War Stories in Social Media: Personal Experience of Russia-Ukraine War

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Abstract. In light of the current Russia-Ukraine war, traumatic stress in civilian Ukrainians is a critical issue for psychological science to examine. Social media is often viewed as a tribune for authors' self-expressing and sharing stories on the war's impact upon their lives. To date, little is known about how the civilians articulate their own war experience in social media and how this media affects the processing of traumatic experience and releasing the traumatic stress. Thus, the goal of the study is to examine how the personal experience of the Russia-Ukraine war 2022 is narrated on Facebook as a popular social media venue. The study uses a corpus of 316 written testimonies collected on Facebook from witnesses of the Russia-Ukraine war and compares it against a reference corpus of 100 literary prosaic texts in Ukrainian. We analyzed both corpora using the Ukrainian version of the Linguistic Inquiry and Word Count software - LIWC 2015 (Pennebaker et al., 2015). We identified psychological and linguistic categories that characterized the war narratives and distinguished it from the literary reference corpus. For instance, we found the style of Facebook testimonies to be significantly less narrative and more analytic compared to literary writings. Therefore, writers in the social media focus more on cognitive reappraisal of the tragic events, i.e., a strategy known to lead to a reduction of stress and trauma.

Keywords: Russia-Ukraine war, Facebook, narrative, LIWC, categorical-dynamic index.

Засскін Сергій, Куперман Віктор, Глова Ірина, Засскіна Лариса. Розповіді про війну в соцмережах: особистий досвід переживання російсько-української війни.

Анотація. Під час нинішньої російсько-української війни травматичний стрес у цивільних українців є критичним питанням для психологічної науки. Соціальні мережі часто розглядаються як трибуна для самовираження дописувачами та обміну своїми історіями про вплив війни на їхні життя. Сьогодні в літературі є небагато досліджень про те, як цивільне населення відображує в соціальних мережах власний досвід війни і як вони впливають на перероблення травматичного досвіду та звільнення від травматичного стресу. Отже метою цього дослідження було з'ясувати, як особистий досвід російсько-української війни 2022 року відтворено у популярній соцмережі Facebook. У дослідженні використано корпус із 316 письмових свідчень, зібраних у Facebook від свідків російсько-української війни, який надалі порівнюється з корпусом із 100 художніх прозових текстів українською мовою. Унаслідок аналізу обох корпусів за допомогою української версії програми Linguistic Inquiry and Word Count – LIWC 2015 (Pennebaker et al., 2015) визначено психологічні та лінгвістичні

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категорії (включаючи категорійно-динамічний індекс), які характеризували наративи про війну. Статистично доведено, що стиль розповідей у Facebook більш аналітичний, порівняно з літературними творами. Відтак, користувачі соціальних мереж здебільшого були зосереджені на когнітивному переробленню трагічних подій, тобто застосовували стратегію, спрямовану на зменшення стресу й травми.

Ключові слова: російсько-українська війна, Facebook, наратив, LIWC, категорійнодинамічний індекс.

Introduction

Social media is fast becoming a key instrument in reflecting the experience of war in civilian population. The war narratives, written for and broadcasted via social media, are considered to be an important resource for all conflict actors and a tool for shaping the conflict itself (Prier, 2020). In addition, social media optimizes communication and makes it time-efficient in terms of disseminating information among a large audience. Social media is especially useful under circumstances of social isolation due to active warfare, including artillery shelling (Singer & Brooking, 2018).

As of 2022, there are over 2.9 billion active Facebook users and over 400 million active Twitter users (https://www.statista.com/statistics/272014/globalsocial-networks-ranked-by-number-of-users/). Studies on the role of social media show its ability to impact the well-being of social media users and even shape critical political events of the twenty first century. For instance, there is evidence that social media played a crucial role in regulating Russia's use of cyber warfare and disinformation in annexing Crimea in 2014; President Trump's election used Twitter as a (mis/dis)information tool as well (Zeitzoff, 2017). At least in part, the socialpolitical impact of social media derives from its role as a plateform for constructing individual and collective memories. Specifically, social media expresses the individuals' and community's preferences and choices in describing events and thus may bias the readers' memories accordingly. As Bartoletti (2011) points out, social media defines the trajectory for individual remembrance and forgetting, which influences the collective memory of important historical events. This function of social media is also aligned with a positive relationship between social media use and social capital as a system of networks, norms, and trust, which enable individuals to work together effectively (Brown & Michinov, 2019; Tefertiller et al., 2020). Additionally, recent results show that individuals use social media to get emotional support, which increases their perceived social belonging (Ostic et al., 2021).

