

# The Disinformation Reaction to the Russia–Ukraine War<sup>1</sup>

## An Analysis through the Lens of Iberian Fact-Checking

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The beginning of the war in Ukraine generated a wave of disinformation in Europe. Our research intends to cognise the reaction of disinformation agents to the outbreak of war, analysing publications checked by Iberian fact-checkers during the first ten days of the conflict. Specifically, we used Voyant Tools online software to perform a quantitative textual analysis, which allowed us to survey the most relevant topics, formats for spreading disinformation and media platforms. We also analysed the presence of political leaders, countries and military terminologies. Our findings indicate that video is the most common format to disseminate disinformation content, namely, to illustrate war scenarios. In addition, our research also showed that online video platforms, especially YouTube, are closer to terms that portray military actions. This may have implications for fostering a warmongering feeling. Finally, we found that the fake content checked was mostly favourable to Ukraine, which raises new poignant arguments for the contemporary debate about disinformation in war.

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## Introduction

The dissemination of disinformation, as a political instrument, used with malicious intent to deceive or manipulate, to discredit opponents, war enemies, real events, true news or opposing political opinions is a very old practice, especially in times of strong political, economic and social crisis. The literature has pointed out a series of political stratagems, dating back to ancient Rome that used lies as their main tool (IRETON-POSETTI 2018; DARNTON 2017; POSETTI-MATTHEWS 2018). Even so, the repercussions of the spread of misinformation have never been as severe as they are today, where a lie can circulate faster than the truth (VOSOUGHI et al. 2018), fake news is more attractive to be shared (BAPTISTA-GRADIM 2022) and journalists are increasingly losing authority (SALGADO-BOBBA 2019; TRILLING et al. 2016). In addition, the distribution of information is becoming more dependent on the work of the algorithms that integrate the functioning of social media, promoting the formation of filter bubbles and echo chambers (BAPTISTA-GRADIM 2021; ZIMMER et al. 2019).

The continued proliferation of online disinformation has contributed to an increase in distrust in the media and public institutions in general, leading to the decline of democratic systems (BENNETT-LIVINGSTON 2018). Several studies (WARDLE-DERAKHSHAN 2017) have found that “disinformation agents” seek to cause strong emotions (such as fear, anger, panic, or anxiety), in order to exploit the anxieties, doubts and social and political prejudices of the masses, feeding conspiracies and rumours (BAPTISTA-GRADIM 2020). Faced with this problem, several government entities have joined efforts, nationally and internationally, to find mechanisms to combat the spread of misinformation. In 2018, the European Commission designated a task force of experts with the aim of creating a report that identified strategies and sought solutions against disinformation (European Commission 2018). Later, in 2020, it created the European Digital Media Observatory with the aim of bringing together fact-checkers and experts in disinformation, in order to support digital literacy initiatives and multidisciplinary work, in agreement with media organisations, for the fight against disinformation.

Despite this commitment against disinformation, the world has recently had to deal with profound and unexpected crises that, in themselves, have had serious social consequences. The disinformation originating in these crises has increased the international community’s difficulty in overcoming them. If, on the one hand, the Covid-19 pandemic has served, through disinformation agents, to instil distrust in public institutions, negatively affecting scientific truth (BRUDER-KUNERT 2021; IMHOFF-LAMBERTY 2020); on the other hand, the invasion of Ukrainian territory by Russian troops, in February 2022, reinforced the power and severity of disinformation as a political weapon, in the midst of the post-truth era (MCINTYRE 2018). Suddenly, when the pandemic seemed to finally give a truce, Europe witnessed the beginning of a war that goes far beyond a local

armed conflict. The Russian “special operation” is also a hybrid conflict, one in which an information war is crucial, with lies and manipulation of the media used as powerful combat weapons (STĂNESCU 2022; BAREIKYTĖ-SKOP 2022).

The new digital ecosystem allows soldiers to be authentic war reporters, sharing videos and images of missile attacks and other military operations on social media (STASTNA 2022). Even U.S. soldiers, during the wars in Afghanistan and Iraq, had turned to YouTube to share videos of military patrols and war scenarios (ANDÉN-PAPADOPOULOS 2009). This ease in spreading information about the theatre of operations also demonstrates the ease with which disinformation produced by malicious agents can circulate. It is true that social media already existed during the Syria or Iraq wars, but the conflict in Ukraine is “the first TikTok war” in the world, and the predominance of video in this social network will shape the information circulated (CHAYKA 2022). TikTok is different than YouTube as it only caters short-form videos that need to be very spectacular to be considered by the algorithm. The displayed content is defined by the algorithm. Furthermore, a study carried out by NewsGuard found that TikTok’s code may be prioritising false and misleading content about the war in Ukraine (HERN 2022).

In fact, the use of manipulated and decontextualised videos and photos has been a recurrent technique to misinform public opinion. These images could boost conflict frames (BARTHOLOMÉ et al. 2017), having implications on the public opinion. Since the first days of the war in Ukraine, fake videos have spread rapidly, especially through TikTok, even allowing fake live broadcasts to be made. Sardarizadeh (2022) noted that “while platforms such as Facebook, Instagram and Twitter have been labelling false or misleading viral videos about the war, TikTok seems to be playing catch-up”. On the other hand, Facebook and Twitter have been used for years as instruments of propaganda and disinformation (BENEDICTUS 2016; STELZENMÜLLER 2017; YOUNG 2021).

