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THE TRIAD OF EMOTIONS (FEAR, ANGER AND TRUST) AS A STRATEGIC TOOL IN PRO-RUSSIAN DISINFORMATION IN POLAND¹

ABSTRACT: Disinformation campaigns in Europe increasingly use emotional appeals as a weapon of hybrid warfare. Yet, the role of such emotional configurations within disinformation narratives remains conceptually underestimated. This limits political institutions' ability to effectively counter their influence. Most previous research catalogued individual emotions, overlooking their interaction and strategic integration into the cognitive-emotional field. To address this gap, we conducted a network analysis of 745 English-language summaries of pro-Russian disinformation messages written in Polish, from the EUvsDisinfo database (2016–2023). This approach enabled us not only to identify dominant emotions but also to trace their interconnections and functional roles within the structure of disinformation discourse. The results show that fear, anger, and trust form the triad of emotions. This triad creates a semantic bridge between various thematic clusters (security, political leadership, diplomacy). Contrary to traditional perceptions of trust as a “positive counterbalance”, it functions as a catalyst for manipulation, legitimizing negative narratives. Temporal analysis revealed that peaks in the triad's use coincide with political crises, revealing its opportunistic adaptation to national vulnerabilities. This study introduces the concept of the cognitive-emotional field as a new tool to analyze hybrid information strategies. It changes the understanding of emotions in disinformation viewing them as an integrated architecture of influence rather than isolated appeals. For scholars, this enables comparative research across different countries. For practitioners, it offers a basis for counter-strategies focused on emotional patterns, not just on fact-checking.

KEYWORDS: disinformation; hybrid warfare; EUvsDisinfo; sentiment network analysis.

1. Introduction

Human thinking is accompanied by a variety of subjective experiences, including moods and emotions, metacognitive feelings (such as ease of recall or fluency of perception), and bodily sensations (Schwartz, 2001). Emotions influence how we perceive information and what we believe, eg., we may experience a sense of threat when something contradicts our beliefs, which shape our social identity (Robertson et al., 2022; Van Bavel & Pereira, 2018). Emotions enable us to detect, process, and remember the emotional components of

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information (Mather & Sutherland, 2011). In the case of disinformation, emotions promote intuitive thinking, increase reliance on heuristics and familiar material, and distract from the quality of information (Ecker et al., 2022). Ecker et al. (2022), Martel et al. (2020), Pennycook & Rand (2021) claim that emotions reduce deliberation and analytical thinking, and increase belief and the spread of misinformation. When we focus more on emotions rather than on reason, it becomes harder for us to distinguish between real and fake political news (Martel et al., 2020) and this is amplified by our personal emotional state (Ecker et al., 2022; Schwarz, 2001). Thus, emotions generally counteract logical thinking and negatively affect judgment, which may particularly apply to negative emotions and emotions of high arousal, such as anger and fear (Lühring et al., 2024).

Modern disinformation campaigns are sophisticated forms of hybrid warfare that operate through strategic emotional manipulation, not merely through distortion of facts. Vosoughi et al. (2018) proved that “falsehood diffused significantly farther, faster, deeper, and more broadly than the truth <...> and the effects were more pronounced for false political news than for false news about terrorism, natural disasters, science, urban legends, or financial information”. Having compared the language of false news to the real one of real news from an emotional perspective, considering a set of false information types (propaganda, hoax, clickbait, and satire) from social media and online news article sources, Ghanem et al. (2020) showed that false information has different emotional patterns in each of its types, and emotions play a key role in deceiving the reader. Systematic reviews of disinformation detection methods show growing attention to the emotional characteristics of messages (Liu et al., 2023), however, they point out the challenges of multilingualism, multimodality, and interpretability of models.

Despite active research on the impact of emotions on the spread of disinformation, critical gaps remain. First, most studies analyze individual emotions without considering their strategic combinations; research on “triads of emotions” (e.g., fear–anger–trust) as integrated tools of manipulation is nearly absent. Second, recent reviews emphasize the need to integrate emotions analysis with network-based approaches to uncover the structural role of emotions in linking thematic clusters and to identify their functions as “semantic bridges.” (Liu et al., 2023). Third, the limitations of multilingual resources reduce the accuracy of analyzing local corpora (particularly Polish-language ones), often forcing researchers to work with English-language summaries and thereby losing part of the cultural and stylistic nuances. Fourth, there is a lack of studies that comprehensively account for the temporal dynamics of emotional intensity and its correlation with political events, using modern metrics of dynamic network analysis.

Our study fills this critical gap by proposing a methodologically novel approach that combines emotional tone analysis of texts (based on the NRC Word-Emotion Association Lexicon) with “word–emotion” network analysis and the subsequent construction of unimodal semantic networks. Key indicators –

modularity, betweenness centrality, and closeness centrality – are used to identify the role of the triad of emotions “fear–anger–trust” as “bridges” between thematic clusters. Additionally, temporal analysis is applied to detect reactive and proactive strategies of disinformation campaigns, allowing for the identification of peaks in manipulative activity during periods of domestic political crises. This integrated approach addresses the existing gap in studying combined emotional patterns within network structures and contributes to the development of research tools in information security and media communications.

The central research question this study focuses on is: What are the key emotions that constitute the cognitive-emotional field of disinformation? This question shifts the analytical focus from cataloguing emotional content to understanding the structural relationships and strategic functions of emotions within the architecture of disinformation.

The theoretical innovation lies in conceptualizing emotions not as independent variables, but as components of a strategic triad that creates cognitive-emotional fields through their asymmetric use. We examine in detail how “trust” (a positive emotion) functions as a strategic counterbalance to “fear” and “anger” (negative emotions), forming sophisticated systems of persuasion that exploit psychological vulnerabilities through emotional polarization.

Poland is an ideal subject for this research due to (1) its documented susceptibility to intense pro-Russian disinformation campaigns since 2014, (2) its strategic position within the European security architecture, and (3) the availability of comprehensive data from the EUvsDisinfo database. The country’s experience with democratic transformation, challenges of EU integration, and current political polarization provides a rich context for analyzing how disinformation adapts emotional strategies to local political dynamics.

Based on the outlined theoretical framework and methodological guidelines, the following research questions were formulated to connect conceptual premises with empirical validation:

RQ1: How does the concept of the “triad of emotions” (fear–anger–trust) allow for a rethinking of emotional dominance in pro-Russian disinformation messages, moving beyond simple frequency counts?

