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Multidisciplinary Assessment of Crisis Resilience in English and Polish Populations: Linguistic, Philosophical, and Economic Perspectives Using WAR, PANDEMIC / WOJNA, PANDEMIA Stimuli

Abstract

This study examines the resilience of English and Polish populations to crises using a pair-by-association methodology, employing questionnaires with stimuli words of "WAR" and "PANDEMIC" in both languages, facilitated by the digital platform STIMULUS. The research focuses on participants' emotional responses to these stimuli, aiming

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to identify patterns of resilience. This investigation stands out due to its innovative use of linguistically matched stimuli to explore cultural variations in crisis response dynamics. The analysis of responses from 800 participants (400 Polish, 400 English) reveals marked differences in emotional reactions between the two groups, indicative of varying resilience levels. Specifically, the dominant response among the English to "WAR" was "concern" (response rate of 0.1023), while for the Polish, it was "śmierć" (death) with a response rate of 0.3172. For the "PANDEMIC" stimulus, the most prevalent response among the English was "adaptation" (response rate of 0.1078), compared to "strach" (fear) among the Polish (response rate of 0.2018). These findings suggest that the English demonstrate greater resilience, adapting quickly and developing effective strategies to manage crises. In contrast, the Polish responses indicate a lower resilience, characterized by more fearful and fatalistic reactions. This research provides insights into cultural differences in crisis resilience, essential for designing targeted interventions.

Keywords*:* experimental diagnostics, resilience, crises, emotional responses, cultural differences, linguistic stimuli

Introduction

Amidst natural disasters, geopolitical upheavals, and related occurrences, there has been a heightened interdisciplinary focus on the study of human resilience, as evidenced by recent scholarly work (Jung *et al.* 2023; Nesbitt *et al.* 2023). This increased academic and practical engagement underscores the urgency of understanding this concept. A multi-level approach to its study enriches systems theory, which primarily examines humans as living systems that have undergone evolutionary stages of development, from genetic and neurobiological to social and cultural. The systems of adaptation (immune, self-regulation, stress management) develop in an individual as much as they interact with other systems and adapt to external conditions. These dynamic interactions contribute to the formation of various adaptation methods, which become behavioural stereotypes among representatives of different social groups and cultures and are pretty stable.

In confronting stressful scenarios, individuals engage both consciously and unconsciously in a quest to circumvent such situations by identifying and adopting behavioral models that are conducive to adapting to crisis phenomena. Over time, these adaptive behaviors solidify into stereotypical patterns embedded within their consciousness. These foundational assumptions have been rigorously tested and substantiated through empirical research. Recent studies (Beukeboom *et al.* 2019; Polusny *et al.* 2023) have demonstrated that complex societal issues serve as crucial bases for modeling resilience as a psycho-emotional construct. This category is closely linked with affective responses and behavioral inclinations toward particular groups, which can give rise to prejudice, discrimination, and societal tensions. However, resilience is predominantly viewed through three lenses:

1) intrapersonal phenomena,

2) belief systems

3) mental processes schematically reflected in each individual's mind.

Resilience, as Bonanno (2004) describes, "represents a distinct trajectory from the process of recovery, that resilience in the face of loss or potential trauma is more common than is often believed, and that there are multiple and sometimes unexpected pathways to resilience" (Bonanno 2004: 20). The American Psychological Association (2015) defines resilience as "the process and outcome of successfully

adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioral flexibility and adjustment to external and internal demands" (Resilience 2015).