Several investigations have exposed political disinformation operations on social media by Russian agents, making known their interference in the U.S. elections in 2016 using trolls to exploit racial, social and political divisions (BENEDICTUS 2016; VOLCHEK-SINDELAR 2015; FREELON et al. 2022). Russia is said to have been trying to take advantage of the internet for many years, long before social media existed, with various strategic actions on disinformation aimed at discrediting democratic countries (MEJIAS-VOKUEV 2017; YABLOKOV 2022). This approach implies controlling “the flow of information”, which is one of the goals of recent wars (BABACAN-TAM 2022).

In this regard, since the Cold War, Russia has been identified as one of the main agents in the use of disinformation campaigns, both internally and externally (SCOTT 2022; YABLOKOV 2022; TREYGER et al. 2022). Between Russia and Ukraine, the discourse around information warfare has increased since 2014, with the war in Donbass, namely through the use of disinformation as a weapon by Russia to shape political outcomes and to encourage military mobilisations (TREYGER et al. 2022; BAUMANN 2020).

With the outbreak of war in 2022, Russian disinformation campaigns intensified around the conflict, seeking to destabilise Western politics, blaming the United States for the war and trying to justify its military action as an action to fight Nazis in Ukraine (SMART et al. 2022; MAGDIN 2022; BLANKENSHIP et al. 2022). However, Ukraine has

been held up as a role model for effective counter-disinformation efforts (TREYGER et al. 2022). In this information clutter, Ukrainians have been known to wage war on social media, promoting false stories of war heroes or legends like the ghost of Kiev (GALEY 2022) or the Ukrainian grim reaper (WALLACE 2022). Moreover, with the figure of President Zelensky, Ukraine has promoted its cause and attracted global attention and sympathy through his videos on social media (COHEN 2022). Ukraine's success in social media leads some academics to think that Russia is losing the information war (ARAL 2022). In a post-truth universe, Ukraine has also played its part. Aral (2022) states that "reports abound on social media of more than 4,000 Russian casualties, images of crippled Russian helicopters and armored vehicles and cellphone videos of savage Russian missile attacks on civilian targets". All this is confused, according to Aral (2022), in a mix of verified and unverified videos.

Faced with this problem, it is urgent to study disinformation as a combat strategy in the mid of an information war taking place in a media ecosystem governed by social media. Our study assumes an exploratory nature and its main objective is to understand how disinformation and its main agents reacted, at first, to the outbreak of a war in Europe. These agents refer to actors who spread disinformation. The study carried out a quantitative textual analysis of false content that was checked by the main fact-checkers in the Iberian Peninsula, with the aim of making a first survey of the most used formats, the most discussed topics, and the most important social media for disinformation agents. Our study also sought to ascertain whether the checks carried out by the fact-checkers showed any political bias, considering the political orientation of the checked contents (pro-Ukraine and pro-Russia).

Our research, like other studies (RECUERO et al. 2022; HUMPRECHT 2019), considers fact-checking as a data source, highlighting how important fact-checker databases can be to identify trends and strategies of online disinformation. Based on the objective of exploring the reaction of disinformation agents to the outbreak of war in Ukraine (O1), we aim to answer the following research questions:

RQ1: Which were the most common formats to disseminate disinformation content?

RQ2: How was disinformation shaped from a textual perspective?

RQ3: What was the relationship between the fake content checked and the political orientation towards the countries involved?

## Methods

This study seeks to understand the reaction of online disinformation to the outbreak of war between Russia and Ukraine. Specifically, we analysed all publications classified as false by fact-checkers from Spain (Maldita.es) and Portugal (Polígrafo) related to the war during the first ten days of the conflict (Maldita.es  $n = 49$ ; Polígrafo  $n = 22$ ) (see supplemental material). Our analysis focuses on the media coverage of the main fact-checkers in the Iberian Peninsula, between 24 February and 6 March 2022. 24 February is the day universally accepted as the beginning of the war between Russia and Ukraine,

being that it was on this day that Russian troops invaded Ukrainian territory. Textual analysis was performed using Voyant Tools, in which corpora (also Polígrafo text) was introduced in the Spanish language.

We decided to select these two Iberian fact-checkers not only because of the geographical and linguistic proximity that exists between the two countries, but also because Portugal and Spain have a political party system and a media system with similar characteristics. This may affect the kind of journalistic coverage applied as polarisation is a common trend. It is also acknowledged that the authors come from these countries, which facilitates the analysis.

Besides that, in both countries there are other organisations that work on verification tasks. However, in Portugal Polígrafo is the only medium dedicated exclusively to fact-checking. In addition, Polígrafo covers a wide range of topics. In Spain, Maldita.es has had a wide impact on social media and society in general and is the only Spanish medium that is part of the High-Level Expert Group on Fake News and Online Disinformation created by the European Commission in 2018. Hence, we assess that those fact-checkers are the two leading fact-checking sites in the Iberian Peninsula. Both analyse content of public relevance on a daily basis, verifying items found on the internet or provided by the audience.

