

Creating a Model of War and Pandemic Apprehension: Textual Semantic Analysis

Solomiia Albota

Lviv Polytechnic National University, Bandera Str. 12, 79013 Lviv, Ukraine

Abstract

The phenomenon of Russian-Ukrainian war and the notion of pandemic have been introduced in the paper. The process of creating models of the mentioned concepts has been considered. The emphasis has been put on cognitive, linguistic and psychological as well as linguistic and social aspects of communicative actions within the Reddit social environment. As we deal with social network, the first and foremost task is to linguistically analyze the comments to the posts referring both to WAR and PANDEMIC concepts. The semantic nature of the posts with the largest number of comments as well as with the least amount of comments has been revealed. The textual semantic analysis involves online Reddit statements to have been linguistically interpreted and categorized into semantic groups and then proved by the software toolbox LIWC-22. According to the established semantic groups, two cognitive sub-models with linguistic psychological and social apprehension aspects (war implications and pandemic consequences) have been developed and further converted into one general cognitive model. Differences and similarities within particular semantic groups have been distinguished and linguistically interpreted. The statistical evaluation of the obtained semantic analytical data has been provided.

Keywords

war, pandemic, communicative actions/speech acts, social media affordances, textual semantic analysis, LIWC-22 software toolbox, online comments, Reddit social network, similarities, differences, implicit linguistic markers, explicitness, implicitness, statistics

1. Introduction

Having studied multifaceted nature of social networks for a couple of years, we encounter the tendency in its social affordance. Depending on the latter there are manifestations in how people socialize within certain media, provide meticulous adherence to information dissemination and behave authoritatively in terms of their assertive statements. Although commenting process has become one of the most studied area within social media, we cannot do without analyzing such linguistic factors of media affordance as cultural and social as well as cognitive perceptions of utterances. By medium of comment construction which signifies the certification of user presence and his/her inclination to relate to others online, the performance of communicative action takes place. Each user when commenting implicitly or explicitly expresses certain attitude towards the situation he/she describes or the situation mentioned earlier by him/her or another user or his/her assessment of another user's comment, etc. Thus, the speech act type is being formed. Simultaneously, particular speech act correlates with the certain attitude/assessment which has been manifested.

In our case, the attention is paid to the linguistic nature of social network comments regarding semantics of war and pandemic notions unlike situations where researchers [1, 2] provide content analysis of the online statements when it concerns the theory of speech acts. As the notions under investigation imply cultural senses of chaos and loss, we claim that emotional states will dominate while analyzing their semantic nature, which is common for expressive speech act. By expressive

COLINS-2023: 7th International Conference on Computational Linguistics and Intelligent Systems, April 20–21, 2023, Kharkiv, Ukraine

EMAIL: Solomiia.M.Albota@lpnu.ua (S. Albota)

ORCID: 0000-0003-3548-1919 (S. Albota)



© 2023 Copyright for this paper by its authors.

Use permitted under Creative Commons License Attribution 4.0 International (CC BY 4.0).

CEUR Workshop Proceedings (CEUR-WS.org)

communicative action we are referring to utterances concerning user's online attitude/assessment of his/her own expressions when sharing particular information, i.e., personal implied value judgements. However, it is noteworthy to differentiate between expressive and verdictive communicative actions as the last ones also correspond to assessments [3]. Thus, under verdictive speech acts we dwell upon assessment of comments of another user, i.e., public implied value judgements.

The chosen material for the research is Reddit media. This social network unites different layers of population (users), which enables the communicative actions to be both personal- and public-oriented. To reveal the hidden or visible attitudes towards social commenting upon war and pandemic concepts is of importance as the purpose of this paper is to create a general model of war and pandemic apprehension through application of semantic analysis of the Reddit post comments and allocating their semantic groups. Each semantic group is formulated by the medium of linguistic markers claiming the implicit or explicit nature of the comment statement and marking the appropriate speech act type through linguistic interpretation and proving the linguistic outcomes by technical toolkit LIWC-22. The general cognitive model is preceded by two other sub-models (war implications and pandemic consequences) which constitute the main one by conducted semantic analysis of the comment statements concerning war and pandemic categorized into the relevant semantic groups. The linguistic analysis stage is accompanied by intermediate procedures of result comparison, linguistic interpretation and statistic data representation.

2. Studies Referring to the Issue

When we refer to social media, our mind evokes scenarios corresponding to unity of users within a network and their ways of interaction. A kind of "coefficient" measuring the extent to which social community may interplay in terms of verbal communication is called affordance [4]. As we study social media through linguistic interdisciplinary areas, there is a necessity to unfold the notion not only of social affordance but also – cultural affordance. We claim that users produce cultural membrane of their social media when commenting the posts within the network – each textual message is provided with meaningful appeal and personal as well as public evaluation judgments. One of the scholars in social media research [5] defines four staple social media affordances: visibility, persistence, editability and association. We interpret visibility as a key factor of social presence within the community and ability to perceive social actions within the network – a feeling of belongingness to a certain community (theme rubric) according to personal preferences. Under persistence we imply a purposeful communicative action of defending personal as well as public opinions within the network. There are vivid examples of persistent user tendency in manifold post comments within the Reddit social environment – we usually observe massive stream of comment statements not under one post but string references to the very first post and its comments – an extensive multi-post comment system. The third function of social affordances is editability covering physical necessity of users to freely convey messages and instant proofread the comment statement. However, when repeatedly compiling a Reddit comment data, it is in most cases obvious that users reject such a possibility to edit any information they possess. It is substantiated by the fact that nowadays social affordance is beyond the limits of opportunities – social community users are too integrated into their routine online environment to cultivate personal literacy. They even neglect online rules, which sometimes makes the results of textual semantic analysis of the data more complicated to interpret. And, finally, association – the fourth function of media affordances – is conjured up in our mind automatically. Being a phenomenon of either psycholinguistics or cognitive linguistics, associations occur among users unconditionally. At the very beginning of starting a conversation a user becomes involved into multiple chains of communicative actions of other users thus driving himself/herself into a circle of endless flow of sharing information. In this case, we may talk about one more type of affordances – emotional affordances. Negative or positive emotions as well as provoking a variety of cognitive processes – an integral part of cultural, psychological and cognitive scopes of linguistic research.

A range of scholars [6, 7] suggest differentiation between social affordances and technological affordances. We have already mentioned above that Reddit social media has a particular multi-functioning system. Each peculiar system construction of social networks allows users to assess their needs and potential to rationale use of the platforms required. Proceeding from this in terms of contrast,

we define technological affordances as a set of tools necessary for a certain system of social networks to work properly, whereas social affordances – social interaction of a user with an online environment in order to establish personal or public connection with other users according to preferences and social roles.