To determine the extent to which adaptive behavior serves as a factor of resilience, it is crucial to experimentally assess the cognitive capacities of individuals from diverse linguistic backgrounds to adapt to stressful conditions. This process entails identifying and implementing positive environmental models within each language culture, which are instrumental in preventing conflicts and alleviating the adverse effects of stress. In cognitive psychology, scholars like Fitzpatrick and Thwaites (2020) continue to seek practical tools for conducting high-level experiments and processing their results. One such tool is the computer service STIMULUS (CS STIMULUS) (URL: http://stimulus.tools/uk/) developed by Ukrainian scholars Zagorodnia and Zagorodnyi. This service has demonstrated efficacy and has become increasingly popular among Ukrainian researchers, as evidenced by Kapranov *et al.* (2021). The objective of this article is to assess the level of resilience (high or low) among English and Polish individuals through a pair-by-association experiment utilizing two stimuli: "WAR" and "PANDEMIC" in English, and their Polish equivalents, "WOJNA" and "PANDEMIA". In the context of increasing scientific and practical interest in the concept of human resilience, intensified by events such as natural disasters and geopolitical conflicts, this study focuses on assessing resilience among English and Polish-speaking populations. Employing a pair-by-association experiment with the stimuli "WAR" and "PANDEMIC" in English and their Polish equivalents, "WOJNA" and "PANDEMIA," the following hypothesis is proposed: Individuals from English and Polish linguistic cultures will exhibit distinctly different patterns of resilience when exposed to the stimuli "WAR" and "PANDEMIC," reflecting the adaptive behavioral models that are entrenched within their respective cultural and linguistic contexts. These differences may manifest in varying emotional and cognitive responses, potentially contributing to the development of stereotypical behaviors associated with each group's approach to crisis management.

Method

Questionnaires

Two electronic questionnaires were uploaded to CS STIMULUS: (1) an English questionnaire (English Questionnaire) for respondents in Great Britain, and (2) a Polish questionnaire (Polish Ankieta) for respondents in Poland. Each questionnaire comprises two sections: Section I. "General Information about the Respondent": This section collects data on the respondents' age (categories: 17–23, 24–30, 31–39, 40–49, 50 and over) and education level (categories: secondary, primary higher (BA), higher (MA), scientific degree (Ph.D., *etc.*)). Section II. "Reactions to Stimuli": This section presents two stimuli for response – English: WAR, PANDEMIC; Polish: WOJNA (literally, WAR), PANDEMIA (literally, PANDEMIC).

Participants

Participants from Great Britain (hereafter referred to as "the English") and the Republic of Poland (hereafter referred to as "the Poles") were recruited for this free-associative experiment. They were tasked with responding to the previously mentioned stimuli by providing words, phrases, or sentences

for subsequent analysis. The study sample comprised 50 English and 50 Polish participants, stratified into two age groups: 17–23 and 31–39 years. These participants were predominantly undergraduate and graduate students enrolled in a variety of academic programs at higher education institutions in Great Britain and Poland.*Computer Tools for Data Processing*

The data was processed using CS STIMULUS. As outlined by Olha Zahorodnia, the primary objectives of developing CS STIMULUS included "creating a practical, multifunctional tool for the statistical data processing of associative experiments, enabling the derivation of constant and variable indicators, functions, dependencies, and graphs in coordinate planes" (Zahorodnia 2020: 80). She also envisioned CS STIMULUS as evolving into "a large-scale database for associative surveys to study the dynamics of language awareness indicators" (Zahorodnia 2020: 80).

CS STIMULUS comprises two modules: (1) the database module, which includes data input, viewing, and communication components; and (2) the data analysis module, which features components for filtering, analyzing linguistic worldviews, and analyzing stimuli (Zahorodnia 2020: 80). It is built on the Delphi 7 programming language and can handle large-scale research involving approximately 500 stimuli, 1,000 respondents, and over 100,000 associative links ("stimulus-reaction"). Installing this software in computer labs will significantly enhance its usage capacity.

Results

The Ontological Essence of Resilience as a Way of Human Adaptation to Modern Stressful Life

Amid the mounting global challenges to stability and security that impact every aspect of human life, contemporary scientific research is progressively concentrating on the issues concerning how individuals from diverse societies adapt during crises and stress-inducing situations. To characterize the contemporary world and its new realities, James Cascio, a lead researcher at the Institute for the Future, introduced the term "BANI-world" in his work "Facing the Age of Chaos" (Cascio 2020), which stands for Brittle, Anxious, Nonlinear, Incomprehensible.