## Textual analysis from Voyant Tools

Voyant Tools is an online software that was created by two academics of computing applied to the humanities, Stéfán Sinclair and Geoffrey Rockwell, which provides a free online toolkit that allows quantitatively analysing a text corpus (SINCLAIR-ROCKWELL 2020). Several studies have tested and analysed the various functions of Voyant Tools, verifying that it is an easy-to-use tool that can be very important for academic librarians, but not exclusively in the humanities (MILLER 2018; SAMPSEL 2018; WELSH 2014). Voyant Tools has 28 textual analysis tools that, in a few seconds, extract linguistic and statistical information from the corpus in various formats and sizes (ALHUDITHI 2021). In addition, this software stands out for the graphical and visual way in which it crosses and analyses the data, offering a wide visualisation window with a word cloud that highlights the most relevant words in the corpus, the distribution of words throughout the text, the context of occurrences and co-occurrences or existing correlations between terms (Figure 1).

Although Voyant Tools was developed to assist studies within the digital humanities, there are several studies from other scientific fields that used the software for textual data analysis. In an area far removed from humanities and literary studies, Maramba et al. (2015) used Voyant Tools to collect medical information, surveying and crossing words extracted from patient comments. On the other hand, Gao (2017) used the software to analyse texts from academic publications in order to identify the main trends and research interests. In marketing, Voyant Tools can also serve to analyse open responses from corporate sales and marketing employees (HETENYI et al. 2019). More recently, due

to the multidisciplinary capacity of Voyant Tools, we found works in the literature that analyse the content of posts and comments on diverse social media, such as Facebook, Twitter or YouTube (MIHÁLIK et al. 2022; PREBOR 2021; ARCHEE 2021; KISELEV 2021). In addition, Voyant Tools has also been useful to analyse reader reactions to news (ITTEFAQ et al. 2023) and media coverage of relevant newspapers, through textual analysis of published news articles (CORVO – DE CARO 2020).

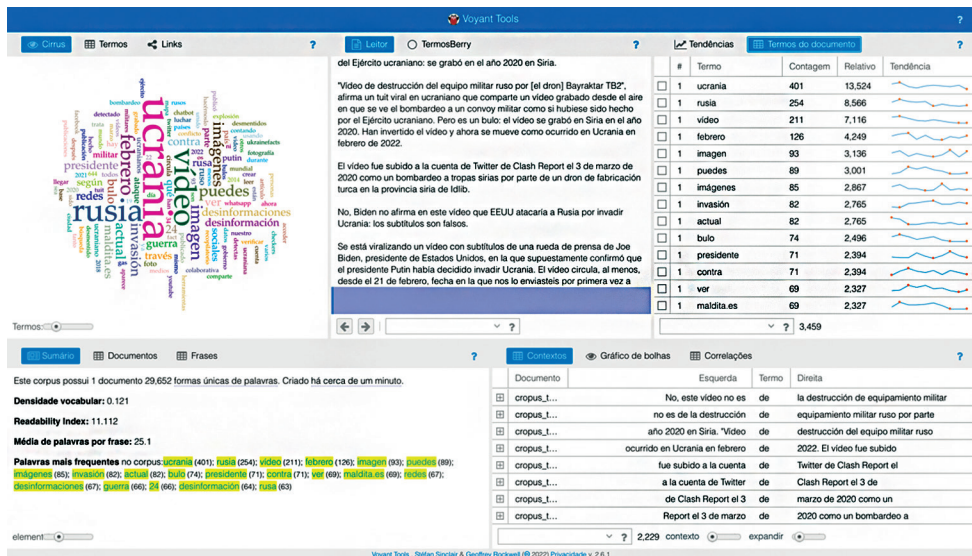


Figure 1: Screenshot of the entire corpus submitted to voyant-tools.org  
Source: <https://voyant-tools.org/>

We performed text mining because this method allows to efficiently analyse an extensive corpus, composed of several minor units, applying various techniques to track the main topics or subjects and keywords of the document (MHAMDI et al. 2018). Above all, the study assumes an exploratory nature and aims to detect the most relevant words in the text, which allows the creation of categories or topics of analysis. For these reasons, we believe that text mining is the most efficient method, as it allows for “quickly extracting useful and innovative insights” (JO-YOU 2019).

In fact, the frequency of words, and their co-occurrences in a given text help to understand the meaning of the text, which is why they are very important instruments for researchers to construct meanings. Hearst (1999: 3) refers that “data mining applications tend to be (semi)automated discovery of trends and patterns across very large datasets”. Several studies (e.g. LEE et al. 2010), which applied the text mining method, used word frequency as the main analysis criterion. In our study, the most frequent words allowed us to construct several topics or category analysis, which contain important information about the corpus itself.

## Procedure

In this study, the Voyant Tools software identified the most relevant words in the analysed text, considering the number of occurrences of words in the corpus. Subsequently, the researchers proceeded to categorise the words found to be the most relevant, into five categories: 1. names of political leaders; 2. nations or countries; 3. disinformation format; 4. social media; and 5. military words or terms associated with war scenarios. The selection of military words was based on the glossary of military terms from the Instituto Universitário Militar and the Academia das Ciências de Lisboa.<sup>2</sup>

After selecting the words for analysis, an attempt was made to understand the relationship between the various categories of words, distributed by the corpora: 1. publications by Maldita.es; 2. publications by Polígrafo; and 3. the corpus general. At first, we resorted to the “Corpus Terms” tool, from the Voyant Tools software, to observe which words have the highest number of occurrences in the corpus. Secondly, we analysed the co-occurrences of the most frequent words in order to carry out a qualitative reading of this relationship. We also analysed the distribution of words throughout the text, using the “Trends” tool, in order to observe how the frequency of words varies between the three corpora. This procedure was repeated for each category of words to analyse their distribution in the publications of the two Iberian fact-checkers.