A much-debated question is whether mass media has a positive or negative impact on mental health and well-being. Recent findings suggest that social media usage is frequently associated with anxiety, loneliness, depression and social isolation, since it may serve as a barrier for face-to-face communication with others (Ostic et al., 2021). However, some studies indicate that social media develops a sense of belonging and connectedness with others (Twenge & Campbell, 2019) and decreases social isolation. The latter issue has grown in importance in light of recent pandemic time and forced distant functioning of people all over the world during the

last years (Chen & Li, 2017; Roberts & David, 2020). One of the most significant recent findings argues that positive and negative impacts on well-being and mental health co-exist. The polarity of the overall impact depends on a variety of factors. In particular, social media usage widens one's social contacts, establishes new connections with heterogeneous groups and increases social interactions between people (Kim & Kim, 2017).

This study examines social media as a platform for expressing in writing individual experiences and emotional distress related to the Russia-Ukraine war. Pennebaker and Beall (1986) argue that the act of writing about emotional experiences of stressful or traumatic events subsequently improves individual mental and physical health. Moreover, articulating one's individual thoughts, emotions, and feelings rather than narrating a pure sequence of facts and events plays a crucial role in releasing distress. Therefore, essays of the individuals whose physical and mental health improved as a result of writing are self reflective, emotionally open, and thoughtful (Pennebaker & Seagal, 1999). The therapeutic potential of writing has been recognized as well. Gawlytta et al. (2022) proposed Internet-based cognitive-behavioural writing therapy (iCBT) asking patients with PTSD to write assignments over a 5-week period. The results of this research show that post-intensive care for PTSD may be more effective when iCBT is administered. It stands to reason that social media may be an essential therapeutic setting for people experiencing continuous traumatic stress during the wartime.

Social media is clearly important as a strategic communication arena during armed conflicts. Yet there remains a paucity of evidence on how raw and immediate war experience is reflected on social media while the war is ongoing. Little is known about how the civilians articulate their own war experience and it is not clear how the usage of social media affects the processing of traumatic experience and the releasing of traumatic stress.

The aim of the current research is to enhance our understanding of how the personal experience of the Russia-Ukraine war 2022 is narrated in the social media venue. To this end, we examine the use of linguistic units and the prevalence of psychologically meaningful categories in the corpus of Ukrainian texts posted on Facebook since the beginning of the Russia-Ukraine war (24 Feb 2022) till the time of this writing (September 2022), see details below. The following research questions are relevant to the current study on sharing individual experiences of the Russia-Ukraine war in social media and its impact on mental health and psychological wellbeing:

RQ1: What psychologically and linguistically meaningful categories represent individual experience of the Russia-Ukraine war on social media?

RQ2: Are there any significant differences in linguistically and psychologically meaningful categories between social media narratives on war and texts written outside of the war context?

RQ3: What style of representing war experience (analytic or narrative) is predominant in social media users?

The three research questions posited above are addressed through linguistic analyses of the Ukrainian-language corpus of written narratives of war published on Facebook since the beginning of the Russia-Ukraine war, from February—September 2022. In analyzing RQ1, we zoomed in on psychological categories that we predicted to be most relevant to the expression of trauma in personal written narratives. One category of obvious relevance is emotionality of the narratives - defined in the literature either through atomic and distinct emotions (joy, sadness, disgust, anger, and fear; see Ekman & Oster, 1979; Roseman et al., 1990) or along the largely independent dimensions of valence/positivity and arousal (Osgood & Walker, 1959; Russell, 1980). We examined the affective content of the narratives by identifying words representing positive and negative emotions and quantifying their prevalence in the texts. Another psychological category of importance is for traumatic memory and decreasing the probability of PTSD is efficient social support. To estimate linguistic expression of this category in the war narratives we examined sets of words related to social and family relations (Pennebaker et al., 2015; Zasiekina et al., 2019). Several other categories of relevance are introduced in detail below.