RQ2: In what ways does the asymmetric use of trust transform the triad of emotions balance, and how does this asymmetry fit into the cognitive-emotional field of disinformation narratives?

RQ3: How does the function of “semantic bridges” within the triad of emotions enable the integration of thematic clusters into a coherent interpretive system of disinformation?

RQ4: How do changes in the intensity and configuration of the triad of emotions over time reflect reactive and proactive adaptation of disinformation strategies to political events?

2. Research Theoretical Framework

2.1. Emotions in hybrid warfare

Although the term “hybrid warfare” was coined by Frank Hoffman in the early 2000s as «different modes of warfare including conventional capabilities, irregular tactics and formations, terrorist acts including indiscriminate violence and coercion, and criminal disorder, conducted by both sides and a variety of nonstate actors» (Hoffman, 2007:8), it became widely used and deeply studied after 2014, when Putin annexed Crimea. Historians have used the term hybrid warfare simply to describe the concurrent use of conventional and irregular forces in the same military campaign. Mansoor (2012), for example, defined hybrid warfare as “conflict involving a combination of conventional military forces and irregulars (guerrillas, insurgents and terrorists), which could include both state and nonstate actors, aimed at achieving a common political purpose.”

The obvious “novelty” of the RF is that “Russian techniques included the traditional combination of conventional and irregular combat operations, but also the sponsorship of political protests, economic coercion, cyber operations and, in particular, an intense disinformation campaign” (Wither, 2020:8). Russian information warfare seeks to blur the lines between truth and falsehood and create an alternative reality. It exploits existing societal vulnerabilities in target states, attempts to weaken state institutions and undermine the perceived legitimacy of governments (Wither, 2020:8).

A message, formed taking into account cognitive-emotional mechanisms of influence, is aimed at inducing decisions or actions in the target audience that meet the interests of its author. Emotions are essential to rational processes and no decision can occur without emotional involvement (Damásio, 2001; Bonansinga, 2020). Jakob and Hamburger (2024) suggest that effective decision-making be not merely a product of logical deliberation but also relies on the intricate interplay of emotional insights <...> human judgments can easily be influenced by emotional factors, even if they are not necessarily related to the current situation. In the political realm, disinformation campaigns use emotionally charged language to capture attention, reinforce messages, and provoke specific reactions to deepen emotional engagement and influence perceptions and responses to content more intensely (Corbu et al., 2021).

Hybrid warfare is closely linked to emotions, as its key instrument is information influence, which targets not only persuasion but also emotional manipulation. Thus, emotions become a weapon by 1) sowing fear and anxiety to demoralize the population, create panic, and reduce trust in authorities; 2) generating anger and hatred to activate radical sentiments, construct the image of an “enemy,” and foster societal division; 3) evoking sympathy and empathy to mobilize support or justify actions; 4) provoking emotional exhaustion, as a constant stream of negativity leads to apathy, loss of critical thinking, and reduced resistance to disinformation.

In other words, under conditions of hybrid warfare, emotions “trigger” both the emotional and cognitive components of our perception. The fact that an emotional state influences key cognitive processes, namely, attention, memory, and cognitive control, is confirmed by neurobiological research, which shows a deep integration of emotional and cognitive brain networks and their mutual regulation (Okon-Singer et al., 2015). Emotion-cognition interactions refer to the influence of emotional states on cognitive processes, particularly how different emotional valences affect the processing of cognitive and emotional conflicts, especially in dynamic, multisensory contexts (Zinchenko et al., 2020). Emotion information processing plays a vital role in cognitive function, signaling either upcoming danger or potential rewards. Thus, emotions can attract attention (Vuilleumier, 2005). Pessoa (2009) claims that emotion and cognitive control share processing resources and, consequently, can modulate each other.

2.2. “Cognitive-emotional field”

We propose the concept of the “cognitive-emotional field” as a dynamic semiotic-affective sphere shaped by shared ideas, emotional norms, and symbolic communication through media, narratives, and communicative practices. Within this field, cognitive processes (such as evaluation, memory, and attention) are closely intertwined with emotional reactions (such as fear, anger, and empathy), which determines susceptibility to manipulation. This concept shares common ground with the ideas of «emotion schemas» (Izard, 2009) or affective-cognitive structures, where emotions and cognition interact dynamically and can act as mediators of cognitive and motivational processes.

The “cognitive-emotional field” probable properties include: 1) the combination of cognitive content (schemas, archetypes, memes) and emotional content (affective norms, moods, tonalities); 2) collective formation through interaction in social networks, media, and cultural practices; 3) structural embedding via institutional repetition (education, media, religion, family), which shapes patterns of thinking and reaction; 4) definition of emotional boundaries, i.e., which emotions are acceptable or taboo; 5) feedback, resonance, and inertia: changes in one segment trigger waves of change across the entire field.

These properties form the analytical framework of this study.

2.3. Beyond individual emotions: the concept of triad

Traditional approaches to disinformation analysis focused on identifying dominant emotions in fake content (Brian, 2023; Cheung-Blunden et al., 2021), though mental framing (fear, anger, sadness) significantly

influences the spread of false statements (Sadat Hosseini & Staab, 2023). However, this atomistic approach does not reflect the sophisticated emotional architectures that characterize modern disinformation campaigns.

Our theoretical framework suggests that effective disinformation operate through emotional triads, i.e., structured combinations of emotions that produce synergistic effects exceeding their individual impact.

The triad of “fear–anger–trust” represents a particularly powerful configuration, as it combines:

- “fear”: perception of threat and heightened uncertainty (Witte, 1992);
- “anger”: mobilization and action orientation since anger significantly increases the viral potential of fake news (Chuai & Zhao, 2020);
- “trust”: legitimization and cognitive anchoring, as reliance on emotions (including trust) increases susceptibility to believing fake content (Martel, Pennycook, & Rand, 2020).

This combination creates what we call a “cognitive-emotional field”, that is a psychological environment in which rational evaluation is subordinated to emotional processing, allowing otherwise implausible narratives to be accepted. The difference between the initial affective state and the emotional response is considered decisive (Ecker et al., 2022).

2.4. Asymmetric emotional use

The theoretical foundation of our analysis is the concept of asymmetric emotional use, i.e., the strategic deployment of positive emotions (trust) to balance and legitimize negative emotions (fear and anger) (Dunn & Schweitzer, 2005; Zhang et al., 2020).