Third, after completing a descriptive analysis of the data, our analysis focuses on the “general corpus”, in which we include all publications by Polígrafo and Maldita.es. In this procedure, we calculated the most diverse relationships between words and categories in the text, considering the way in which military words are associated with various forms of disinformation and social media through the analysis of word flow diagrams.

Finally, we proceeded to analyse the correlations between the words in the same text. That is, we calculated Pearson’s correlation coefficient by comparing the relative frequencies of words. Thus, a coefficient close to 1 indicates that the words are positively correlated, showing a similar tendency. When close to -1, the correlation between words is negative, revealing an opposite tendency.

Once the textual analysis was completed with the help of the Voyant Tools toolkit, we proceeded to an analysis of the total number of articles ( $n = 72$ ) published by Polígrafo and Maldita.es in order to understand whether there was an ideological tendency of fact-checkers when checking the information. For this, we consider it important to analyse each fact-checking article and classify its content according to its political and ideological orientation: 1. Pro-Ukraine; 2. Pro-Russia; and 3. Neutral. This classification was established regarding the events fact-checked in the story. A neutral article is one that does not expose content in favour of either side, while pro-Ukraine or pro-Russia news items develop a verification that benefits one of them. For example, a pro-Ukrainian article could prove that the Russian news about the support of the Ukrainian people for the invasion are false. In this way, we were able to find out whether there are differences in media coverage, by fact-checkers, in relation to the war.

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<sup>2</sup> Available online at [www.ium.pt/container/106](http://www.ium.pt/container/106)

## Results

Analysing the word clouds formed by the most frequent concepts in the corpora (Figure 2), our study allows us to perceive, at first, that there are three words that are the most relevant in the total corpus: “Ukraine”, “Russia” and “Video”.



Figure 2: Word cloud of the analysed corpora  
 Source: <https://voyant-tools.org/>

Focusing the analysis on these three words, it is observed that two terms “Ukraine” and “Russia” identify the nations or countries involved in the war, while the word “Video” allows detecting the most relevant and verified format or means of dissemination by fact-checkers. However, comparing the Polígrafo corpus with the Maldita.es corpus, “Video” does not occur as frequently as, for example, the word “Image”, which also refers to a type of content dissemination format.

Table 1: Top 10 most frequent words in corpora

Top 10	Words	n	Co-occurrences
1	Ukraine	401	Russia (163), Invasion (63), Attack (43), Conflict (28)
2	Russia	254	Ukraine (162), Invasion (41), Attack (36), Denial (34), Disinformation (28)
3	Video	211	Hoax (26), Circulates (22), Ukraine (19), Publicado (16), Recorded (13)
4	February	126	2022 (26), Dawn (17), Ukraine (17), 23 (13), Russia (10)
5	Image	93	Networks (8), Hoax (7), Ukraine (7), Social (6), Russia (4)
6	Images	85	Video (10), Ukraine (7), Tank (4), Bombings (3)
7	Invasion	82	Ukraine (63), Russia (41), Denial (27), Russian (16)
8	Hoax	74	Video (28), Ukraine (12), February (8), Image (7)
9	President	71	Ukraine (20), Putin (13), Russian (9), Republic (7), Ukrainian (7)
10	Disinformation	67	Hoaxes (42), Denial (34), Russia (6), Ukraine (3)

Source: Compiled by the authors.



Our findings indicate that video is the most recurrent format for disseminating uninformative content. Corroborating the results presented in Figure 2, Table 1 shows that only the words “Ukraine” (n = 411) and “Russia” (n = 254) occur in the text more frequently than the word “Video” (n = 211).

In addition, it should be noted that disinformation, related to the Ukraine-Russia war, considers visual elements to be important, since the words “Image” (n = 93) and “Images” (n = 82) appear as the most frequent words in the corpora of fact-checkers’ articles. In Table 1, it is important to highlight the word “Hoax” as a co-occurrence of terms such as “Video”, “Image” and “Disinformation”. Considering the countries “Ukraine” and “Russia”, it is observed that the co-occurrences point to the words “Disinformation” or “Denial” as being more associated with the word “Russia”.

Analysing Maldita.es, Polígrafo and Corpus Total comparatively, Figure 3 demonstrates that, in percentage terms, fact-checker Maldita.es effectively devoted more attention to video verification than Polígrafo. In addition, through Figure 3, we observe that Polígrafo focused more on social media, such as Facebook and Instagram, while Maldita.es seems to have verified more content on WhatsApp, YouTube and TikTok. This may help explain the greater occurrence of the word “Video” in the Maldita.es corpus.