These mentioned types concerning the theory of affordances may be enumerated regarding author's area of research [8]. Everything what a user chooses to interact with within the social media is shaped by a system of particular cultural values and judgments, meanings and evaluative factors. A scholar [9] shed light on the cultural affordances and their correspondence to social media. Cultural affordances are associated with the peculiarities of perception of particular “things” and surrounding and only particular social group may recognize their conception. In other words, users are inclined to objective meanings which have been previously embedded. We differentiate between well-grounded affordances and common affordances within cultural affordances. These two subtypes are precursors of cultural occurrences. The first – well-grounded affordances – are embedded into our natural human development process under which human interactions and associations are taken for granted and in future may never be neglected. Users express their natural emotions due to congenital inclinations. The second – common affordances – are formed in the process of human lifetime, only experience gaining process matters. Users choose certain communicative actions shaped by their communicative patterns they gained experience in. So, cultural affordances are based on psycholinguistic aspects, mainly, sphere of emotions and reactions thus calling for certain cognitive processes across the verbal communication. If we can turn to past and these past actions and senses may be transferred into future – cultural affordances occur. Users act in social networks the same way as they act in their everyday life, as online life under such conditions as pandemic and war has become a norm these days. The boundaries between real and online have been erased and cultural factor is available everywhere. All cognitive processes are involved when users comment posts in social media, which is a direct proof of unfolding cultural senses and values. But due to cultural bias, limited cultural awareness and restricted understanding of appropriate cultural patterns the issue of social media affordances has not been tackled completely. That is why we consider an approach to analysis of social media affordances regarding cultural constituent in terms of producing motions of social media affordances.

Researchers consider cultural constituent in terms of linguistic sociology as the latter covers the user interactions and sharing information within particular social networks studies [10]. There is an opinion [11] that there is nothing like cultural constituent which may comprise different layers of population (users) under one particular social media and “fill” them with senses unfolding when they start communication (post commenting, reacting, etc.) and even allow them to provide a valid point of view towards the social situation required. By turning to cultural origins, we start cultivating personal mindset thus expanding the mindset of other users across the media and forming new online community with literate, culturally aware users possessing the rules of accessible information presentation and discussions. That is why it is necessary to emphasize independent nature of linguistic cultural constituents. It intersects linguistic sociology but also runs parallelly to it (claiming its interdisciplinarity focus) underlining its originality and call for strong mentality stimulation. Linguistic cultural studies are aimed at relations between constituents thus neglecting the issue of its bias. They have linguistic psychological nature as well as the ability to develop and unfold senses, which has a correspondence to system of beliefs and hypothetical human connections. Notwithstanding the fact that cultural awareness has its origins back into history and philosophy, it has an ever-changing dynamic. It is also regarded as its own independent source of human being and his/her life development [12]. So, culture immerses all possible traditional and common human beliefs, judgments, values, meanings, senses depending on certain ground of communication. The way we treat our surrounding, what we enclose in the meaning of online discussion and all our possible responses to the environment form our cultural immediacy. Culture may also be regarded as a source of conducting personal analysis, critics and become interested in each and every sphere of online environment [13]. The understanding of culture demands understanding of meaning: where it has been created, which conditions have been chosen to create it and how to interpret it with all its internal, historical and social senses involved. Basically, if culture “predicts”, i.e., shapes our way of communication and social establishment, it involves a complicated and intersected range of correspondences and associations.

Now we would like to compare cultural affordances and technological affordances as their relation is obvious due to mutual “application” – when choosing an appropriate social network, for example,

with an aim of sharing opinions on the given topic (this way we adhere to technological affordances), users engage their system of beliefs and cultural values to join the collective stream of communication and be able to hold discussions while post commenting. So, this interrelation is determined by the contextual environment under which both technological and cultural aspects are considered. There is a thought [14] according to which connections/associations and senses are unforeseen and unreliable. They are involved in an ever-changing dynamic. We claim that the correspondence between mentioned affordances is conditional/conventional, and it is not always practical for technological aspect to endure motion procedures. To avoid ambiguity concerning these two affordances we offer to introduce cultural and technological unity of affordances and treat it as an integral part of social affordances inherent to social network studies and analysis. It is also noteworthy that both affordances are considered mutual, however, we do not refer to them as to interchangeable aspects of social affordance.

To our mind, in order to enhance a theoretical aspect of social media affordances, we suggest singling out layers of the following affordances. Both negative and positive aspects are provided when it comes to revealing the nature of cultural aspects of technological affordances – users may be misled by network settings or cost-effective scope of profile creation. However, if practical needs are followed, cultural aspects will be considered while dealing with technological characteristics of certain social network. And the second layer, unlike the first one of the prevalence of cultural above technological, involves total dominance of cultural constituent within the technological and social affordances. It accumulates all previous human skills and perception “experience”, and in certain social contexts is used to bridge the community development gaps and information processing. The example of our first suggestion: Reddit users may find it hard when registering navigate this social media for the first time (finding rubrics, news feeds with a variety of posts and their comments, etc.), but this time cultural substitution takes place – users switch their technological opportunities to cultural thus experience of social media usage is gained and senses of adaptation to the certain environment are unfolded. The example of the second suggestion of affordances is the Reddit users’ interaction with other users through commenting process, which is emotionally secure and each representative is ready to defend his/her own opinion and provide cultural evaluative measures.

Also, these two approaches to social affordances may be developed from another point of view: in addition to our users which have been unanimously treated before, there are people who are responsible for creating social networks. They also have their cultural mindset and consider technological affordances when compiling a computer network. So, we may suggest considering another social group who obviously have a connection to social users of their network with their own set of affordances. This way, we have cultural space full of hidden and visible senses and beliefs, which never exists on its own but interrelates with other layers of cultural constituents, perception factors, technological affordances, emotional evaluative measures and cognitive processes and more.

Users’ needs are always taking the upper hand and they adapt social media to their own way of interaction. But the fact is undeniable that either cultural or social affordances depend upon human communicative actions. As we have considered both social and technological affordances, it is relevant to dwell upon speech acts.

Among the tasks of the research we have mentioned that psycholinguistics and social linguistics are the central areas the study is evolving around. Speech and action have always been two of main notions in terms of these linguistic areas. Theoretical aspect of action is based on the statement that social objective of a human is considered a reason of human’s social mindset and a system of beliefs concerning the particular social objective. There is a study [15] coping with an issue concerning speech acts that a user rendering a meaning of his own appeal (in a form of comment within the social network) may misinterpret his/her own utterance in a way which has been previously inappropriate for him/her. In other words, when a user addresses his claim towards another user, in the process of meaning interpretation, the first one is likely to evaluate his/her own claim in a different way, whether it is positive or negative. The communicative action is so powerful that it indicates or even influences/affects personal system of prejudices and beliefs. Emphasizing the mutual correspondence between action and speech we may claim that what a user intends to say presupposes his future course of the follow-up actions and vice versa. So, we define communicative action as a process according to which an utterance produced not only influences/affects user’s actions but also generates social environment where other users remain. Speech acts correlate with verbal messages being uttered either online or in real thus providing this communicative meaning/sense. One scholar [16] describes the notion of speech acts as a

language that simultaneously interpret the meaning and communicative action. There are different types of communicative actions described and presented, we will not use all of them, but as our study is concentrated mainly on the Reddit social networks and the semantic nature of such notions as pandemic and war, it is worth allocating only those types of speech acts which will be suitable for our case.

According to the verbal actions which are aimed at achieving some particular result in conversation, there are their main types: representatives (assertions, statements, claims, hypotheses, descriptions, suggestions), commissives (promises, oaths, pledges, threats, vows), directives (commands, requests, challenges, invitations, orders, summons, entreaties, dares), declarations (blessings, firings, baptisms, arrests, marrying, juridical speech acts such as sentencing, declaring a mistrial, declaring s.o. out of order, etc.), expressives (greetings, apologies, congratulations, condolences, thanksgivings, etc.), verdictives (rankings, assessments, appraising, condoning) [17]. While conducting textual semantic analysis of the Reddit comments to the posts, which has been mentioned to be one of the research tasks, we will provide implicitness or explicitness of statements, so statements being a part of speech act types are selected in this study.