According to the "Online Etymology Dictionary", the ontological essence of resilience is defined as the "act of rebounding or springing back", often in the context of immaterial things. This term is derived from the Latin resiliens, the present participle of *resilire* ("to rebound, recoil", from re- "back" + salire "to jump, leap"). In the physical sciences, by 1824, resilience also came to mean "elasticity, or the power of returning to an original shape after compression, *etc.*" (OED). This definition emphasizes resilience as the capacity of a system or organism to rebound from stressors, difficulties, or changes while preserving its core functionality and structural integrity. This scientific framing encourages a more intensive utilization and deeper exploration of the term "resilience" within the cognitive-oriented sciences. The American Psychological Association (2015) defines resilience as the process and outcome of successful adaptation to complex life experiences towards personal growth, facilitated by forming emotional and behavioral flexibility under external and internal conditions of the BANI world.

Broadly defined, resilience encapsulates the ability of a system or organism to rebound from stressors, difficulties, or changes while preserving its functionality and structural integrity. This characteristic of enduring and swiftly recovering from impacts has garnered significant interest among professionals in

the humanities and social sciences, especially psychologists. It is valued both as a theoretical concept and as a promising domain for practical psychological engagement.The focus then shifted to factors that, in the context of contemporary stressful existence, would enable a person to adapt to changes and new conditions and restore psychological balance. Resilience involves persisting, adapting, or transforming in the "face of change" to maintain the system's essential identity (Knuth 2019). Ann Masten interprets resilience as the cognitive ability of a representative of a linguaculture to successfully adapt to obstacles and stressful phenomena that can even threaten human life (Masten 2014). According to other researchers, resilience is defined as a stable trajectory of healthy functioning after experiencing extremely adverse events (Bonanno 2004); reintegration of the "self," involving conscious efforts aimed at moving forward in an integrated positive manner, gained through insight as a result of learning from traumatic experiences (R. Yehuda), constructing life meanings (C. Panter-Brick) (Southwick *et al.* 2014); the ability to buffer against stress (Maddi 2013), the outcome of processing psycho-traumatic experiences, manifesting in psychological resilience (Luthans *et al.* 2006); positive adaptation to traumatic events, i.e., realizing new opportunities that arise due to psychotrauma (Richardson 2002).

Resilient individuals are distinguished by their perception of stress as a developmental resource, an awareness of the boundaries of their responsibility (Kobasa 1979), and proficiency in fostering trusting interpersonal relationships, guided by both personal and collective objectives. Additional characteristics include self-efficacy, extraversion, a history of past successes, a sense of humor (Rutter 1985), tolerance for change, optimism, and faith (Lyons 1991). These traits collectively contribute to an individual's resilience in facing life's challenges. The concept of resilience is also rooted in philosophical discourse, particularly among existentialist thinkers (Khamitov 2002), who examine the nuanced interplay between free will and responsibility, the constraints on or determinism of choices, and the assertion of self in the face of crisis to preserve one's essence while undergoing personal transformation. Practically all metaphysical theories developed throughout the history of human thought inherently involve the notion of surmounting challenges that threaten or potentially negate an individual's "self."Since the 1970s, the concept of resilience has been actively used in other sciences, particularly ecology and sociology, to describe the ability of an individual, group, or system to withstand stressful situations, adapt to changes, and successfully function after that.

In ecological research, which began to unfold in the 1970s, the critical concept is ecological resilience. It defines the degree of impact a system can withstand before transitioning to a qualitatively different, stable alternative state. The main goal of resilience is to adapt ecosystems and organisms to environmental changes, such as natural disasters or climatic and anthropogenic influences, to ensure ecosystem stability (Suding and Hobbs 2009).

Global shifts in ecological systems have direct implications on diverse facets of social, technological, and economic processes. In this context, Ivanyuk (2022) distinguishes three main approaches to assessing the resilience of the socio-economic system: "technical" (also known as "physical" or "engineering"), "ecological," and "adaptive." The "technical" approach focuses on assessing "technical" resilience, defined as the system's ability to recover and return to the growth trajectory observed before the crisis. In the "ecological" approach, the role of crises in stimulating the socio-economic system to transition to a new state of stability or configuration towards which the system is moving is analyzed (Burlutska 2016). The degree of resilience is measured by the impact the system can withstand or absorb for further change in its form, function, or position. The "adaptive" approach paradigm in assessing resilience allows

determining the socio-economic system's potential for changes (adaptation, reorganization) before, during, or in response to a crisis, aiming to minimize the negative impact of the crisis on the system's further development (Ivanyuk 2022).