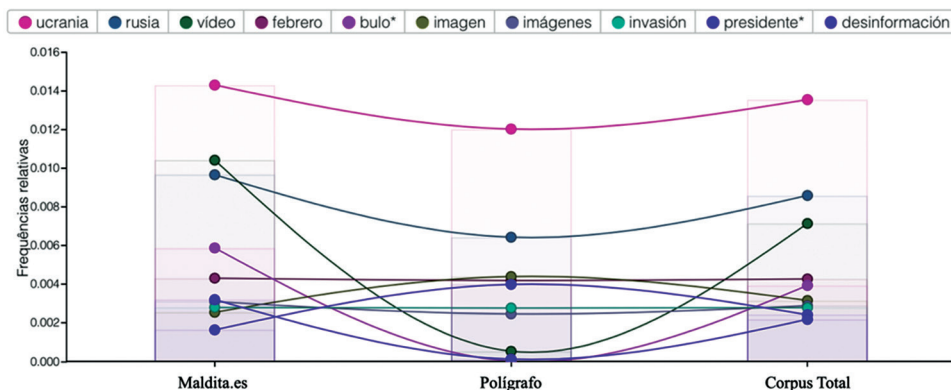


Figure 3: Relative frequency of the most frequent words in each corpus  
 Source: <https://voyant-tools.org/>

Through the analysis of Figure 4 (upper quadrant), we verified that the two most common disinformation formats in the corpora, video and image, appear associated with the illustration of war scenarios. We can see, on the one hand, that the association “video planes” appears with some frequency throughout the text. Although the word “video” is the most widely distributed word, it appears close to words such as “explosion”, “military”, “bombardment” or “troops”.

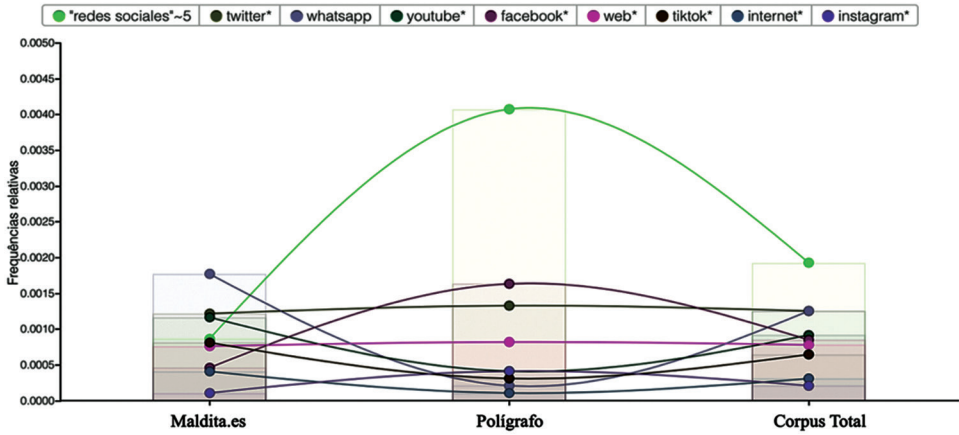


Figure 4: Flow diagram of the war words associated with the most common disinformation formats  
 Source: <https://voyant-tools.org/>

In the lower quadrant of Figure 4, we also find some association between military words and the word “Image”, but not as clearly as when associated with the word “Video”. Table 2 shows how social networks are correlated with military terms in the corpora.

Table 2: Association between words: social networks and war words (*r* of Pearson)

	Facebook	TikTok	YouTube	Twitter	WhatsApp	Instagram
Attacks	.35	.72**	.37	-	.58	.44
Explosions	.67*	.38	.81**	.18	-.55	-.08
Deaths	-	-.13	.66*	.63*	-.28	-
Victims	-	-	.65*	-	-	-
Planes	.08	.04	.64*	-.07	-.25	-.23
Missiles	-	-.37	.49	-.45	-	-
Bombing	-.42	.55	.47	.16	-.26	.23
Guns	.76**	-	.44	-.10	-.32	-.08
Fire	-	-	.23	-	-	-
Soldiers	-	-.53	.07	.31	.18	-
Military	-	-	-.61*	.04	-.21	-
Troops	-	-	-.08	.24	-	-

	Facebook	TikTok	YouTube	Twitter	WhatsApp	Instagram
Tanks	-	-.34	-.08	-.50	.26	-
Bombs	.62*	.02	-.19	-.07	-	-.35
Army	-.01	-.30	-.01	-	.47	-.25
Shots	-.06	-.08	-.40	.28	-.28	-
Armed forces	-	-	-.61	.39	-	-
Attempt	.15	-	-	-	-	-
Prisoners	-	-	-	.63*	-	-
Injured	-	-	-	-	-	.66*

\*p < .05 \*\*p < .01

Source: Compiled by the authors.

Table 2 shows positive and negatively significant correlations between the words that identify social networks and the words related to the war scenario. Therefore, statistically positive correlations between two words indicate that the words show a similar trend, increasing and decreasing together. In case of a statistically negative correlation, the words have opposite tendencies.

Thus, the word “YouTube” seems to be the one most associated with military terms. It is important to highlight the significantly positive correlations between “YouTube” and “Explosions” (r = .81, p < .01), “Deaths” (r = .66, p < .05), “Victims” (r = .65, p < .05) and “Airplanes” (r = .64, p < .05). We also highlight the strong positive correlation between “TikTok” and “Attack” (r = .72, p < .01). These data show, once again, the importance of video in the dissemination of misinformation related to war scenarios, since TikTok and YouTube are social networks that disseminate video content.