Statements belong to such verbal actions as representatives and mainly the whole commenting material within the Reddit social network is presented in this form of utterances. But after thorough linguistic interpretation we will mark the analytical data with relevant speech act types and their subtypes. Unlike statements, all other representative speech act subtypes render more or less expressive tone of statements. Assertions are stated in a more forceful and confident way, which we cannot reveal explicitly. Claims are also statements but render defense of user's own opinion. Hypotheses are used to find solutions to the stated problems. Descriptions usually serve as an account of statements in an expended way of information dissemination. Suggestions refer to evoke the mind of another user to make decision. So, representative verbal actions will dominate in our research as we deal with expressively colored language and intense emotional tone of both positive and negative emotions concerning pandemic and war.

The second type of speech acts – commissives – is not that much common for the Reddit social media rubrics of the stated notions under investigation – oaths, pledges and vows would be widespread for some ceremonial procedures. However, promises and threats may prevail in our social rubrics of war and pandemic.

The third type – directives – is aimed at provoking another user to take immediate actions within the communicative situation. The most peculiar subtypes for our study may be commands and orders referring to control of actions. All others – requests, challenges, invitations, summons and entreaties – have an inclination to the action in a form of persuasion and encouragement.

The fourth communicative action type – declarations – does not have a tendency in social networks discussion and commenting sections, although exclamations with blessings for the soonest end of war or covering from a virus as well as representation of massive arrests and sentencing may have the nature of explicit statement of public or personal announcement.

The fifth speech act type – expressives – communicative actions inherent to evaluative measures, reflecting attitude and representing cognitive and psychological states of the user on his/her own, are the most commonly used in social media. The Reddit environment is overwhelmed with expressives where users admit their communicative actions through emotional tone of utterances and emotive words.

The sixth verbal actions – verdictives – are similar to expressives in a form of evaluations and addressing attitudes, however, in this case, towards other users and other situations. We identify assessment utterances towards other users' comments or appraising elements of utterances semantically by marking positive and negative tone, the extent of allure of the communicative action, moralization factors, etc. Rankings are also staple speech acts subtypes when it comes to war or pandemic discussions among social network users.

All things considered, we demonstrated the interplay between the notion of social affordance and communicative action thus engaging a variety of linguistic areas into the research to conduct further textual semantic analysis of the Reddit social environment comments to posts regarding Russian-Ukrainian war and pandemic situation worldwide. We state that the most common speech acts dominating within social networks are representatives with statements, expressives with evaluations and attitudes towards personal user's opinion and verdictives – towards verbal actions of other social users. When using a variety of speech acts subtypes (those we considered the most commonly used

within the social media), a user realizes that the he/she can start acting within the Reddit environment thus fostering relations with social groups according to personal preferences. By recognizing personal social role in terms of communicative action, a user starts having an influence on himself/herself and the social surrounding. One more factor which presupposes user's impact on the social environment is personal awareness of the issue to be addressed. Cultural, psychological, social aspects of linguistic interpretation of users' communicative actions within the social media are shaped by user's personal purpose of utterance and the extent of impression he/she would like to convey. The most relevant rule for all social groups of online users – to avoid rude statements in commenting section of the social media as they lead to misunderstanding and controversies within the communicative process. When commenting in an inappropriate way, the commenting section is being converted into a “field” for friendly correspondence where the given topic mentioned in the headline string of news feed is leveled. This way, it will be complicated for new users, who would like to share their opinions without reading the previous ones, to take part in a discussion continuing incomprehensible utterances of other users. So, such irrelevant manipulative ways of communication as imposition of one's opinion, forceful persuasion towards another user, etc. should be eliminated altogether in order to provide fruitful and informative online discussion. The main feature of the communication action application is to comprehend the communicative process of how users manage to form the meaningful unit in order to transmit information they possess (usually in a form of comments to the posts) and make it affordable to be perceived by other users in a particular communicative social Reddit rubric, so the formulation process of the meaningful unit, its objective and way of presenting information should be taken into consideration.

3. The Application of Textual Semantic Analysis to the Reddit Post Comments concerning the War and Pandemic Concepts

In our preliminary linguistic analysis [18] the notion of Russian-Ukrainian war was semantically analyzed and interpreted as a negative phenomenon among social users of the particular social network, however, with an extensive amount of cognitive processes, mainly with the semantics of hope for victory and desire to fight till the end, we are willing to demonstrate war and its implications from another angle. In this paper we will linguistically trace the dynamics of war and the change of human war apprehension. Moreover, there is a task to linguistically monitor the pandemic situation and how human attitudes and perception changed towards it. In order to conduct a profound linguistic analysis, the following research steps will be represented.

The basis for our linguistic study – the Reddit social network (<https://www.reddit.com/>) – demonstrates the news feeds in a variety of possible communities, posts with their comment replies, etc. It is a staple social media for our research as comment data has been systematically structured according to pandemic community posts as well as war community posts and their replies; comments are shared by different layers of world population, whose opinions are worth analyzing; streamlined user interface, which makes you be immersed into user's interaction and calls for taking part in a discussion section. The reason for choosing these two particular concepts is substantiated by the fact that humanity has recently faced the two main catastrophes – pandemic spread with its different forms of detection like COVID-19 and its follow-up diseases, and Russian-Ukrainian war – which affect the whole world in particular. We consider the main task of this research – to linguistically reveal the degree of war and pandemic apprehension applying textual semantic analysis to the Reddit social media post comments.

For this, firstly, we have chosen the Reddit social communities with the biggest amount of comments to the war posts and the least commented ones in order to have a full picture for a cognitive model of war implications. Now, there is a new War in Ukraine L Megathread community post (https://www.reddit.com/r/europe/comments/10eps9y/war_in_ukraine_megathread_l/) with 9.6k comments (Fig.1). Secondly, by using linguistic markers of implicit semantic nature of utterances and explicit ones, we single out comments which relate to war in Ukraine regarding communicative actions preferable to social media, which have been stated in Part 2 of this paper.

Figure 1: The Reddit war post with the biggest amount of comments

After processing of linguistic data and highlighting key words in bold, the third step of research is considered – the application of textual semantic analysis to the allocated textual fragments of the Reddit post comments. The following representation of the linguistic data obtained is provided in a form of semantic groups. After each statement in brackets we provide linguistic interpretation with marking its implicitness or explicitness and type with subtype of particular communicative action. Each semantic group is followed by linguistic analysis observation concerning peculiarities of war apprehension and statistic indicators.

The first semantic group of positive tone of the Reddit statements: *unless the **Russian leadership collapses Ukrainian army gets stronger** with each passing month* (explicitness of hope for “ideal” victory in Russian-Ukrainian war; type of communicative action – representatives, subtype - suggestion); *it seemed unlikely that **Ukraine can withstand a full-scale Russian invasion**, yet here we are* (explicitness of real physical strength of the nation and implicitness of adamant morale; representatives, assertions); *with western support anything is possible* (implicitness of continuous assistance; implicitness of hope for the victory; representatives, statement); *Today is a **REALLY good day for Ukraine*** (explicitness of hope for the victory; representatives, statement). Positivity is expressed through more explicit (3 cases of occurrence) than implicit (2 cases of occurrence) linguistic markers of victory expectation as there is an earnest hope for peace and users openly declare it.