Resilience gained particular relevance in socio-economic research after the global economic crisis of 2007 and 2008 (Doran and Fingleton 2016; Simmie and Martin 2010). During this period, European regional economies showed varying recovery rates after the crisis (Hadjimichalis and Hudson 2014), prompting socio-economic scientists to explore factors that could facilitate rapid recovery after crises and ensure the stability of economic systems. In economic science, regional economic resilience emerged, defined as the ability of a regional economy to withstand and quickly recover from shocks, sometimes improving its situation compared to the pre-crisis state (Bristow and Healy 2014).

Economist Ron Martin delineated four dimensions of regional economic resilience: resistance, recovery, reorientation, and renewal. Resistance refers to the degree of sensitivity or the depth of the regional economy's response to a recessionary shock. Recovery encompasses the speed and extent of the economy's rebound. Reorientation involves the degree of adaptation in response to the impact. Lastly, renewal pertains to the extent to which the regional economy either resumes its pre-recession growth trajectory or shifts towards a new growth trend (Mayor and Ramos 2020). An essential aspect of researching the concept of resilience is considering the economic environment as a whole and individual economic entities in particular. In the modern competitive environment, economic entities are perceived as living organisms, which, in a particular interpretation, have the properties of a physical person. In his research, Arie de Geus concluded that "like all organisms, a company exists primarily for its survival and perfection: to realize its potential and grow as large as possible" (De Geus 1999). In the modern economic space, with its constant economic crises, natural disasters, political crises, wars, and other risk and uncertainty situations, it is impossible not to pay attention to the problem of business resilience and the need to reduce its vulnerability and increase safety, resilience, and flexibility.

The resilience of global systems often surpasses established scientific paradigms and manifests at the geopolitical level. Particularly in scenarios of external aggression and internal instability, the significance of investigating the phenomenon of resilience intensifies among scholars within the Ukrainian linguistic culture. The National Institute for Strategic Studies implemented Ukraine's national resilience strategy to hybrid threats. In this context, national resilience is considered the ability of the state to interact with society to preserve stability in the face of external and internal aggressive influences, to respond promptly and effectively to asymmetric threats through the implementation of changes and adaptation without violating the fundamental values and institutions of society, to ensure continuous functioning during crises, and recover after the destructive effects of phenomena or actions of any nature (Reznikova 2022).

The interdisciplinary and multi-branch use of the concept of resilience indicates that the conceptual understanding of the essence of resilience as a means of adapting the personality, economic entity, and system (regional, national, global) to the contemporary stressful existence presupposes expanding the categorical framework through defining differences between it and other related concepts (willpower, stress resistance, vitality, viability).

As a result of analyzing the essence of the concept of resilience, preliminary assumptions can be made that its value-conceptual core is the essential feature associated with the cognitive ability of a person to adapt to a stressful existence, from a high degree of ability to zero. The around-core features include:

(a) overcoming difficulties (the ability to effectively mobilize resources, overcome crises, resist stressors without reducing the success of activities, maintain psychological well-being, and ensure stability); (b) adaptation to changes (the ability to quickly restore balance after stressful impact); (c) facilitating personal growth (identifying growth points and growth trajectories and ensuring reorientation and renewal towards preserving the previous stable system or transitioning to a new growth trend).

Accordingly, resilience is defined as the ability of any dynamic system to adapt to challenges that threaten its functioning or development successfully. According to Ann Masten (2014), resilience can be applied to various types of systems at different levels of interaction, both living and non-living, such as a security system, economy, economic entities, ecology, nation, family, person, and microorganism. Thus, the essence of resilience as an interdisciplinary concept lies in adapting to the changing conditions of the BANI world and the complex experience of enduring a crisis toward post-crisis recovery through the system's internal and external protective factors.