Table 3 presents the words that are significantly correlated with the relevant words that constitute the main categories of our analysis: 1. names of political leaders; 2. nations or countries; 3. format of disinformation; and 4. social media. As for the words that identify the nations mentioned in the corpora, the biggest difference is in how the words “Ukraine” and “Russia” are associated with other words. In Table 3, it is possible to observe that the word “Russia” appears positively associated with words related to fact-checking, such as “IFCN” (r = .86, p ≤ .001), “Hoaxes” (r = .85, p ≤ .001), “Checking” (r = .83, p ≤ .001) or “Proven” (r = .76, p = .01).

*Table 3: Significant associations of the categories in analysis with the other words of the corpus (r of Pearson)*

Categories	Word	Positive correlation (words)	Negative correlation (words)	
Nations	Ukraine	Explosion ( $r = .72, p = .01$ )	Putin ( $r = -.72, p = .01$ )	
		Hoaxes ( $r = .63, p = .04$ )	Russian ( $r = -.70, p = .02$ )	
		Planes ( $r = .63, p = .04$ )	Death ( $r = -.70, p = .02$ )	
			Tank ( $r = -.65, p = .04$ )	Nigeria ( $r = -.63, p = .05$ )
			Attacked ( $r = -.63, p = .05$ )	Captured ( $r = -.63, p = .05$ )
			Checked ( $r = -.63, p = .05$ )	
	Russia	IFCN ( $r = .86, p \leq .001$ )	Facebook ( $r = -.72, p = .01$ )	
		Hoaxes ( $r = .85, p \leq .001$ )	Invades ( $r = -.64, p = .04$ )	
		Checking ( $r = .83, p \leq .001$ )	Government ( $r = -.63, p = .04$ )	
		Checked ( $r = .76, p = .01$ )		
		Bombing ( $r = .76, p = .02$ )		
		Attack ( $r = .70, p = .02$ )		
		Hoax ( $r = .70, p = .02$ )		
Disinformation ( $r = .70, p = .02$ )				
Denial ( $r = .69, p = .03$ )				
Dead ( $r = .68, p = .02$ )				
Photo ( $r = .64, p = .04$ )				
American ( $r = .60, p = .05$ )				
China	Armour ( $r = .93, p \leq .001$ )			
	Support ( $r = .90, p \leq .001$ )			
	Support to ( $r = .83, p = .02$ )			
Americans	Murdered ( $r = .75, p = .01$ )			
	Combat ( $r = .75, p = .01$ )			
	Assault ( $r = .70, p = .02$ )			
	Afghanistan ( $r = .69, p = .02$ )			
	Donetsk ( $r = .62, p = .05$ )			

Categories	Word	Positive correlation (words)	Negative correlation (words)
Leaders	Biden	Plane ( $r = .95, p \leq .001$ )	
		Gun ( $r = .88, p \leq .001$ )	
		Planes ( $r = .64, p = .04$ )	
	Putin	Mounting ( $r = .68, p = .02$ )	Bombs ( $r = -.72, p = .01$ )
		Front page ( $r = .66, p = .03$ )	News ( $r = -.62, p = .02$ )
		Adolf ( $r = .61, p = .05$ )	
	Zelensky	They died ( $r = .91, p \leq .001$ )	
		Communist ( $r = .84, p \leq .001$ )	
		Independence ( $r = .79, p \leq .001$ )	
		Historical ( $r = .76, p \leq .001$ )	
		Hashtag ( $r = .76, p \leq .001$ )	
		Prisoners ( $r = .75, p = .01$ )	
		Release ( $r = .75, p = .01$ )	
		Example ( $r = .74, p = .01$ )	
		President ( $r = .73, p = .01$ )	
Dead ( $r = .73, p = .01$ )			
Armed ( $r = .65, p = .04$ )			
Bombed ( $r = .64, p = .04$ )			
TV ( $r = .63, p = .05$ )			