This asymmetry operates through several mechanisms:

1. Emotional anchoring: trust provides cognitive stability that makes fear and anger appear rational rather than manipulative. When the audience trusts the source or associated actors, negative emotions are interpreted as justified responses to real threats rather than artificially induced anxieties (Dunn & Schweitzer, 2005; Jones, 2019; Zhang et al., 2020).
2. Legitimacy transfer: trust in familiar symbols (national leadership, institutions, values) creates pathways for accepting content that evokes fear or anger about unfamiliar or complex issues (eg., international relations, economic policy, or security threats). In times of crisis, for instance, during COVID-19, fear can trigger a “trust mobilization effect” toward authorities, while anger, conversely, intensifies criticism and sanction-oriented sentiments (Bol et al., 2023; Hough et al., 2010).
3. Resolving cognitive dissonance: the presence of trust reduces the psychological discomfort caused by conflicting information, allowing the audience to maintain a positive self-image while simultaneously accepting divisive content. According to Festinger’s classic theory of cognitive dissonance,

individuals seek to reduce internal disharmony by changing their beliefs or behavior (Festinger, 1957; Braithwaite, 2021).

2.5. Semantic bridges and network effects

Drawing on the theory of semantic framing (Sullivan, 2023; Ruppenhofer et al., 2006), we propose that emotions in disinformation function as “semantic bridges” that connect diverse thematic clusters into a coherent interpretive framework (Semeraro et al., 2022). This network effect enables emotional manipulation to cross thematic boundaries, creating unified worldviews from fragmented information (Scheibenzuber et al., 2023; Scheufele & Iyengar, 2014).

The triad’s bridging function operates through:

- emotional coherence across topics: similar emotional patterns across different themes create perceived consistency (Nabi, 2003),
- hierarchical emotional structuring: trust legitimizes the reliability of fear and anger responses, forming a hierarchy of interpretations (Sullivan, 2023),
- dynamic emotional anchoring: sequential emotional associations build stable interpretive schemas (Semeraro et al., 2022; Nabi, 2003).

Thus, taking into account interdisciplinary research on emotional dynamics in mass communication and social media, the concept of the “triad of emotions” (fear, anger, and trust) can be viewed as an integrated system that determines the nature and intensity of emotional influence. Studies show that negative emotions, particularly fear and anger, often coexist within shared communicative spaces, forming stable thematic connections (links between topics) and contributing to the crystallization of unified interpretive frameworks. At the same time, trust can serve as a critical moderator of this influence, legitimizing negative emotions and making them acceptable to the audience. In other words, the triad is considered not merely as a set of separate emotions, but as an interconnected system in which trust can both legitimize and amplify the impact of negative emotions, and mitigate them.

3. Research Methodology

The theoretical framework served as the basis for the developed operationalization scheme, which includes: measuring the co-occurrence of emotions, analyzing their network centrality, temporal correlation, and asymmetric usage. A methodological approach was also formulated on this basis, aimed at a comprehensive analysis of the dynamics, structural role, and strategic application of emotions in disinformation content.

In this study, the operationalization of the triad of emotions included four dimensions: 1) co-occurrence analysis, which records cases when fear, anger, and trust appear simultaneously in a single message or story-line; 2) network centrality measurement to identify the structural role of each emotion in linking thematic clusters; 3) temporal correlation analysis, which allows for the identification of synchronous changes in the intensity of the triad's emotions during political or social events; 4) assessment of asymmetric usage, where each emotion is examined, including the role of trust as an amplifier or neutralizer of the impact of fear and anger.

3.1. Data and sampling

We analyzed 745 cases of pro-Russian disinformation directed against Poland taken from the EUvsDisinfo database, covering the period 2016–2023¹. Initially, only Polish-language disinformation messages were taken into account. However, a decision was later made to analyze emotional coloring and sentiments based on English-language summaries of the messages. This choice was driven by limitations in access to full versions of disinformation materials and their authentic Polish-language variants. The complete content was unavailable due to the absence of primary sources, missing material at the provided links, or restricted access. The short summaries represented the only accessible source of information for analyzing Polish material, and they were the ones subjected to analysis. Although this approach may result in the loss of semantic depth and linguistic nuances, it nevertheless allows for the standardization of information and enables analysis at the level of general emotional tone and prevailing emotional tactics.

Overall, the selection of disinformation represents professionally processed examples of disinformation identified and debunked by the EU East Stratcom Task Force, providing high-quality, verified cases of coordinated influence operations.

The dynamic distribution shows significant variability: minimal activity during 2016–2018 (a total of 19 messages), a sharp increase in 2019–2021 (534 messages), and stable activity in 2022–2023 (192 messages). This pattern aligns with major political events, including parliamentary elections (2019), presidential elections (2020), constitutional crises (2020–2021), and the period of war in Ukraine (2022–2023).

3.2. Methods and stages of analysis

¹ It should be mentioned that during 2016–2018, the number of messages was relatively low. That was likely due to the fact that the EUvsDisinfo database officially began operating and being populated in 2015, and initially, fact-checkers worked manually; accordingly, the content was added slowly. Later, in 2018, after receiving funding from the European Commission, appropriate software was introduced for fact-checking and verification, which significantly increased the capacity to process the disinformation database.

1) At the empirical level, the study involved collecting a corpus of messages from EUvsDisinfo over a defined period, followed by labeling their emotional component. Emotion coding was carried out using a combined approach: automated analysis with the use of emotion lexicons and contextual models, as well as expert verification. For sentiment analysis, we used NRC Word-Emotion Association Lexicon (Mohammad & Turney, 2013), which allowed us to identify eight main emotions: anger, fear, anticipation, trust, surprise, sadness, joy and disgust, as well as the general polarization (positive or negative) in the content of disinformation materials.

To verify the assumption regarding the statistical predominance of the three most frequent emotions (trust, fear, anger) over the remaining emotions, a set of statistical procedures was applied. Emotions were grouped into two categories: top-3 ($n=3$) and other emotions ($n=5$). Descriptive statistics were presented as arithmetic means, standard deviations, and frequency distributions. To compare the mean values between groups, Student's t-test (two-tailed, $\alpha = 0.05$) for independent samples was used, after testing for equality of variances with Levene's test. As a non-parametric alternative, the Mann–Whitney U test was applied to ensure robustness of the results. The practical significance of the differences was assessed by calculating the effect size using Cohen's d . The hypothesis of uniform distribution of emotions in the corpus was tested using Pearson's χ^2 test. Statistical analysis was conducted in the R environment (version 4.3.0) using the packages *car*, *effsize*, and *dplyr*.