Multidisciplinary studies allow for a deeper consideration of resilience as a systemic characteristic from psychological and linguacognitive aspects.

The Results of Pair-by-Association with the English and Poles

In cognitive psychology, researchers frequently utilize associative experiments (AE) as a method to validate hypotheses and gain deeper insights into human cognition and the brain's mechanisms for organizing higher nervous activity (Rabeyron *et al.* 2020). These experiments are pivotal in understanding how thoughts and behaviors are structured and influenced by neural processes. AE has been pivotal in analyzing and constructing associative fields tailored to specific scientific objectives, such as understanding knowledge organization in human thought. In psychology and psychodiagnosis, the initial focus was on exploring human consciousness structures, including the diversity of associative ideas, response times for associations, classification of associations, and introducing the concept of "association stability" to determine normative patterns for both regular and pathological states of consciousness.

Pair-by-association, which involves associating a stimulus with an arbitrary idea or object and typically eliciting an emotional response, has become among the most popular AEs. It is conducted by repeatedly pairing the stimulus with the arbitrary object. Cabana *et al.* (2023) note that "since the late 1970s, large-scale word association studies have contributed to behavioural research in at least two distinct ways: first, as a normative tool for measuring lexical properties of interest in psycholinguistic experimental designs (e.g., association strength, set size), and second, as a tool to explore and model the structure of semantic representations stored in memory" (Nelson *et al.* 2004; Dubossarsky *et al.* 2017; Wulff *et al.* 2019).

Using CS STIMULUS, we recorded over 800 responses with varying brightness indices to the English WAR, PANDEMIC / Polish WOJNA (lit. WAR), PANDEMIA (lit. PANDEMIC) stimuli: English WAR (236 reactions), PANDEMIC (184 reactions); Polish WOJNA (lit. WAR) (204 reactions), PANDEMIA (lit. PANDEMIC) (176 reactions), with some participants providing multiple reactions to a single stimulus. We selected three reactions for each stimulus with the highest brightness index for further analysis (see: Table 1).

Table 1. The Highest Brightness Indices of Reactions Provided by the English and Poles to English WAR, PANDEMIC / Polish WOJNA, PANDEMIA Stimuli

Reactions of the English				Reactions of the Poles			
WAR	***Brightness index***	***PANDEMIC***	***Brightness index***	***WOJNA (lit. WAR)***	***Brightness index***	***PANDEMIA (lit. PANDEMIC)***	***Brightness index***
death	0.3423	*isolation*	*0.2001*	*śmierć* (lit. death)	0.3172	*izolacja* (lit. isolation)	*0.3182*
different	0.1023	*adaptation*	*0.1078*	*strach* (lit. fear)	0.2603	*strach* (lit. fear)	*0.2018*
peace	0.0823	*covid*	*0.1053*	*konflit* (lit. conflict)	0.1309	*choroba* (lit. disease)	*0.0526*

Coincidences and Discrepancies in Reactions: A Comparative Analysis of English and Polish Participants

The table displays the similarities and differences in the responses of English and Polish participants, each characterized by varying degrees of brightness indices. These reactions and indices are considered natural manifestations of their psycho-emotional perceptions of reality within a contemporary globalized context marked by frequent occurrences of wars and pandemics.For instance, a typical response to both the English WAR and Polish WOJNA (literally, WAR) stimuli was English *death* (0.3423) and Polish *śmierć* (literally, death) (0.3172), respectively. Similarly, for the English PANDEMIC and Polish PANDEMIA (literally, PANDEMIC), the shared reaction was English isolation (0.2001) and Polish *izolacja* (literally, isolation) (0.3182). Notably, the Polish respondents used the same reaction, *strach* (literally, fear), for both Polish WOJNA and PANDEMIA, albeit with different brightness indices: WOJNA (0.2603) and PANDEMIA (0.2018).