The second group of negative tone of the Reddit statements: *pro-Ukrainian people state that even if Ukraine wins the war militarily, it might be forced via diplomatic means to let go of either Crimea or Donbass, in order for true peace to ensue* (explicitness of truce under unfair conditions, implicitness of territory deprivation perspectives; representatives, hypothesis); *The **Russian army keeps declining** but only 9 countries stated that they explicitly support return to 1991 borders. And the US is not one of them* (explicitness of support without world country №1; representatives, claims); *We can call Russia a shit state without going into wild tirades of how uncivilized they are* (explicitness of real name of the enemy; representatives, description+verdictives, assessment); *These Russians are so stupid it hurts at times* (explicitness of real name of the enemy; representatives, description+verdictives, assessment+expressives, personal feelings). Negativity is expressed through only explicit (4 occurrences) linguistic markers of obstacles interfering the victory and rude utterances towards enemy. The semantics of quitting tolerance of national disgrace prevails.

The third group of the Reddit statements referring to cognitive processes: *having only a Russian citizenship can be a death sentence* (implicitness of negative attitude to the enemy belongings; representatives, description+ declarations, sentencing in a figurative way of speaking); *realistically speaking, how likely is it for Ukraine to formally return all of its territory back under its control?* (explicitness of evaluative attitude of the user; verdictives, assessment+representatives, suggestions); *Putin may mobilize the whole Russian population, it doesn't matter if they won't have armour and artillery* (explicitness of enemy's desperate military position; representatives, assertion); *the second-best army in the world is borrowing their tactics from Ukraine which has never even been a nation before* (explicitness of enemy's desperate military position; representatives, assertion+verdictives, negative assessment); *so the missile attack has not been really a big deal in the end?* (implicitness of enemy's underestimation; representatives, hypothesis+verdictives, implicit ranking); *Revoking Putin's Legion d'honneur would only serve to escalate the conflict, and might very well be what pushes us into total nuclear war!* (explicitness of enemy's underestimation; representatives, claim+verdictives, unfair assessment). The semantization of cognitive processes is expressed through more explicit (4 occurrences) linguistic markers of user's military unawareness and figuratively (metaphorically) assessing attitude towards war than implicit (2 occurrences) linguistic markers of user's not facing combat operations and abrupt utterance towards enemy's citizenship.

In total, we processed linguistically all community comments mentioned (9.6k comments) with 576 textual fragments allocated with reference to war implications. The support from other countries plays a strong semantic intercourse of communicative actions. Out of these semantic groups we obtained 11 explicitly marked statements (rendering clear understanding among users) with their, in most cases, representative speech acts types (users usually express their opinions with a different statement emotional tone) and their subtypes (the most common usage of assertions (3 cases) and descriptions (3 cases)). Verdictives are revealed through users' negative assessment of war attitude of other users (5 cases).

The last step of the research methodology is the application of a software toolbox. Among a variety of language processing tools and textual content recognition methods [19, 20], LIWC-22 certifies authenticity of the linguistic results obtained by textual semantic analysis. The data outcomes are consistent and the computer application revealed the linguistic result match (Fig. 2). We may state that the amount of positive and negative tone of Reddit statements is equal (1.67%). It means that even if WAR as a concept bears a total negative sense, textual semantic analysis allowed to unfold other senses of war implications among online users, which have a semantic nature of positive deeds for the Ukrainian glory and victory. Such traditional LIWC-dimension as I-words (I, me, my) we omit in this research as personal addressing is eliminated (0.60%), the attention is paid to the meaningfulness of the Reddit social discussion section. Social words prevail (3.46%) over I-words as we refer to social notion of war and its implications. Cognitive processes (12.40%) constitute the largest percentage of all LIWC-22 dimensions as mostly all meticulous utterances and speculations of users are expressed by negativity and military unawareness.

| Traditional LIWC Dimension | Your Text | Average for Social Media Language |
|----------------------------|-----------|-----------------------------------|
| I-words (I, me, my) | 0.60 | 5.44 |
| Positive Tone | 1.67 | 5.93 |
| Negative Tone | 1.67 | 2.34 |
| Social Words | 3.46 | 6.74 |
| Cognitive Processes | 12.40 | 8.86 |

Figure 2: Consistent linguistic match by LIWC-22 software (semantic groups with the most commented Reddit war in Ukraine posts)

The subsequence of linguistic analysis steps mentioned above is inherent to the following Reddit social community post comments along with their textual semantic features. So, here we demonstrate the textual semantic analysis of the least commented (2.9k comments) Reddit post (https://www.reddit.com/r/europe/comments/10z73sv/war_in_ukraine_megathread_li/) (Fig. 3).

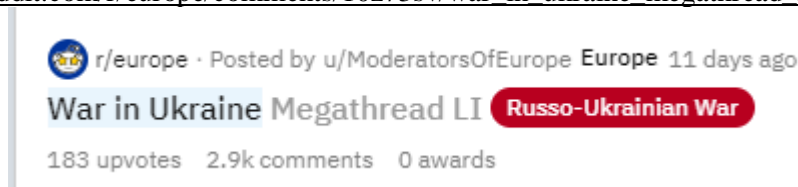


Figure 3: The Reddit war post with the least amount of comments

The relevant semantic groups with their linguistic interpretation and final observation are given below.

The first semantic group of the Reddit positive tone statements: *Ukraine has adapted now* (implicitness of long-term escalation and explicit mechanism of adjustment; representatives, assertion); *Kyiv is extremely well protected with air defences now too* (explicitness of foreign assistance; representatives, statement); *have LOADS of generators everywhere now* (explicitness of foreign assistance; representatives, statement); *They're about to have patriot in place to take down ballistic*

missiles soon too (explicitness of foreign assistance; representatives, statement); *Russia simply doesn't fire as much as at the start* (explicitness of user's military unawareness; representatives, statement+verdictives, negative assessment); *Ukraine counterattacked successfully* (explicitness of success; representatives, claim+verdictives, appraising); *our unity of purpose in support of Ukraine* (explicitness of foreign assistance; representatives, assertion); *We'll have electricity for the whole day almost guaranteed* (explicitness of foreign assistance; representatives, statement+commissives, promise). Total explicitness (8 occurrences) of foreign assistance, hope for enhancing living conditions and victory is dominant. One implicit linguistic marker of unwanted adaptation to the war state is observed.

The second semantic group of the Reddit negative tone statements: *Ukrainian power grid and supply is very much decentralized now* (explicitness of combat operations; representatives, statement); *They still lob unguided MLRS rockets at Kherson and Kharkiv though* (explicitness of combat operations; representatives, statement); *Attack on 16.02 had 44 cruise missiles* (explicitness of combat operations; representatives, statement); *Before that on 10.02 they launched over 70 cruise missiles* (explicitness of combat operations; representatives, statement); *On 18.02 – four cruise missiles* (explicitness of combat operations; representatives, statement); *the real crime is having such a boring speech* (explicitness of combat operations; representatives, description); *Putin has cancelled a decree that recognized the sovereignty and territorial integrity of Moldavia* (explicitness of violation of territorial integrity; representatives, statement); *entering a spending/procurement/development battle with the US on nuclear weapons will not end in Russia gaining any appreciable advantage* (explicitness of failure of possible combat operations; representatives, statement). The prevalence of explicitness (8 occurrences) of combat operations, their terrible consequences are of importance, however, drastic military measures are inevitable to avoid.

