attitudes and hyper-vigilance, both of which can be potentially dangerous, continuing for months or even years (Leets, 2002). Exposure to hate speech also deteriorates neurocognitive mechanisms of the ability to understand others' pain (Pluta et al., 2023).

It thus appears increasingly important to analyse this form of language and the negative consequences it entails, with a view to developing remedial programmes and implications for a variety of groups and individuals who experience hateful language on a daily basis. Analysing the web space, particularly for hate speech against mothers who choose to give birth by CS, can shed significant light on the scale of this phenomenon. The research can be used by website administrators and moderators to develop awareness of the problem posed by hate comments against expectant mothers choosing a particular type of birth (mainly surgical delivery). It appears that simply providing information on where to seek support when experiencing hate or on the possible effects of hate on expectant mothers can have a measurable positive value. Also, launching various types of educational campaigns in birthing schools or in educational, municipal and city institutions, institutions supporting families and single mothers or social welfare centres can become an important factor in providing knowledge on this topic of major social importance, as well as fulfilling a protective role towards expectant mothers who have fallen or may fall victim to *hate speech*.

The research project at hand has provided an answer to the formulated research problem, i.e. what the extent and nature of online hate speech against women giving birth by caesarean section is. It has also made it possible to identify interesting theoretical and practical implications:

1. The analysis has shown a high intensity of hate speech signals in the surveyed areas of the web in a specific time unit. Importantly, such hateful behaviour has been observed in online groups where mothers should theoretically support each other as they embark on the path of motherhood. This is not the case, however, as indicated by the huge number of negative, even hateful, comments.

2. The analysed examples of speech meet the criteria of interpersonal aggression (Duntley, Buss, 2008; Keipi et al., 2016), or communication violence, spread online (Pyżalski, 2012). The haters focused not on the argumentative quality of their interaction with the antagonist, but on the attack itself to undermine the addressee's psychological wellbeing. At this point, it is useful to reference Austin's (1962) theory, which connects the theory of language with the theory of action. Austin's approach to performatives was intended to describe and elucidate the conditions under which 'issuing the utterance is doing something' or, in other words, cases in which 'to say something is to do something; or in which by saying or in saying something we are doing something'. This means that the observed utterances can be attributed to the active aggression group (Dias, Mbasalaki, 2021; Pieczywok, 2023). In his original ABACUS theory based on the abacus principle, which compares traditional and electronic aggression, Pyżalski (2012) recognises the following characteristics typical of electronic aggression (the list not being exhaustive): (1) permanent victimisation (from which one cannot escape), (2) anonymity (most perpetrators of online violence are unknown to their victims), (3) secrecy of communication (the possibility of concealing content), (4) invisible audience (publishing multimedia material), (5). cockpit effect (dehumanisation of the victim due to a lack of direct contact with him or her; similar to a fighter pilot, the person in front of the computer screen does not see the suffering of the victim).
3. The presented AI-based tools appear likely to become a viable option among contemporary instruments for monitoring psychological and social phenomena that may have a major impact on the wellbeing and functioning of large social groups. They provide data with a rather simple yet clear structure, at the same time offering attractive visualisation options.

Limitations. The presented research has some limitations. It does not offer any information on the psychosocial characteristics of individuals using hate speech against women who have given birth by CS. Also, it will be probably rather difficult to identify the *causes* of the phenomenon under investigation because of the specificity of anonymity of online activity.

When evaluating the implementation of the project, it is also important to ask developers of AI tools whether AI is sensitive enough to be able to recognise the subtle meaning of a message (and whether the *sentiment* function used in this study offers correct identification). It is also essential to stress the unique character of the linguistic creations and forms in Polish (mainly '*modern lexemes*') that have been examined in the present study, and to note that each national study should employ an individual methodology of semantic analysis. One of the numerous explanations for the rise in hateful conduct may be Berkowitz's concept, which posits a link between aggression and frustration (Berkowitz, 1965). Psychologists researching hatred also indicate the need to study narcissism, understood as the inability to build relationships, associated with a narcissistic personality that does not consider the feelings of others (Lasch, 2015), however, that it will be immensely difficult to establish any relationships and correlations here (mainly due to the inability to conduct psychological surveys of online haters). This research must now be regarded as necessary and indispensable, since hatred as an emotion that is permanent, lasting and coded in the mind of the perpetrator, together with its far-reaching effects, remains unexplored (Cahill et al., 1994; Fridja et al., 2000; Gawenda, 2018; Jacobson, Schlink, 2012; Le Doux, 1996; Prinz, 2004).

Directions for further research. Is the phenomenon discussed limited to Poland, or does it affect other countries as well? Given that there are no studies of this phenomenon whatsoever, it is advisable to draw the attention of researchers to the relevance of research in this area. The phenomenon of hate speech towards mothers who have undergone a CS appears to be so important that any exploration of this issue will be legitimate and needed. It should be noted also that AI-based methods appear to be an effective tool for monitoring modern threats. This also prompts one to think that, quite paradoxically, hate resulting from technological development can be diagnosed using a tool that is its most prominent exemplification.

CONFLICT OF INTEREST

The author has no competing interests to declare.

ETHICS OF RESEARCH

The research material comprises posts and comments published in a publicly accessible virtual space and thus not restricted to any particular audience. Any public posts and comments are analysed once anonymised, in accordance with the first paragraph of Article 89 of Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation; OJ L 119, 4.5.2016, p.1, as amended), which refers to safeguards and exceptions applicable to the processing of personal data for, inter alia, scientific or historical research purposes or for statistical purposes.

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