2) Network analysis was applied to construct co-occurrence graphs of emotions and thematic clusters, as well as to calculate centrality measures. The network analysis, conducted following the methodology of Bail (2016) and Rule et al. (2015), involved building bimodal networks in which words were linked to emotions, followed by their transformation into unimodal networks for centrality assessment. The key indicators included modularity class (thematic grouping of content), betweenness centrality (the role of a “bridge” between clusters), and closeness centrality (the potential for rapid information diffusion).

3) Temporal analysis involved the use of correlation and cross-correlation methods to identify synchrony or time lags between emotional patterns. The dynamic analysis focused on tracking changes in emotional intensity over several years and correlating identified peaks with documented political events, allowing for the identification of potential patterns of strategic targeting.

To assess the asymmetric use of trust as a moderator of the influence of fear and anger, moderation analysis was employed, enabling the evaluation of how the strength of this influence varied depending on the level of trust.

4. Research Results

4.1. Quantitative analysis of sentiments, emotions and vocabulary

The analysis of pro-Russian disinformation messages against Poland from 2016 to 2023 (Table 1) revealed an increase in both positive and negative sentiments, peaking in 2021 and subsequently declining. The data indicate that pro-Russian disinformation messages aim to elicit a range of emotional responses among Polish audiences, with a slight predominance of positive emotions (2,900) over negative ones (2,403).

Table 1
Sentiment and emotion analysis in Russian/Pro-Russian disinformation
(2016–2023, NRC Lexicon, based on the EUvsDisinfo Database)

Sentiments/ emotions	2016	2017	2018	2019	2020	2021	2022	2023	total
Sentiments									
positive	2	15	5	281	736	1113	221	527	2900
negative	3	14	5	232	538	895	226	490	2403
difference	-1	1	0	49	198	218	-5	37	497
Emotions									
trust	1	9	6	209	409	619	128	300	1681
fear	2	15	4	172	358	572	157	395	1675
anger	3	6	3	120	281	457	118	260	1248
anticipation	2	7	2	78	231	331	80	184	915
sadness	2	5	1	72	157	277	85	199	798
joy	1	4	0	56	120	186	54	114	535
disgust	1	6	1	42	109	186	46	108	499
surprise	1	0	1	48	87	144	35	80	396

However, the analysis of the most frequently used words revealed a different picture (Figure 1). Words with negative sentiment dominate both in number and frequency. Most high-frequency words (e.g., “war”, “conflict”, “struggle”, “crisis”) carry negative connotations, centered around conflict, threat, and aggression. Positive sentiments are associated with unity, leadership, and cooperation, but are less common.

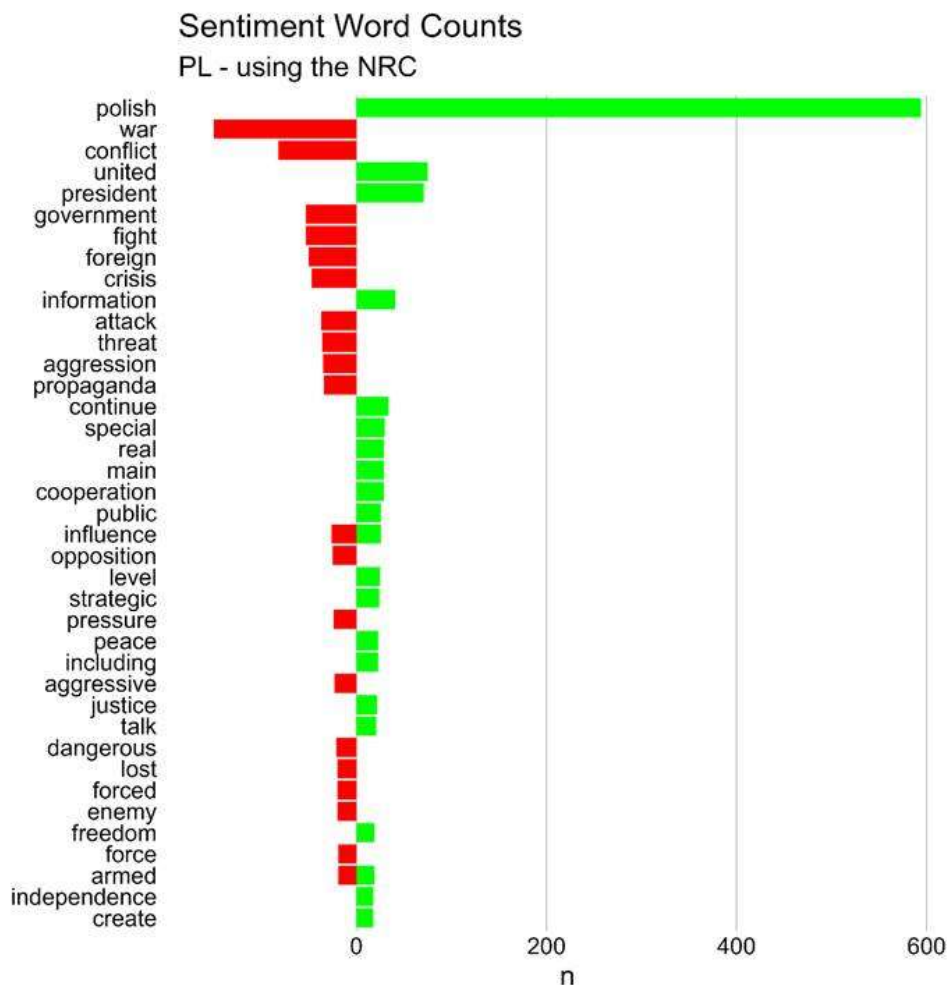


Fig. 1. Sentiment of the most frequently used words in disinformation messages (2016-2023, NRC dictionary, the EUvsDisinfo database)

This analysis shows that pro-Russian disinformation messages in Polish media are heavily focused on negative content, which may be aimed at creating an atmosphere of fear and distrust. Positive sentiments may be used to create contrast or a manipulative positive background.

In terms of emotions, the most common are “trust” (1,681), “fear” (1,675), and “anger” (1,248). Less frequent emotions include “anticipation”, “sadness”, “joy”, “disgust”, and “surprise”.