The third semantic group of the Reddit cognitive processes: *looks like problematic enough for Russians to worry about* (explicitness of enemy's irresistibility; representatives, statement); *any real signs of this to happen?* (explicitness of doubtful combat operations; directives, challenge); *seems extremely unlikely* (explicitness of doubtful combat operations; representatives, statement); *did the ruzzkis give up on randomly firing rockets into Ukraine cities?* (explicitness of user's military unawareness; representatives, statement); *I didn't know there were that many at hand, I am proud of the world. good job world!* (explicitness of foreign assistance; representatives, statement+verdictives, appraisal); *could someone explain to me why can't we simply just take away all of the money that Russia and the Oligarchs have?* (explicitness of user's military unawareness; representatives, statement+directives, request); *I can understand that we don't have this kind of regulations ready but we can make them, and make them NOW* (explicitness of a call for action; representatives, claim); *giving them back everything after all of this is not fair* (explicitness of military despair; verdictives, assessment); *I do not regret preparing, but I feel like Putin owes me some money* (explicitness of sorrow, irony and user's negative attitude to unfair escalation; representatives, claim+verdictives, condoning); *Why do you think Russia is capable of mobilizing, equipping, and consolidating forces beyond what they're doing already?* (explicitness of user's military unawareness; representatives, statement); *Is your argument that Russia is intentionally holding back and acting in incompetently?* (explicitness of user's military unawareness; representatives, statement+verdictives, ranking); *You're welcome to have your own conclusions and say I am wrong* (explicitness of user's discussion awareness and implicitness of tactfulness of a tense topic; representatives, statement+verdictives, ranking). There is a dominant explicitness (11 occurrences) of user's attempts to find out answers to possible stated war speculations in a meticulous way. Also, there is an irony of enemy expressed in a mockery way. In most cases, cognitive processes concern negative attitude to the enemy.

All in all, we linguistically processed all community comments mentioned (2.9 k comments) with 579 textual fragments referring to war implications. There are noticeable 27 cases of explicit positive, negative and rational attitude towards war with a single implicitness (1 case) of impossibility to accept military actions. There are 6 occurrences of representative speech acts in terms of positive tone of Reddit assertions and statements of visible military successes; 2 cases of verdictives (negative assessment towards enemy's actions but appraisal for our army) and 1 case of commissives in a form of promise to provide population with electricity. The negativity is marked with 8 cases of representative speech acts of negative military statements. 10 cases of representative communicative acts within cognitive processes with a subtype of statement characterize positive speculations towards

war states for us but negative ones concerning enemy. The occurrence of verdictive verbal actions (4 cases) is connected with user's activity in terms of suggesting ways to solve military issues and share their personal opinions with other military aware users.

The next step of the research – compilation of software data proving linguistic results by conducting textual semantic analysis. (Fig. 4). The LIWC-22 dimensions of social words prevail (4.71%) over I-words (1.65%) as we consider war a social phenomenon and Reddit users' interactions occur in terms of social ties. The amount of positive and negative tone statements is equal (1.77%) as the more foreign support we get, which is a success, the more dissatisfaction of the enemy grows. Cognitive processes (16.96%) have a semantics of scattered actions towards both war sides – some users make other users sure that the war opponent is waging a completely illegitimate battle whereas others doubt in a form of rhetorical questions and request to uncover the truth.

| Traditional LIWC Dimension | Your Text | Average for Social Media Language |
|----------------------------|-----------|-----------------------------------|
| I-words (I, me, my) | 165 | 5.44 |
| Positive Tone | 177 | 5.93 |
| Negative Tone | 177 | 2.34 |
| Social Words | 471 | 6.74 |
| Cognitive Processes | 1696 | 8.86 |

Figure 4: Consistent linguistic match by LIWC-22 software (semantic groups with the least commented Reddit war in Ukraine posts)

After obtaining linguistic results on war-related base within the social media, we suggest creating the first linguistic and cognitive sub-model – war implications – which involves all evaluative measures and assessment features from the above semantic groups. The model consists of the same amount of positive and negative attitudes to war apprehension thus transforming initial negative initial stage of war implications (mentioned in author's previous paper [18]) into stable phenomenon of equality in both successes and failures. The model will be illustrated in Part 4 as an integral part of general linguistic and cognitive model of war and pandemic apprehension through conducted textual semantic analysis.

Another concept to be regarded in the same semantic dimension is PANDEMIC. The latest Reddit news feed post – Are there places you should still mask in, forever? Three expert weigh in (https://www.reddit.com/r/Coronavirus/comments/115k1kb/are_there_places_you_should_still_mask_in_forever/) with 301 comments. In order to draw conclusions concerning pandemic consequences after gradual decline of the virus, the semantic groups with the following linguistic analysis are regarded.

The Reddit statements with positive tone: *Going to Japan, mask is required in planes* (explicitness of pandemic ongoing requirements; directives, orders); *wearing a mask has mitigated the number of times I've gotten sick* (explicitness of efficacy of pandemic requirements; representative, statement). The extent of positivity in terms of diseases is little, however, semantics of warning exists.

The Reddit statements with negative tone: *most contagious places* (explicitness of pandemic ongoing threats; representative, statement); *I caught covid in the plane coming back from Japan* (explicitness of pandemic ongoing threats; representative, statement); *I caught the worst flu I've ever had from flying at international airport in San Francisco* (explicitness of pandemic ongoing threats; representative, statement); *Airports are germ factories* (explicitness of pandemic ongoing threats; representative, description); *Yeah this is just bad parenting* (explicitness of pandemic consequences; verdictives, negative assessment); *Japan still has a COVID-19 problem too just like every other country on the earth* (explicitness of pandemic ongoing threats; representative, statement+description); *the covid family spread out too* (explicitness of pandemic ongoing threats; representative, statement). Negative semantics of still ongoing virus threat prevails. Even upbringing methodism problem arises as a consequence of pandemic.

The Reddit statements involving cognitive processes: *Not sure why it hit me so hard* (explicitness of severe course of illness, representatives, claim); *I called people out on that shit [cover mouth when coughing] before covid and will continue to forever* (explicitness of pandemic consequences; directives, orders); *That's infuriating* (explicitness of negative attitude to pandemic; representative, statement); *So sorry you had to endure that* (explicitness of negative attitude to pandemic; representative, statement); *I always wonder how we made it this far with how awful we are to each other and the planet the world would have a lot less problems* (explicitness of pandemic consequences; representative, statement); *I will continue wearing a mask even if covid is ever over* (explicitness of pandemic requirements; commissives, promise); *still very cautious with covid* (explicitness of pandemic requirements; representative, statement); *will need extra precautions* (explicitness of pandemic requirements; commissives, promise); *do a quick fit test* (explicitness of pandemic requirements; representative, statement). Here we observe negative vestiges of the past illnesses, fears of ongoing virus and upbringing issue as well.