Categories	Word	Positive correlation (words)	Negative correlation (words)
Social Networks	YouTube	Explosion ( $r = .81, p \leq .001$ )	Facebook ( $r = -0.71, p = .02$ )
		Video ( $r = .78, p \leq .001$ )	Fake ( $r = -.65, p = .03$ )
		Hoax ( $r = .74, p = .01$ )	
		Americans ( $r = .73, p = .01$ )	
		Dead ( $r = .66, p = .03$ )	
		Fire ( $r = .65, p = .03$ )	
		Victims ( $r = .65, p = .03$ )	
		Would attack ( $r = .65, p = .04$ )	
		Injured ( $r = .65, p = .04$ )	
		Plane ( $r = .64, p = .04$ )	
		IFCN ( $r = .64, p = .04$ )	
		U.S. ( $r = .63, p = .04$ )	
		Biden ( $r = .63, p = .04$ )	
Social Networks	TikTok	Crimea ( $r = .88, p \leq .001$ )	
		Dead ( $r = .74, p = .01$ )	
		Attack ( $r = .72, p = .01$ )	
		Injured ( $r = .71, p = .01$ )	
		Russia ( $r = .67, p = .03$ )	
		Americans ( $r = .65, p = .03$ )	
Social Networks	Facebook	Europe ( $r = .83, p \leq .001$ )	Hoaxes ( $r = -.81, p \leq .001$ )
		U.S. ( $r = .73, p = .01$ )	Checking ( $r = -.77, p \leq .001$ )
		Guns ( $r = .72, p = .01$ )	Bombing ( $r = -.71, p = .03$ )
		Explosions ( $r = .67, p = .03$ )	Attack ( $r = -.66, p = .03$ )
		Bombs ( $r = .62, p = .05$ )	Denial ( $r = -.66, p = .03$ )
Social Networks	Twitter		Disinformation ( $r = -.64, p = .04$ )
		China ( $r = .77, p \leq .001$ )	
		Fake ( $r = .75, p = .01$ )	
		Shooting up ( $r = .65, p = .03$ )	
		False ( $r = .64, p = .04$ )	
		Communist ( $r = .64, p = .04$ )	
		PCP ( $r = .64, p = .04$ )	
		Cyberattack ( $r = .64, p = .05$ )	
		Memes ( $r = .64, p = .05$ )	
		Nazi ( $r = .63, p = .04$ )	
Dead ( $r = .63, p = .05$ )			
Social Networks	WhatsApp	Checkers ( $r = .91, p \leq .001$ )	
		Denial ( $r = .91, p \leq .001$ )	
		Detected ( $r = .91, p \leq .001$ )	
		Disinformation ( $r = .88, p \leq .001$ )	
		Checked ( $r = .84, p \leq .001$ )	
Social Networks	Instagram	Fact ( $r = .82, p \leq .001$ )	
		Image ( $r = .83, p \leq .001$ )	
		Armed ( $r = .74, p = .01$ )	

Categories	Word	Positive correlation (words)	Negative correlation (words)
Video		Hoax (r = .96, p ≤ .001)	Facebook (r = -.90, p ≤ .001) Peace
		IFCN (r = .92, p ≤ .001)	(r = -.71, p = .02)
		Checking (r = .88, p ≤ .001)	News (r = -.67, p = .03)
		Checked (r = .81, p = .003)	Post (r = -.64, p = .04)
		Bombing (r = .81, p = .003)	
		Explosion (r = .78, p = .007)	
		Offensive (r = .78, p = .007)	
		Russia (r = .74, p = .01)	
		American (r = .73, p = .01)	
		Fact-checkers (r = .72, p = .01)	
		Dead (r = .70, p = .02)	
		Attack (r = .69, p = .02)	
		Injured (r = .68, p = .02)	
		Ukraine (r = .66, p = .03)	
Denial (r = .65, p = .04)			
Disinformation (r = .63, p = .04)			
Formats	Image	Injured (r = .89, p ≤ .001)	Checkers (r = -.63, p = .04)
		Photo (r = .76, p ≤ .001)	Denial (r = -.63, p = .04)
		British (r = .72, p = .01)	
		Helicopter (r = .70, p = .02)	
	Germany (r = .68, p = .03)		
	Post	Polígrafo (r = .89, p ≤ .001)	Maldita.es (r = -.73, p = .01)
		Military (r = .86, p ≤ .001)	Denial (r = -.66, p = .02)
		America (r = .86, p ≤ .001)	Hoax (r = -.67, p = .03)
		Guns (r = .82, p = .003)	Checking (r = -.66, p = .03)
		Europe (r = .81, p = .004)	Internet (r = -.63, p = .04)
		Clinton (r = .75, p = .01)	
		Aggressor (r = .75, p = .01)	
		Lie (r = .74, p = .01)	
		Facebook (r = .68, p = .02)	
Portugal (r = .65, p = .03)			
U.S. (r = .65, p = .04)			
Peace (r = .62, p = .05)			

\*p < .05 \*\*p < .01

Source: Compiled by the authors.

As for political leaders, we noticed that the word “Zelensky”, which identifies the President of Ukraine, when compared to other leaders, has more relevant words significantly associated.

Focusing our analysis on the words that identify social networks, the tendency of the words “YouTube” and “TikTok” to appear positively associated with words of war is confirmed. The word “Facebook” is negatively associated with words related to fact-checking activity, such as “Hoaxes” (r = -0.81, p ≤ 0.001), “Checking” (r = -0.77, p ≤ 0.001) or “Denial” (r = -0.66, p = 0.03), which seems to indicate that this social

network has fallen into the background with regard to fact-checking priorities. Emphasising the differences between the fact-checkers Polígrafo and Maldita.es, the word “Post” appears positively associated with words such as “Polígrafo” ( $r = 0.89, p \leq 0.001$ ), “Portugal” ( $r = 0.65, p = 0.03$ ) and “Facebook” ( $r = 0.68, p = 0.02$ ), but negatively correlated with Maldita.es ( $r = -0.73, p = 0.01$ ). On the other hand, the word “Video” is positively and significantly associated with relevant action words of fact-checkers.

Analysing Table 4, we observe that, in 72 publications verified by the fact-checkers, more than 50% are Pro-Ukraine publications, with 30.6% of the disinformation verified as Pro-Russia. Of the remaining publications checked, 18.1% are neutral, not being evident that they favour Russia or Ukraine.