The analysis of the frequency distribution of emotions (Table 1) revealed a pronounced asymmetry: the three most common emotions accounted for 4,604 mentions (59.4% of the total), while the remaining five emotions had 3,143 mentions (40.6%). Welch’s t-test confirmed a statistically significant difference between the group means: the top-3 emotions ($M = 1,534.67$) significantly exceeded the others ($M = 628.60$), $t(3.87) = 5.225$, $p = 0.007$. The effect size, measured by Cohen’s d , was 3.963, indicating a large practical effect. The

Mann–Whitney U test also confirmed the statistical significance of the differences ($W = 15$, $p = 0.018$). Pearson’s χ^2 test rejected the assumption of a uniform distribution of emotions ($\chi^2 = 1913.5$, $df = 7$, $p < 2.2e-16$).

The obtained results indicate a statistically significant and practically important dominance of three key emotions (trust, fear, anger) in disinformation messages. The exceptionally large effect size ($d = 3.963$) points to substantial practical relevance for understanding the emotional mechanisms of disinformation.

Co-occurrence analysis (Table 2) revealed a high level of synchronization: all three emotions appeared simultaneously in 57.4% of messages (429 cases), which significantly exceeded the expected frequency of random co-occurrence. Additional combinations included “fear–trust” without “anger” (11.4%), “trust” only (10.8%), and “fear–anger” without “trust” (9.9%). Correlation analysis demonstrated a strong positive relationship between “trust” and negative emotions, with correlation coefficients reaching $r = 0.89$ during peak years (2019–2021), which contradicts the traditional understanding of “trust” as the opposite of negative emotions.

Table 2

Table of co-occurrence of the triad of emotions in disinformation

Fear (>0)	Emotions		Number of messages	% of messages
	Anger (>0)	Trust (>0)		
Yes	Yes	Yes	429	57,4
Yes	No	Yes	85	11,4
No	No	Yes	81	10,8
Yes	Yes	No	74	9,9
No	Yes	Yes	33	4,4
No	No	No	19	2,5
Yes	No	No	16	2,1
No	Yes	No	10	1,3

The chi-squared test confirmed the uneven distribution of different emotion combinations in the messages ($p < 2.2e-16$), allowing the rejection of the assumption of randomness. This indicates the strategic use of certain emotion combinations, namely, the simultaneous use of fear, anger, and trust, to achieve a stronger emotional impact on the audience.

The full triad (fear–anger–trust) is in 57.4% of messages, representing an absolute majority and significantly exceeding any other combinations. The dominance of the full triad indicates a strategic orchestration of emotions, where their combination creates a qualitatively new effect.

“Trust” is present in 79.6% of all messages, making it the most common emotion in the sample. Particularly notable is the combination of “trust without fear and anger” (10.8%), which is five times more frequent

than “fear without trust and anger” (2.1%). This confirms the role of trust as an “emotional anchor” that legitimizes even manipulative content.

The low percentage of messages without any of the three emotions (2.5%) demonstrates that the triad functions as an integrative mechanism. Each emotion performs a specific “bridging” function: “fear” creates a sense of threat, “anger” mobilizes action, and “trust” ensures acceptance of the narrative. The presence of diverse emotional configurations indicates adaptation to different contexts and target audiences.

Thus, these research findings highlight the need to consider emotion combinations to understand the mechanisms of disinformation and to develop effective counter-strategies.

4.2. Structural analysis: emotions as semantic bridges

Network analysis revealed that the three emotions – fear, anger, and trust – occupy central positions and function as “bridges” between thematic clusters (Fig. 2). This is confirmed by high betweenness centrality (CB) and closeness centrality (CC) scores. Four modular classes were identified in the network: 1) political discourse and democratic activity, 2) diplomatic relations and strategic defense, 3) humanitarian crisis and conflict resolution, and 4) presidential leadership and national unit.

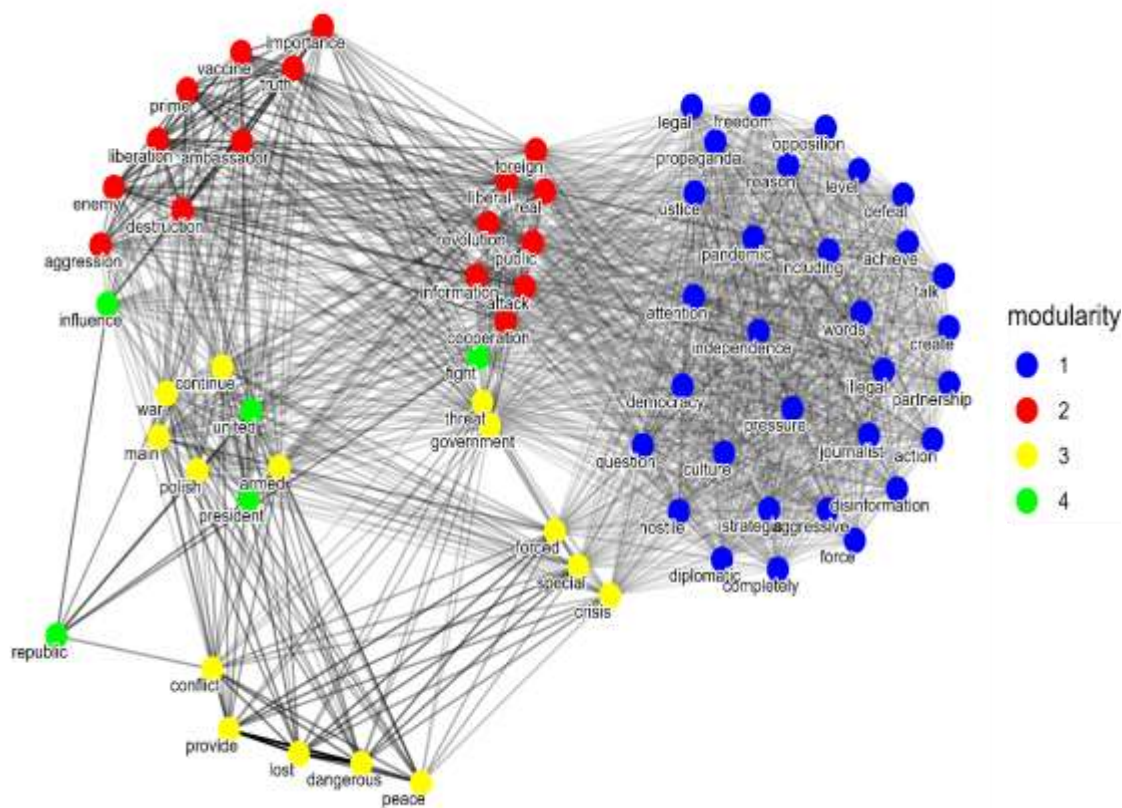


Fig. 2. Sentiment and emotion network in disinformation messages (2016–2023) by modularity class

The triad of emotions ensures the shortest paths between clusters (high CB/CC), indicating its integrative role in the circulation of disinformation content. In the “presidential leadership” cluster, the highest betweenness and closeness centrality scores are held by lexical intermediaries between themes and emotions: “threat” (CB = 71, CC = 0.090; primarily associated with fear and anger), “president” (CB = 67, CC = 0.086; associated with trust), “government” (CB = 53, CC = 0.090), and “aggression” (CB = 58, CC = 0.082). The presence of both “threat/aggression” and “president/government” among the top terms demonstrates the network’s ability to combine negatively charged meanings with legitimizing vocabulary, forming cross-cutting pathways between clusters.