In terms of Reddit pandemic-oriented post, we linguistically studied all community comments mentioned (301 comments) with 295 textual fragments. In terms of positivity we revealed 2 occurrences of explicitness of virus precaution presented by the communicative action of directives – order to comply with the pandemic requirements; negativity – 7 cases of explicitness of pandemic threat and rules of behavior under pandemic situation with representative speech act, mainly in a form of statements (5 cases) but also describing the situation and showing negative attitude (1 verdictive action) towards pandemic precautions. Cognitive processes are represented by 10 occurrences of explicitness of both virus precaution and fear with 7 cases of representative verbal action in a form of statements (6 occurrences) and single cases of order not to neglect virus measures, and 2 cases of promises to obey the safety rules. So, we trace the repetitiveness of the same semantics under three Reddit semantic groups – warning, threat and fear of possible recurrence of the pandemic.

The data outcomes are consistent and are proved by the LIWC-22 software (Fig. 5). The LIWC-22 dimensions of I-words (5.34%) prevail over social words (4.34%) as we analyze pandemic phenomenon from a point of view of online users considering their personal beliefs towards the PANDEMIC concept. Negative tone statements (2.67%) outweigh positive ones (1.45%) as there is a semantization process of threat of recurrent disease spread and still users adhere to precaution measures. Cognitive processes (11.68%) dominate over negative tone statements as they absorbed both negative experience of users towards pandemic and defensive mechanisms against possible illnesses.

| Traditional LIWC Dimension | Your Text | Average for Social Media Language |
|----------------------------|-----------|-----------------------------------|
| I-words (I, me, my) | 5.34 | 5.44 |
| Positive Tone | 1.45 | 5.93 |
| Negative Tone | 2.67 | 2.34 |
| Social Words | 4.34 | 6.74 |
| Cognitive Processes | 11.68 | 8.86 |

Figure 5: Consistent linguistic match by LIWC-22 software (semantic groups with the most commented Reddit pandemic consequence posts)

The Reddit post – Long Covid is a disability. Here’s how to ask for workplace accommodations. Coming clean on limitations posed by symptoms such as fatigue and brain fog is difficult for many (https://www.reddit.com/r/Coronavirus/comments/117lvnb/long_covid_is_a_disability_heres_how_to_ask_for/) – enumerates the least amount of comments out of the Reddit Coronavirus community (183 comments). Below we demonstrate the semantic groups followed by relevant textual analysis remarks.

Negative tone of Reddit statements: *I had long COVID and needed special accommodations* (explicitness of being infected and appropriately protected; representatives, statement); *fired from your job because you’re too sick to work* (explicitness of unsatisfactory pandemic consequences; representatives, statement); *Employers don't even accommodate being actively sick with symptoms*

anymore (explicitness of unsatisfactory pandemic consequences; representatives, statement); *It really sucks* (explicitness of unsatisfactory pandemic consequences; representatives, statement); *still positive and having symptoms* (explicitness of being infected and appropriately protected; representatives, statement). Negative explicitness of user-infected states and disappointing effects of the pandemic from employers prevails within the mentioned textual fragments.

Cognitive processes of Reddit statements: *you also lose benefits eligibility because you are no longer working full time* (explicitness of unsatisfactory pandemic consequences; representatives, statement); *allowing part time work isn't a reasonable accommodation* (explicitness of unsatisfactory pandemic consequences; representatives, statement); *never tried to sue their boss* (explicitness of unsatisfactory pandemic consequences; representatives, statement); *I doubt they will do anything about long term symptoms* (explicitness of unsatisfactory pandemic consequences; representatives, statement); *the symptoms of long covid actually prevent you from reasonably doing your job* (explicitness of unsatisfactory pandemic consequences; representatives, statement); *you cannot prove most medical problems from long COVID* (explicitness of unsatisfactory pandemic consequences; representatives, statement); *employers have zero empathy anymore for severe COVID* (explicitness of unsatisfactory pandemic consequences; representatives, statement). This semantic group is shaped by explicitness of different negative statement tone intensity concerning the indifferent states of employment system to long-term illness.

The textual semantic analysis was applied to community comments mentioned (183 comments) with 179 textual fragments concerning pandemic consequences. The fact is that we failed to reveal positive tone of the Reddit statements as this community post was aimed at communicative actions of representation of pandemic consequences users face in their lives thus making semantical emphasis only on negative attitudes towards what infection may cause. Negative tone of statements is marked by 5 cases of explicitness of unsatisfactory pandemic consequences due to signs of illness; all these 5 cases possess representative communicative action of statement of personal opinions on working unfair working conditions when being infected. Cognitive processes are demonstrated by 7 occurrences of explicitness of the same unsatisfactory pandemic consequences semantics of which we observed in negative semantic group. We state that the semantization process between both semantic groups of negativity and cognitive processes may be blurred as cognitive mechanisms within the allocated statements are inseparable from each other.

By applying LIWC-22 tool to the obtained linguistic results we revealed the following mismatch (Fig. 6). It is substantiated by the fact that while thorough allocation of the textual fragments there were no positive tone statements, however, the repetitiveness of lexeme *positive* is out of account. We state that the software application processed textual fragments with this amount of usage occurrences (1.63%) and categorized them with the mentioned lexeme under the positive semantic group. Although negativity is high (2.17%) due to semantics of dissatisfaction of job requirement under pandemic conditions, cognitive processes dominate (13.45%). The LIWC-22 dimension of social words (6.62%) prevails over I-words (4.56%) as there are references to employers and program treats them as a main social word.

| Traditional LIWC Dimension | Your Text | Average for Social Media Language |
|----------------------------|-----------|-----------------------------------|
| I-words (I, me, my) | 456 | 5.44 |
| Positive Tone | 163 | 5.93 |
| Negative Tone | 217 | 2.34 |
| Social Words | 6.62 | 6.74 |
| Cognitive Processes | 13.45 | 8.86 |

Figure 6: Consistent linguistic match by LIWC-22 software (semantic groups with the least commented Reddit pandemic consequence posts)

Having generated linguistic outcomes on pandemic-related Reddit online comment section, the second linguistic and cognitive sub-model – pandemic consequences – is considered. The model

comprises the analyzed semantic groups above. Negative tone of statements concerning virus spread apprehension prevails. The dominance of cognitive processes enables the model prevalence, which will be illustrated in Part 4 of the research.

To provide a brief overview of the textual semantic results, we note that Reddit users recognize war and its implications in a steady and sound way. One category of users states the news firmly, expresses their opinions freely, defend other opinions assertively, provides negative assessment of unfair military actions and does not justify the enemy (representative communicative actions dominate in a form of statements). Other users put into question combat operations from both sides in a form of rhetorical questions or by a range of words with cognitive semantics like *explain, interpret, clarify, be sure*, etc. (verdictive, declarative and commissive communicative actions along with representatives, statements). Unlike high in quantity Reddit war post comment ranking due to users' urgent need to know the course of military operations, pandemic posts have become a rare phenomenon within the Reddit social media due to fortunate decline in COVID spread and, correspondingly, less interest in such a negative phenomenon. We state that all categories of users have a tendency in virus threat, precaution measures, self-defense against possible infection. And the main semantic feature is that all Reddit social users assess pandemic as a negative phenomenon still facing problems with working conditions due to drastic virus restrictions.

4. Shaping a Linguistic and Cognitive Perception of the Reddit WAR-PANDEMIC Comment Relation

This Part is aimed at introducing a model for cognizing WAR and PANDEMIC relation on the basis the conducted textual semantic analysis and linguistic interpretation of the analytical data obtained in the course of research stages in Part 3, and statistical analysis.