*Table 4: Political orientation of content checked by fact-checkers (% per column)*

Political orientation	Fact-checker		
	Total %	Maldita.es %	Polígrafo%
Pro-Ukraine	51.4	51.0	52.2
Pro-Russia	30.6	32.7	26.1
Neutral	18.1	16.3	21.7
<i>n</i>	72	50	22

*Source:* Compiled by the authors.

Considering the ideological orientation of the political content of the verified publication (1 - Pro-Ukraine, 2 - Pro-Russia, 3 - Neutral), we did not find any significant trend between Polígrafo and Maldita.es [ $\chi^2(2, n = 72) = .479, p = .78; v = .082$ ].

## Discussion and conclusions

Overall, our study highlights the importance of video for agents of disinformation in the early days of the war between Ukraine and Russia. After the words “Ukraine” and “Russia”, the word “Video” was the one that came up most frequently in fact-checkers during the first ten days after the Russian invasion. Furthermore, our findings show that video was essential to illustrate war scenarios, such as bombings and explosions. In fact, these results are in line with the capabilities that technology currently has, with common mobile devices producing high quality videos.

As previously mentioned, this conflict is branded as the “smartphone war” (STASTNA 2022). Several investigations related to the same period of our data collection warned that we were facing an information war, in which fake videos are broadcast to attract views (SARDARIZADEH 2022). Also on the Ukrainian side, President Zelensky uses social media to share personal videos, apparently recorded spontaneously on a smartphone (OECD 2022). To date, 324 sites that spread war disinformation have been identified (NewsGuard 2022) and a report by the Center for Information Resilience, a non-profit



association created to combat disinformation, monitored and collected information from Ukraine, creating a database with around 7,000 videos (STRICK 2022). The use of video by agents of disinformation is easily understandable, considering that video has a strong emotional impact and can quickly go viral. For example, at the beginning of the war, an influencer broadcasted live videos about the war and achieved almost a million views per night (SERAFIN 2022).

Nor can we ignore that the war in Ukraine coincides with the rise of the TikTok platform, an application that distributes video content, which in 2022 was the most downloaded in the world (PAUL 2022). Furthermore, YouTube is also the most popular social media platform in Russia, having served to spread pro-Kremlin online disinformation, before YouTube blocked Russian state media (11 March) (PERRIGO 2022; GOLOVCHENKO et al. 2022). Earlier, during the war in Syria, Russian state media sought, through YouTube, to legitimise their military intervention in that country (CRILLEY-CHATTERJE-DOODY 2020). These data help, therefore, to explain the fact that our findings demonstrate that the words “YouTube” and also “TikTok” appear significantly related to the words of war in the text. It is also very important to note that our data collection took place before the main social media restriction policies imposed on Russian propaganda in relation to the war in Ukraine (YUSKIV 2022).

On the other hand, our results also show that the word “Russia” tends to be more positively associated with words related to disinformation (such as Hoax, Checking, IFCN, Denial) when compared to the word “Ukraine”. However, our latest analysis regarding the political orientation of checked disinformation shows that half of the publications favour the Ukrainian nation. Although most of the prior research emphasises the role of the Russian state as disseminator of online disinformation (YABLOKOV 2022; GOLOVCHENKO 2020), the findings illustrate that more fake news were pro-Ukraine than pro-Russia in the time period investigated.

As previously happened in the conflict between Russia and Ukraine (MEJIAS-VOKUEV 2017), it is possible that citizens actively participate in the distribution of false information. Considering the Russian invasion, some recent studies found that pro-Ukrainian narrative was oriented to foster support for Ukraine and the Ukrainian army (THOMPSON 2022). Beyond the action of the Ukrainian Government, some accounts of the civil society on Twitter or TikTok such as Ukrainian Memes Forces has generated contents to external audiences (TILTON-AGOZZINO 2023). Further research should definitely evaluate whether some of those messages could be categorised as disinformation.

In this way, our analysis seems to suggest that with regard to this information war, there is the spreading of disinformation on both sides. Nevertheless, some limitations should be acknowledged. Only two sites for two countries were analysed, which generates a small sample. In this sense, it would also be noteworthy to explore the evolution of the fact-checking activity during more extended time frames.

Despite those limitations, our findings seem to be aligned with some authors, who argue that Ukraine is winning the information war, seeking to expose Russian military weaknesses (ARAL 2022). This perception may be influenced by journalistic biases and editorial interests within fact-checking organisations, but the fact is that the verified

content was pro-Ukraine during the first days of the war. Furthermore, it should be noted that already in relation to the fighting in Donbass between 2014 and 2015, Ukraine served as an example of how to face Russia's efforts to spread disinformation (TREYGER et al. 2022).

In short, our research shows, firstly, that video is crucial for disseminating false war-related content, associated with online platforms that favour this format, namely YouTube and TikTok. The frequency of videos reveals an emotional approach related to war scenarios in terms of words, which is different to other topics. Secondly, our study represents an important contribution to the current debate about the role of disinformation not only as an offensive weapon, but also as a defence strategy in a disinformation war.

This preliminary, exploratory study also highlighted the role that fact-checking can play for researchers, allowing them to analyse their databases. Thus, in future studies, we intend to expand the analysed sample to publications by several European fact-checkers with the aim of identifying different strategies and motivations for spreading disinformation between the two nations at war.

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