Distinct emotional patterns are clearly observed within the thematic clusters (Table 3):

- 1) political discourse and democratic activity: such high-frequency words as “opposition” and “propaganda” are accompanied by anger, while “justice” and “level” are associated with trust;
- 2) diplomatic relations and strategic defense: “ambassador” and “truth” (trust) coexist with “enemy”, “aggression”, and “attack” (anger/fear);
- 3) humanitarian crisis and conflict resolution: “conflict”, “dangerous”, and “forced” (fear/anger/sadness) appear alongside “peace” and “provide” (trust/anticipation/joy);
- 4) presidential leadership and national unity: such key terms as “republic”, “united”, and “president” are linked to trust and anticipation, while “struggle” and “influence” are accompanied by fear and anger.

Table 3
Key concepts in individual clusters with emotion distribution,
sorted by TF-IDF value¹

Modularity classes/words	Sentiments	Emotions	Group variables	tf_idf	n
Modularity class - 1 (Political Discourse and Democratic Engagement)					
opposition	negative	anger	2021	0.212	16
propaganda	negative		2021	0.212	16
justice	positive	trust	2021	0.212	14
pressure	negative		2021	0.212	14
level	positive	trust	2021	0.212	13
democracy	positive		2021	0.212	12
including	positive		2021	0.212	12
aggressive	negative	anger, fear	2021	0.212	11
talk	positive		2021	0.212	11
attention	positive		2021	0.212	10
Modularity class - 2 (Diplomatic Relations and Strategic Defense)					
ambassador	positive	trust	20	0.887	10
enemy	negative	anger, disgust, fear	2020	0.887	10
vaccine	positive		2020	0.887	10
destruction	negative	anger	2020	0.887	8
truth	positive	trust	2020	0.887	8
importance	positive	anticipation	2020	0.887	7
liberation	positive	anticipation, joy, surprise	2020	0.887	7

prime	positive		2020	0.887	7
aggression	negative	anger, fear	2020	0.592	14
attack	negative	anger, fear	2020	0.478	14
Modularity class - 3 (Humanitarian Crisis and Conflict Resolution)					
lost	negative	sadness	2023	1,386	8
dangerous	negative	fear	2023	1,386	7
provide	positive	trust	2023	1,386	7
peace	positive	anticipation, joy, trust	2022	1,214	7
forced	negative	fear	2023	0.693	7
peace	positive	anticipation, joy, trust	2023	0.693	7
conflict	negative	anger, fear, sadness	2023	0.675	37
special	positive	joy	2023	0.647	7
armed	negative, positive	anger, fear	2022	0.539	8
main	positive		2023	0.499	9
Modularity class - 4 (Presidential Leadership and National Unity)					
republic	negative		2019	2,140	7
united	positive	trust	2019	0.505	17
influence	negative, positive		2019	0.446	10
president	positive	trust	2019	0.372	12
fight	negative	anger, fear	2019	0.357	7
president	positive	trust	2020	0.296	23
influence	negative, positive		2020	0.296	16
fight	negative	anger, fear	2020	0.296	14
united	positive	trust	2023	0.270	14
president	positive	trust	2022	0.246	7

Such coexistence of “threat ↔ legitimization” within the same modular fields is an empirical indicator of semantic bridges, i.e., stable connections between threat-related and trust-related lexemes.

Temporal snapshots show consistent co-variation: peaks in trust coincide with peaks in fear and anger. Between 2019 and 2021, the correlation between “trust” and the combined emotions of “fear + anger” reached 0.89. This indicates an asymmetric role of trust – an “anchor” that legitimizes negatively marked narratives rather than an opposite to negative emotions.

In the network, this effect materializes in the spatial proximity of trust-related lexicon (“president”, “unity”, “cooperation”) to threat-related lexicon (“threat”, “aggression”, “enemies”), enabling the transfer of

credibility from reliable sources to alarming content. Such nodes with high betweenness centrality (CB) serve as transitions between positive and negative emotional subgraphs.

The dynamics show clear peaks in 2019–2021, coinciding with domestic political events and accompanied by a surge in all three emotions. In 2020, there was a sharp increase in trust (+96% compared to 2019), and in 2021, synchronous peaks in fear (+60%), anger (+63%), and trust (+51%) with a shift toward the political cluster. In 2022–2023, intensity declined, but there was a thematic shift toward the humanitarian cluster while maintaining the triad's proportions. This indicates responsiveness to events and adaptive reconfiguration of “bridges” between clusters.

4.3. Thematic integration: “bridges” between semantic clusters

The analysis of the summary Table 4 (Appendix) made it possible to identify critical patterns in the interaction between the triad of emotions and thematic clusters of disinformation content during 2016–2023, providing empirical answers to the set research questions.

First and foremost, about the synergistic effect of the emotional triad. The data show an uneven dynamic of the triad, which reached its peak intensity in 2021: “trust” (619), “fear” (572), “anger” (457). Compared to the initial figures in 2016 (trust – 1, fear – 2, anger – 3), there is exponential growth that far exceeds a simple proportional increase in the number of messages. In 2021, with 220 messages, the average intensity of the triad was 549 mentions per emotion, whereas in 2019, with 114 messages, it was only 167 mentions per emotion. This indicates a strategic concentration of emotional impact rather than merely an increase in content volume.

“Trust” shows consistent dominance throughout the entire period, surpassing “fear” and “anger” in every year except 2023, when “fear” (395) exceeded “trust” (300). Particularly illustrative is the ratio of “trust” to negative emotions during peak years: in 2020, “trust” (409) compared to “fear” (358) and “anger” (281); in 2021, “trust” (619) compared to “fear” (572) and “anger” (457). This asymmetry confirms the function of “trust” as a stabilizing element that legitimizes negative emotional content by creating a sense of credibility of sources.