In order to verify the reliability of the analyzed volume of textual fragments, we provided the differentiation between the biggest and the least amount of war post comments and the same of pandemic post comments (Fig. 2, 4, 5, 6). However, statistically, indicators in percentage have a slight difference in values. The value inconsistency we see in amount of comments: revealed most commented textual fragments have less percentage in each semantic group than the least commented ones. Such a research detection is inherent to both concepts under investigation. Only LWIC-22 dimension of I-words in Reddit pandemic-oriented post comments prevails (5.34%) in the most commented section over those in the least commented one (4.56%), and it is true as semantically personal appeal towards COVID virus and negative attitude to personal experience was spotted. All other divergences in values in terms of the amount of comments may be explained by the fact that least commented posts of both linguistic and social phenomenon are characterized by less interest but more accuracy in speech. That is why it was less complicated task to allocate those textual fragments out of the least commented Reddit posts. Having considered minor deviations in percentage, we calculate arithmetic mean of semantic group percentage, so we can contrast and compare only two lines with staple calculation (Table 1).

Table 1

Arithmetic mean of percentage concerning the Reddit semantic groups

| Arithmetic mean of the Reddit community posts comments | I-words (I, me, my) | Positive tone | Negative tone | Social words | Cognitive processes |
|--|---------------------|---------------|---------------|--------------|---------------------|
| WI | 1.12 | 1.72 | 1.72 | 4.08 | 14.68 |
| PC | 4.95 | 1.54 | 4.84 | 5.48 | 12.56 |

The Reddit war-oriented community post comments, mainly their statistical representation, are provided in the first line of the Table, where the WI abbreviation stands for the first linguistic and cognitive sub-model – war implications. The Reddit pandemic-oriented community post comments, their statistical representation in particular, are provided in the second line of the Table, where the PC abbreviation stands for the second linguistic and cognitive sub-model – pandemic consequences.

Through conducting textual semantic analysis, it was established that the first and second sub-models consists of 5 main semantic groups. The LIWC-22 semantic analyzer proved the obtained linguistic data provided by the stated linguistic methodology. The vast majority of appeals to individuals in the second PC is justified by the fact that the semantic nature of the allocated Reddit comments presupposes user personal cases of being infected and job loss due to virus restrictions, whereas in WI sub-model – personal user appeal is eliminated by inability to participate in war and experience personal “war infection”. The percentage of the first semantic group – positive tone – of WI is higher than in PC not because of the fact that WAR is a positive concept. Positive war semantics is provided by explicit versatile support from abroad all over the world, successful combat operations of our army and strong human faith in Ukrainian victory. Even if WAR is considered a total negative concept, PANDEMIC was proved to be more negative phenomenon. It is caused also by the Reddit most and least commented community posts – particular discussion topics for the study were selected. The semantics of deprivation of employment due to employers’ refusal to provide relevant accommodation conditions and users’ fear of becoming infected again (PC) dominates over only users’ negative assessment of war and enemy’s conviction (WI). The percentage of social words of PC is higher than those of WI as users provide more descriptions of their personal course of illness using expressively-colored words and exclamations. Cognitive processes prevail in WI as we allocated lots of cases when users would like to make sure whether most of military operations are true and what particular terms mean. Such military unawareness and doubts concerning both sides of war participants are shaped by cognitive mechanisms of war perception.

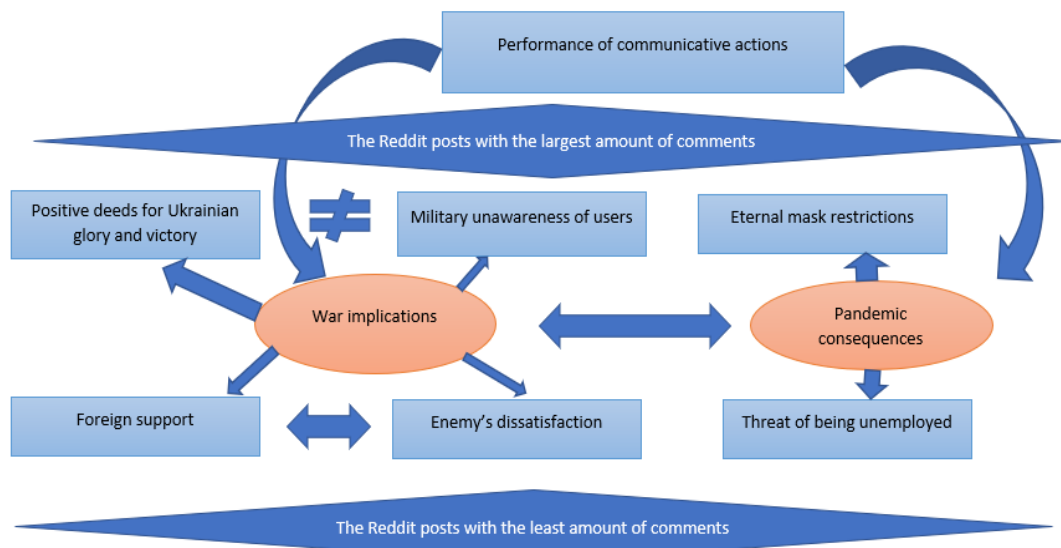


Figure 7: A model of WAR and PANDEMIC apprehension via conducted textual semantic analysis of the Reddit post comments

A model of WAR and PANDEMIC apprehension is considered (Fig. 7). It is based on two sub-models – war implications and pandemic consequences – which have been preceded by textual semantic analysis and linguistic interpretation method. Both models are shaped by theory of speech acts. We stated in Part 2 that the most common communicative actions for social media would be representatives, expressives and verdictives. However, our study showed that expressives with subtype of expressing personal feelings were not that much observed (only 1 case). Instead, representatives with statement subtype and verdictives with negative assessment towards utterances of other users, appraisal subtype were widely applied. Also, different combinations of representative communicative subtypes and single cases of commissives and declaratives were noticed. Such an application of almost all types of verbal actions indicates multifold semantic nature of Reddit users’ statements shaped by both social and cultural affordances. For our study, the second layer of social media affordance is applied as we could note the staple dominance of cultural constituent over Reddit technological and social affordances. This case is resembled in our model: the semantics of positive deeds for Ukrainian glory and victory cannot be identified with users’ military unawareness – these are the outcomes of linguistic interpretation of the WI sub-model of the most commented Reddit war-oriented post. In other words, without appropriate

cultural background online users fail in tendency of commenting thus causing discomfort conditions for discussion among other competent users. The linguistic interpretative outcomes of WI sub-model with the least amount of comments have mutual correspondence in a direct proportion – when our country gains more foreign support – that much dissatisfaction our enemy receives. Only two interpretative results we obtained concerning PC sub-model as all textual fragments analyzed are considered negative without exception. So, in order not to repeat the same expressions of negative ranking of pandemic consequences, users were mostly dissatisfied with ongoing mask regime in some public places and job losses due to virus restrictions.

And, finally, mutual connection between WI and PC sub-models is established: we state that both sub-models imply consequences of linguistic and social as well as psychological, cultural and cognitive phenomena. PANDEMIC is considered one of WAR manifestations as it is also a powerful weapon (in a figurative way) against humanity. At the same time, WAR triggers world calamities, and PANDEMIC is one of its biggest levers.