Psycholinguistic characterization of a corpus of writing proposed in RQ1 requires a comparator, i.e., a reference corpus of written texts. In this study, the target corpus of Facebook testimonies of war are compared to a corpus of Ukrainian literary texts written outside of the war context, see below for details. RQ2 then constitutes a statistical comparison of the prevalence that select psychological and linguistic categories have in the target vs reference corpus.

A final linguistic factor that we consider as RQ3 is the style of writing, known to be indicative of the successful or unsuccessful processing of trauma, see below. Two major styles are distinguished in the literature, i.e., the analytic and the narrative styles, see definitions below. The former style is considered to be indicative of active reappraisal of the traumatic event and may lead to desirable traumatic stress release (Pennebaker & Seagal, 1999). RQ3 is then concerned with determining the prevalent writing style in the target corpus of the Facebook war narratives, compared to the literary reference corpus.

In what follows, we present the corpus and the analyses and draw conclusions on the "real-time" psychological impact of the wartime on the well-being of war witnesses and survivors.

Method

Participants and Materials

This study uses two corpora – a target corpus of 316 written testimonies collected from witnesses of the Russia-Ukraine war in February—September 2022 and a reference corpus of 100 Ukrainian literary prosaic texts. In the Facebook corpus, written testimonies in Ukrainian related the personal experiences of the

writers (and in some case, their families) with the ongoing war, occupation and flight. The testimonies are supplemented with English translations and, in some cases, with video and photo materials: This study solely analyzes texts written in Ukrainian. The testimonies were submitted via the Facebook group *Writings from the War* (publicly available at https://www.facebook.com/WritingsFromTheWar) initiated and administered by Dr. Alex Averbukh (University of Alberta). A total of 316 individuals voluntarily submitted their testimonials: The data are openly accessible in public domain. The Facebook corpus consists of 316 written texts presenting monologues or dialogues, with a total of 62,196 word tokens. Meta-data (e.g., age, place of residence before and during the war) are available for some of the participants: We do not make use of the meta-data.

The literary reference corpus was compiled as the material of a DSc thesis (Zasiekin, 2020) and is based on Ukrainian literary prose written by native Ukrainian writers (Zasiekin et al., 2022). The corpus incorporates 100 prosaic texts from the 19th–21st centuries of 20,000 words each, totaling 2,000,000 word tokens. Due to their balanced incorporation of narration, description, and dialogue segments, they represent a comparable corpus of texts with the Facebook texts. The scarce availability of the war topic in the literary corpus makes it a 'norm', a reference corpus against which the corpus of Facebook texts is contrasted.

Procedure

We analyze war narratives in social media and literary texts using the Ukrainian version of the Linguistic Inquiry and Word Count software – LIWC 2015 (Pennebaker et al., 2015). LIWC is a widely used tool for computerized text analysis. Its basis is a set of curated word lists associated with semantic categories relevant for characterization of psychological states and linguistic preferences of the text writer. The LIWC classifies words in the input texts according with its pre-defined categories, including positive and negative emotions, motivation, thinking styles and social relationships. In total, the LIWC defines 125 categories based approximately on 6,400 words (Pennebaker et al., 2015).

In line with the notion that "[t]he words we use in daily life reflect who we are and the social relationships we are in" (Tausczik & Pennebaker, 2010, p. 25), we make use of select LIWC semantic categories to quantify and highlight the individual experience of the Russia-Ukraine war. The key to the analyses of traumatic experience is the frequency count of words belonging to linguistically and/or psychologically relevant categories (RQ1) in comparison to a reference corpus that does not reflect experiences of war (RQ2).