What does the integrative function of semantic bridges look like? Thematic clusters display a specific dynamic that correlates with the intensity of the triad of emotions. In 2016–2018, no thematic cluster was active, which coincides with minimal levels of the triad. The first cluster, “Presidential Leadership and National Unity”, appears in 2019 (1 mention), simultaneously with a sharp rise in the triad. In 2020–2021, when the triad reaches its peak, the clusters “Diplomatic Relations and Strategic Defense” and “Humanitarian Crisis

and Conflict Resolution” become active. This suggests that the triad of emotions should function as a necessary condition to activate complex thematic narratives, ensuring their semantic integration.

Temporal analysis revealed two types of emotional adaptation to political events. Reactive adaptation is observed in 2019 (parliamentary elections), marked by a sharp increase in all components of the triad: “trust” rose from 6 to 209, “fear” from 4 to 172, and “anger” from 3 to 120. Proactive adaptation is recorded in 2021 during the confrontation with the EU and the migration crisis, when “trust” reached its peak (619), and “fear” (572) and “anger” (457) also showed peak values, indicating a preemptive mobilization of emotional resources.

A critical shift in the balance of the triad of emotions occurred in 2023 during the parliamentary elections: “fear” (395), for the first time in the entire period, exceeded “trust” (300), which may indicate a strategic shift from legitimization through trust to mobilization through fear in a situation of threatened political control.

The highest activity of the triad coincides with key domestic political events in Poland: the 2019 parliamentary elections, the 2020 presidential elections and the Constitutional Tribunal’s decision, and the 2021 confrontation with the EU. The decline in activity in 2022 (during the reception of Ukrainian refugees) may point to the limited effectiveness of traditional disinformation narratives in the context of a humanitarian crisis, which required an adaptation of influence strategies.

5. Discussions and Conclusion

5.1. Rethinking the emotional architecture of disinformation through the prism of the triad

The results of this study show the strategic use of emotional combinations in pro-Russian disinformation campaigns targeting Poland, which goes far beyond the traditional understanding of emotional manipulation. Key empirical evidence points to the formation of an integrated “triad of emotions” (fear–anger–trust), which functions as a systemic tool of influence rather than a set of independent emotional appeals.

Synergetic nature of the triad of emotions (RQ1)

Regarding the first research question on rethinking emotional dominance through the concept of the triad, the empirical data demonstrate a qualitatively new level of complexity compared to traditional frequency-based approaches. The statistically significant dominance of the three key emotions ($t(3.87) = 5.225$, $p = 0.007$, Cohen's $d = 3.963$) indicates not merely their quantitative prevalence, but their structural integration into a unified system of influence.

The critical finding is the simultaneous presence of the full triad in 57.4% of messages, with “trust” appearing in 79.6% of cases overall. This pattern radically differs from models that predict the dominance of individual negative emotions (Chuai & Zhao, 2020). Instead of the traditional logic of “either fear or anger,” a strategic combination of “both fear and anger and trust” is observed, creating a synergistic effect that is unattainable through the isolated use of emotions.

The triad concept helps explain the paradox of disinformation’s high effectiveness even in the presence of factual rebuttals. When emotions operate systemically rather than individually, they create a cognitive-emotional field in which rational verification becomes subordinate to affective processing. This fundamentally shifts the understanding of emotional dominance from a quantitative phenomenon to a qualitative one – as a form of cognitive control through emotional architecture.

Asymmetric role of trust as a cognitive anchor (RQ2)

The second research question, concerning the asymmetric use of “trust”, received the most unexpected empirical support. Instead of the anticipated antagonistic interaction between “trust” and negative emotions, a high correlation was found ($r = 0.89$) during peak activity periods in 2019–2021. This result radically redefines the role of positive emotions in manipulative narratives.

“Trust” functions not as an alternative to negative emotions, but as an “emotional anchor” that provides cognitive stability for perceiving alarming content as credible. The mechanism operates through the transfer of authority from reliable symbols (national leadership, traditional institutions) to controversial claims about international relations or security threats. When the audience trusts the source, “fear” and “anger” are interpreted as justified responses to real dangers.

The dynamics of 2020–2021 are particularly illustrative, with peak levels of “trust” (619) accompanied by maximum indicators of “fear” (572) and “anger” (457). This pattern empirically confirms the function of “trust” as a moderator that does not neutralize negative emotions but legitimizes them by creating a pseudo-rational basis for accepting manipulative narratives.

A critical shift occurred in 2023, when “fear” (395) for the first time exceeded “trust” (300). This may signal a strategic adaptation from legitimization through trust to direct mobilization through threat in a context of political instability, indicating the tactical flexibility of emotional architectures in disinformation.

Semantic bridges and thematic integration (RQ3)

The third research question, concerning the function of “semantic bridges,” received compelling support through network analysis. The triad of emotions occupies central positions within the network structure, with high betweenness centrality scores ($CB > 60$ for key emotional lexemes) and closeness centrality ($CC > 0.08$), empirically confirming its role in the circulation of disinformation content across thematic clusters.

A critical mechanism is the spatial proximity within the network structure between trust-related lexemes

(“president,” “unity,” “cooperation”) and threat-related lexemes (“threat,” “aggression,” “enemies”). This configuration provides cognitive pathways for integrating oppositely charged narratives through shared affective patterns.

The coexistence of oppositely marked concepts within the same modular classes is particularly illustrative, eg., “ambassador/truth” (trust) alongside “enemy/aggression” (fear/anger) within the cluster of diplomatic relations. This creates emotional coherence between thematically diverse narratives, allowing the audience to perceive fragmented information as a unified interpretive system.

The function of semantic bridges is manifested through: emotional coherence between themes (similar affective patterns create perceived logical consistency), hierarchical emotional structuring (trust legitimizes negative reactions), dynamic emotional anchoring (sequential associations form stable interpretive schemas). It results in the creation of unified worldviews from heterogeneous information through emotional rather than logical integration.

Temporal adaptation and strategic targeting (RQ4)

The fourth research question, concerning temporal adaptation patterns, revealed two fundamentally different types of emotional strategies. Reactive adaptation is observed in 2019, with a synchronous rise in all components of the triad in response to the parliamentary elections: “trust” increased from 6 to 209 (+3383%), “fear” from 4 to 172 (+4200%), “anger” from 3 to 120 (+3900%). Such synchronicity indicates the rapid mobilization of emotional resources in response to political events.