5. Conclusion

To summarize, the phenomenon of Russian-Ukrainian war as well as the notion of pandemic was considered. The complex linguistic methodology of shaping a linguistic and cognitive perception of the Reddit WAR-PANDEMIC comment relation was introduced. The attention was paid to such linguistic spheres as cognitive, psychological, cultural and social, in terms of which a notion of social media affordances was regarded. The theory of social affordances was presented. On its basis two definitions of social media affordances were implemented. The relevance of the communicative actions theory to social affordances was substantiated and corresponding types and subtypes preferable for our study were identified.

In order to obtain analytical data within the Reddit social media, social network, comments to the posts referring both to WAR and PANDEMIC concepts were allocated. In a view of verifying the reliability of social data, the Reddit community posts were singled out according to their highest and lowest comment ranking. All 4 semantic groups (2 groups for each concept under investigation) consisted of Reddit positive, negative and cognitive tone statements. They were analyzed by application of textual semantic analysis along with linguistic interpretation, and the consistency of linguistic outcomes was proved by the software toolbox LIWC-22. Focusing on the established semantic groups, two linguistic psychological and social perceptive sub-models – war implications (WI) and pandemic consequences (PC) – were created. They were the precursors of general model of WAR and PANDEMIC apprehension model.

Divergences and analogies within particular semantic groups have been distinguished, linguistically interpreted and statistically presented. Among noteworthy research analysis, one inconsistency between results represented linguistically and by application of a software in terms of Reddit pandemic-oriented positive tone statements was revealed and substantiated by the fact that without manual interpretation of a linguist semantics automated analyzers may provide misleading results.

With an aim to summarize the linguistic data, arithmetic mean of percentage concerning the Reddit semantic groups was identified. The semantization process of war and pandemic phenomenon allowed to reveal assessment and users' attitudes towards them. The explicitness of military successes and enemy's irritation formed the WI sub-model, whereas obsession with mask restrictions and fear of job loss due to virus shaped the PC sub-model. The interconnection between two sub-models was studied. The pandemic with its consequences is considered one of the harbingers of war with its implications (the initial stage of world chaos), and war with its implications undermines pandemic recovery process.

What concerns perspective, the semantics of Ukrainian victory in Russian-Ukrainian war and its linguistic cognitive mechanisms may be studied and developed in further scientific exploration.

6. References

- [1] V. Singh, A. Thurman, How many ways can we define online learning? A systematic literature review of definitions of online learning (1998-2018), *American Journal of Distance Education* 33 (2019) 289–306. doi: 10.1080/08923647.2019.1663082.

- [2] X. Zhang, A. A. Ghorbani, An overview of online fake news: Characterization, detection, and discussion, *J. Information Processing & Management* 57 (2020). doi: 10.1016/j.ipm.2019.03.004.
- [3] R. Ambarwati, J. Nurkamto, R. Santosa, Expressive Speech Acts of Women's Communication on Facebook, *J. ASSEHR* 228 (2018). doi:10.2991/klua-18.2018.15.
- [4] Y. Song, Q. Ma, Affordances of a mobile learner-generated tool for pupils' English as a second language vocabulary learning: An ecological perspective, *British Journal of Educational Technology* 52 (2021) 858–878. doi: 10.1111/bjet.13037.
- [5] A. Luqman, A. Masood, F. Shahzad, M. I. Rasheed, Q. D. Weng, Enterprise Social Media and Cyber-slacking: An Integrated Perspective, *International Journal of Human-Computer Interaction* 36 (2020) 1426–1436. doi: 10.1080/10447318.2020.1752475.
- [6] Z. Shao, L. Zhang, K. Chen, C. Zhang, Examining user satisfaction and stickiness in social networking sites from a technology affordance lens: uncovering the moderating effect of user experience, *Industrial Management & Data Systems* 120 (2020) 1331–1360. doi: 10.1108/IMDS-11-2019-0614.
- [7] M. D. Molina, S. S. Sundar, Can Mobile Apps Motivate Fitness Tracking? A Study of Technological Affordances and Workout Behaviors, *Health Communication* 35 (2020) 65–74. doi: 10.1080/10410236.2018.1536961.
- [8] O. Apuke, B. Omar, Social media affordances and information abundance: Enabling fake news sharing during the COVID-19 health crisis, *J. Health Informatics* 27 (2021). doi:10.1177/14604582211021470.
- [9] M. Jaakkola, From re-viewers to me-viewers: The #Bookstagram review sphere on Instagram and the uses of the perceived platform and genre affordances, *Interactions: Studies in Communication & Culture* 10 (2019) 91–110. doi: 10.1386/iscc.10.1-2.91_1.
- [10] B. Qodiralievich, Realization of the Concept in Modern Linguistics, *International Journal on Integrated Education* 3 (2020) 246–248. doi:10.31149/ijie.v3i12.995.
- [11] S. M. Azizi, A. Soroush, A. Khatony, The relationship between social networking addiction and academic performance in Iranian students of medical sciences: a cross-sectional study, *J. BMC Psychol* 7 (2019). doi: 10.1186/s40359-019-0305-0.
- [12] R. Shadiev, Y.-M. Huang, Exploring the influence of technological support, cultural constructs, and social networks on online cross-cultural learning, *Australasian Journal of Educational Technology* 36 (2020). doi: 10.14742/ajet.6038.
- [13] M. Kaufhold, C. Reuter, C., Violence and Peace in Social Media, in: C. Reuter (Eds.), *Information Technology for Peace and Security*, Springer Vieweg, Wiesbaden, 2019, pp. 361–381. doi:10.1007/978-3-658-25652-4_17.
- [14] T. Sandel, R. Buttny, M. Varghese, Online interaction across three contexts: an analysis of culture and technological affordances, *J. Intercultural Communication Research* 48 (2019). doi:10.1080/17475759.2018.1552616.
- [15] B. Geurts, Communication as commitment sharing: speech acts, implicatures, common ground, *Theoretical Linguistics* 45 (2019) 1–30. doi:10.1515/tl-2019-0001.
- [16] Joksimović, Srećko, Jovanović, Jelena, Kovanović, Vitomir, Gašević, Dragan, Milikić, Nicola, Zouaq, Amal, and Jan Paul van Staalduinen. "Comprehensive Analysis of Discussion Forum Participation: From Speech Acts to Discussion Dynamics and Course Outcomes." *IEEE transactions on learning technologies* 01.01.-03 (2020): 38-51.
- [17] K. Davie, *Linguistics: Theoretical Pragmatics*, 2021. URL: <https://kddidit.com/2021/04/08/linguistics-theoretical-pragmatics/>
- [18] S. Albota, War Implications in the Reddit News Feed: Semantic Analysis, in: *Proceedings of 17th. IEEE international conference, CSIT 2022, Lviv, Ukraine, 2022*, pp. 99–102. doi: 10.1109/CSIT56902.2022.10000515.
- [19] N. Kunanets, O. Levchenko, A. Hadzalo, The Application of AntConc Concordancer in Linguistic Researches, in: *Proceedings of the thirteenth International Scientific and Technical Conference on Computer Sciences and Information Technologies, CSIT, 2018*.
- [20] V. Vysotska, A. Sachenko, V. Lytvyn, Y. Burov, Information resources processing using linguistic analysis of textual content, in: *Proceedings of the ninth IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, IDAACS, 2017*.