An additional aspect of linguistic structure considered here is the writing style of the war testimonies. Specifically, we make use of a Categorical-Dynamic Index (CDI) – one of reliable markers of the text author's narrative or analytic style (Jordan & Pennebaker, 2017; Taraban et al., 2022). The index consists of two independent quantities, derived from language use. The Categorical index draws on the observation that the more the authors use articles and prepositions, the more explicit

is their abstract thinking and cognitive complexity. Higher values of the Categorical index are diagnostic of the analytical writing style. In Jordan & Pennebaker's (2017) formula, based on the English language, articles (which serve as noun modifiers) and prepositions are word categories associated with a space-related story. As the Ukrainian language has no category of articles, for the purposes of our analysis we replaced it by adjectives that also serve as modifiers of nouns:

Categorical =
$$(articles + prep)/2$$
 (1)

Modified for Ukrainian:

Categorical =
$$(adj + prep)/2$$
 (1a)

The formula defining the Dynamic index for English incorporates personal and indefinite pronouns, auxiliary verbs, conjunctions, adverbs and terms of negation. We modified the formula by deleting auxiliary verbs, since the Ukrainian language does not have such verb forms:

$$Dynamic = (ppron + ipron + auxverb + conj + adverb + negate)/6$$
 (2)

Modified for Ukrainian:

$$Dynamic = (ppron + ipron + conj + adverb + negate)/5$$
 (2a)

Higher values of the Dynamic index are typically associated with the narrative style of writing.

Statistical analyses compared the Writings from the War corpus and the reference literary corpus in terms of percentages of words belonging to specific linguistic and psychological categories, as well as indices of the writing style defined in (1a) and (2a). All analyses were conducted in SPSS version 26.0.

Results and Discussion

Statistical analyses identified psychologically and linguistically meaningful categories that particularly strongly represented individual experiences of the Russia-Ukraine war on social media (see Table 1). These were the categories that demonstrated statistically significant (at the 5% level) differences in the percent of words from those categories found in Facebook narratives on war versus literary texts. The LIWC-processed numbers in Table 1 represent the mean percent of total words in the respective narratives that fall into a specific linguistic or psychological category. Below we discuss the semantics of those categories and their relevance for the psychological characterization of witnesses and survivors of the Russia-Ukraine war, in line with RQ1 and RQ2 posited in the Introduction.

Table 1 Mean Percents, Standard Deviations and t-test Outcomes for Linguistic and Psychological Meaningful Categories of All War Narratives on Facebook (n = 316) and Literary Texts (n = 100)

Variables	War narratives (n=316)		Literary texts (n=100)		t	p
	Mean	Min- Max	Mean	Min- Max		
	(SD)		(SD)			
We	.72	.00	.22	0.01	5.119	< .001
	(.96)	6.12	(.21)	1.40		
Social	3.97	.00	3.12	1.73	2.663	.008
	(3.14)	33.33	(.56)	4.80		
Family	1.02	.00	.42	.14	2.612	.009
	(2.31)	33.33	(.18)	1.06		
Female	.59	.00	.56	2.04	.225	.882
	(1.11)	7.69	(.31)	.11		
Male	.01	.00	.07	.00	-6.547	< .001
	(.06)	0.53	(.11)	.98		
Cogproc	6.35	.00	7.89	5.15	-3.675	< .001
	(4.13)	25.00	(1.36)	13.43		
Affiliation	1.14	.00	.52	.21	2.861	.004
	(2.16)	33.33	(.24)	1.71		
Focuspresent	1.39	.00	.98	.39	2.379	.018
1	(1.71)	18.00	(.33)	2.12		
Posemo	.84	.00	.64	.33	.947	.344
	(2.12)	33.33	(.15)	1.03		
Negemo	.58	.00	.55	.22	.226	.821
C	(1.41)	20.00	(.16)	1.62		

Three categories connected to social relations were more prevalent in the Facebook corpus than in the literary corpus. One such category "We" as a marker of internal agency (Zasiekina et al., 2019) represents a collective response shared between people. Two additional categories – "Social" and "Family" – are the most common linguistic markers of social relations and thus their frequent use confirm authors' tendency to group together in the face of a threat. Jointly, these results demonstrate a greater reliance on social ties at the level of a person, family and society, during the war compared to the peacetime. A highly related finding is a greater prevalence of category "Affiliation" in the Facebook vs literary corpus. Affiliation is found under the LIWC super-category of "Drives", together with achievement and power as two additional basic human needs (McClelland, 1961).