Proactive adaptation is recorded in 2021, during the confrontation with the EU and the migration crisis, when “trust” reached an absolute peak (619), and “fear” (572) and “anger” (457) also showed their highest values. This configuration indicates a preemptive preparation of the cognitive-emotional field for the reception of crisis narratives, characteristic of strategic rather than merely tactical planning in disinformation operations.

A critical insight is the correlation of emotional activity peaks with domestic rather than external events. The highest intensity of the triad coincides with the 2019–2020 elections and the constitutional crisis of 2020–2021, while the period of the war in Ukraine (2022–2023) is marked by a decline in activity. This confirms the opportunistic nature of hybrid information operations, which adapt to local vulnerabilities in the political system.

Temporal dynamics also reveal thematic shifts: in 2020–2021, the dominant cluster is “Presidential Leadership and National Unity”, while in 2022–2023, there is a transition to the cluster “Humanitarian Crisis and Conflict Resolution”, with the core proportions of the triad remaining intact. This demonstrates the adaptive reconfiguration of semantic bridges between clusters depending on the political context.

5.1. Comparison with previous studies

These results expand upon the findings of Martel et al. (2020) and Chuai & Zhao (2020) regarding the influence of individual emotions on the spread of disinformation, demonstrating the synergistic effects of their strategic combination. While previous studies focused on the dominance of anger as a catalyst for the viral dissemination of fake news, our data point to a more nuanced architecture, where trust moderates the intensity of negative emotions, facilitating their acceptance by the audience.

The concept of the “cognitive-emotional field” aligns with the theoretical propositions of Ecker et al. (2022) regarding emotional drivers of disinformation perception, but it offers a structural mechanism for their interaction. Unlike models that view emotions as a destabilizing factor in rational thinking, our approach demonstrates how their systematic use creates pseudo-rational foundations for the acceptance of manipulative narratives.

Temporal analysis reveals patterns that contradict commonly held assumptions about the reactive nature of disinformation campaigns. The exponential growth in emotional intensity during 2019–2021, which coincides with domestic political crises rather than external threats (such as the war in Ukraine), confirms the opportunistic nature of hybrid information operations that adapt to local vulnerabilities in the political system.

5.1. Study limitations

A key limitation is the use of English-language annotations instead of full Polish-language texts, which may have led to the loss of culturally specific emotional nuances and stylistic features. Although the NRC Word-Emotion Association Lexicon provides a standardized approach to emotion analysis, its application to translated short summaries may not fully capture the emotional complexity of the original materials.

A methodological limitation lies in the focus on the triad of three emotions, with relative neglect of other emotional categories (anticipation, sadness, joy, disgust), which could reveal additional patterns of manipulation. Furthermore, the network analysis is based on static snapshots, failing to account for the dynamic evolution of semantic connections over extended periods.

Sampling limitations stem from the exclusive focus on EUvsDisinfo materials, which represent only identified and debunked cases of disinformation. This may introduce systematic bias in favor of more obvious or technically simpler manipulative strategies to detect.

5.2. Theoretical contribution

This study makes a fundamental contribution to understanding the emotional mechanisms of disinformation by conceptualizing the “triad of emotions” as a systemic tool of manipulation. A key theoretical achievement is the demonstration of the synergistic nature of emotional combinations, which produce qualitatively new effects compared to the isolated use of individual emotions.

The empirical confirmation of the asymmetric role of trust as an “emotional anchor” redefines the traditional view of positive emotions as a protective factor against manipulation. Trust emerges not as an antidote, but as a catalyst for emotional manipulation, with critical implications for both the theory and practice of information security.

The concept of “semantic bridges” offers a mechanism for integrating fragmented narratives into coherent worldview systems through emotional rather than logical consistency. This expands our understanding of how disinformation achieves internal coherence despite factual contradictions.

The identification of reactive and proactive strategies of emotional adaptation illustrates the sophistication of modern disinformation operations, which not only respond to current events but also shape the cognitive-emotional field for future information perception. This underscores the need to reconceptualize disinformation as a strategic, rather than merely tactical, phenomenon within the context of hybrid warfare.

5.3. Further research directions and practical implications

A primary avenue for further research is the expansion of analysis to full authentic texts in local languages, utilizing multilingual emotion lexicons and involving experts in cultural linguistics. This would enable validation of the triad of emotions concept across diverse cultural contexts and reveal specific adaptations of manipulative strategies.

Promising directions include the study of dynamic network structures using temporal graphs to track the evolution of semantic bridges and their adaptation to shifts in the political context. The integration of socio-psychological experiments could confirm the causal mechanisms through which the triad of emotions influences cognitive-emotional information processing.

The practical implications include the development of early warning systems for disinformation campaigns based on the detection of characteristic emotional patterns. Monitoring algorithms tuned to identify the asymmetric use of trust in combination with negative emotions may offer more effective identification of

manipulative content compared to traditional fact-checking methods.

To build resilience against disinformation, it is advisable to design educational programs that focus on recognizing the emotional architectures of manipulation rather than solely on fact verification. Understanding how trust is used to legitimize alarming content can significantly enhance media literacy in the context of hybrid information threats.

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Dynamics of disinformation content by year: messages, key events, and emotional-thematic structure (2016-2023)

Years	Number of messages	Events (most important socio-political events in the country during the year)	Emotions (emotions of pro-Russian disinformation news)								Modularity class (topics of pro-Russian news)			
			trust	fear	anger	anticipation	sadness	joy	disgust	surprise	1. Political Discourse and Democratic Engagement	2. Diplomatic Relations and Strategic Defense	3. Humanitarian Crisis and Conflict Resolution	4. Presidential Leadership and National Unity
2016	4	Black protests against the abortion ban	1	2	3	2	2	1	1	1	0	0	0	0
2017	12	Judicial reform	9	15	6	7	5	4	6	0	0	0	0	0
2018	3	Act on the Institute of National Remembrance (Holocaust)	6	4	3	2	1	0	1	1	0	0	0	0
2019	114	Parliamentary elections – victory for PiS	209	172	120	78	72	56	42	48	0	0	0	1
2020	200	Presidential election – re-election of Duda / Constitutional Tribunal ruling on abortion	409	358	281	231	157	120	109	87	0	1	0	1
2021	220	Confrontation with the European Union (national law versus EU law) / migration crisis on the border with Belarus	619	572	457	331	27	186	186	144	1	0	0	0
2022	57	Admission of refugees from Ukraine	128	157	118	80	85	54	46	35	0	0	1	1

2023	135	Parliamentary elections – victory for the opposition	300	395	260	184	199	114	108	80	0	0	1	1
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