The predominant role of Affiliation in Facebook narratives is in line with the stronger impact of the "We" and "Social" categories that amplify the effect of "togetherness".

Other noteworthy findings included a small percent of words from the "Male" categories in Facebook vs literary corpus: No statistical difference was found in percents of words from the "Female" category. We speculate that this finding is related to the notion that the influence of mass violence and political oppression affects mainly women, due to their being "the cultural and biological repository of the nation" (Naimark, 2001, p. 83). An additional finding was that markers of cognitive processing were less frequent in social media narratives compared to literary texts.

As for time reference, the participants tended to be aware of and involved in the current events demonstrated by the significantly higher percent of markers of present time – LIWC category 'Focuspresent'. Taken together, the results show authenticity is associated with more personal and honest communications.

According to our objectives, we also examined the affective content of the narratives by identifying words representing positive ("Posemo") and negative ("Negemo") emotions. Somewhat counterintuitively, neither category revealed a significant difference between the target and the reference corpus (see Table 1). This suggests that the expected prevalence of negative emotions due to experiencing an ongoing war does not propagate to the written expression of those experiences. Either language is an inefficient vehicle for this specific expression, or writers use effective coping strategies that offset or reduce the negative emotions.

An additional question (RQ3) that we ask is what style of representing war experience (analytic/narrative) is predominant in social media users. Table 2 summarizes the comparative statistical analysis of style in social media versus literary texts. Specifically, it reports comparisons of two indices: Categorical (more prevalent in the analytical style) and Dynamic (more prevalent in the narrative style).

Table 2
Mean Percents (Standard Deviation in Parenthesis) for Categorical and Dynamic Indices, by Corpus

Categorical- Dynamic Indices	Facebook corpus n=316	Literary corpus n=100	t	p
Categorical	5.80 (6.75)	5.35 (.48)	.674	.501
Dynamic	3.34 (2.47)	3.85 (.63)	-2.059	.040*

p < .05. All tests are two-tailed.

The differences between Categorical Index values in both corpora were not significant (p = .501). However, in their value of the Dynamic index (p = .040),

literary texts significantly exceeded Facebook texts. Because the Dynamic index is less prevalent in the war narratives, it confirms the fact that the style of representing war experience is less narrative and more analytic in social media users. Using an analytic style in their writings from the war reveals authors' higher cognitive processing of their painful experience. Psychologically, this can be treated as a positive feature: as argued by Pennebaker et al. (2000), story-tellers neutralize their traumatic experience by relieving it through verbal expression. We tentatively conclude that the Facebook authors focus more on cognitive reappraisal of the tragic events, which can lead to a reduction or elimination of their trauma and stress.

Conclusions

The present research aimed to examine how the personal experience of the Russia-Ukraine war 2022 is narrated in the social media venue. Although the affective content of the Facebook narratives was relevant, it gained no statistical significance in these texts when compared with literary texts. However, with social categories like "Family", "Social", "We", and "Affiliation" being prominent in the Facebook vs literary corpus, the social support and "togetherness" factor proved to be vital in the war narratives. The difference between linguistically and psychologically meaningful categories in social media narratives on war and literary texts was also seen in the stronger focus on present time by the Facebook contributors, relative to literary texts. Finally, the style of their writing – more analytic and less narrative – defined through the Categorical-Dynamic Indices tended to reflect the Facebook authors' active reprocessing of the wartime events that altogether might have a positive impact on leveling-out their mental health and psychological well-being. We hope the present exploration of the narratives of the Russia-Ukraine war will guide future research into the structure and content of the war narratives. We expect this research to point to both the nature and extent of experienced trauma as well as coping and healing strategies that witnesses and survivors of war employ.

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