Semantic Identification of Stimuli and Reactions

The subsequent phase involves determining the semantic weight of each stimulus and response, capturing the initial associative norms of respondents based on their previous experiences. This analysis will be detailed in Table 2 and Table 3. This involves identifying the primary seme, or archiseme, and a secondary seme, or integral seme, to evaluate implicit components. The term "implicit" here implies that past experiences unconsciously influence judgments. The pair-by-association method revealed that stereotypes and prejudices, traditionally considered conscious, have an implicit dimension. These do not necessarily correlate with direct responses to questions about specific stereotypical judgments (Joffe and Elsey 2014: 173).

Table 2. A) Semantic Identification of the English WAR, PANDEMIC Stimuli and Reactions with the Highest Brightness Indices

	Reaction	Brightness Index	Semes	Reaction	Brightness Index	Semes
Stimulus	***WAR***	–	**"state", "state of enmity between someone"**	***PANDEMIC***	–	**"state", "degree of development of the epidemic"**
Reactions	*death*	0.3423	"result", "cessation of vital activity of the body"	*isolation*	0.2001	"state of emotion", "state of loneliness"
	different	0.1023	"characteristic", "deprived of similarity, sameness"	*adaptation*	0.1078	"process" "process of changing something"
	peace	0.0823	"state", "state of quietness"	*covid*	0.1053	"disease", "type of disease"

The analysis of the English responses to the WAR and PANDEMIC stimuli, using the brightness indices from CS STIMULUS, presents a nuanced understanding of their cognitive processing of these concepts.

In the case of the WAR stimulus, the English responses form a cognitive triad consisting of *death* (0.3423), *different* (0.1023), and *peace* (0.0823). These reactions, corresponding to the archisemes of "result", "characteristic", and "state" offer a layered insight into the English perception of war. Initially, war is associated with the dire "result" of death, suggesting a recognition of its grave consequences. However, this leads to a conceptual shift to *different*, indicating a view of war as a transformative, possibly renewing force. Ultimately, the triad concludes with *peace*, a "state of tranquility", signifying a hopeful end or resolution. This progression from the grim reality of death through a transformative phase to a peaceful resolution encapsulates a journey from negative to positive, reflecting a complex and ultimately optimistic view of war.

Similarly, the English responses to the PANDEMIC stimulus form a cognitive triad of *isolation* (0.2001), *adaptation* (0.1078), and *covid* (0.1053). The archisemes here are "state of emotion", "process", and "disease". The pandemic is initially perceived as a "state of emotion" – isolation, highlighting the emotional and social impact of the pandemic. This leads to *adaptation*, a "process of change", indicating a response to the challenges posed by the pandemic. The final element of the triad, *covid*, categorized under "disease", underscores the specific health-related fears and concerns associated with the pandemic. This triad suggests a journey through the emotional and practical challenges of the pandemic, culminating in a focus on the disease itself.

These cognitive triads reveal how the English process and perceive the concepts of war and pandemic. While the WAR triad moves from a grim reality to a hopeful resolution, the PANDEMIC triad navigates through emotional and adaptive responses to the specific health crisis, illustrating a dynamic and multi-layered cognitive engagement with these complex and challenging stimuli.

Table 2. B) Semantic Identification of the Polish WOJNA (lit. WAR), PANDEMIA (lit. PANDEMIC) Stimuli and Reactions with the Highest Brightness Indices

	Reaction	Brightness Index	Semes	Reaction	Brightness Index	Semes
Stimulus	***WOJNA (lit. WAR)***	–	**"state", "state of enmity between someone"**	***PANDEMIA (lit. PANDEMIC)***	–	**"state", "degree of development of the epidemic"**
Reactions	*śmierć* (lit. death) –	0.3172	"result", "cessation of vital activity of the body"	*izolacja* (lit. isolation) –	0.3182	"state", "state of loneliness"
	strach (lit. fear) –	0.2603	"state of emotion", "state of dangerous, painful, or threatening emotion"	*strach* (lit. fear) –	0.2018	"state of emotion", "state of dangerous, painful, or threatening emotion"
	konflit (lit. conflict) –	0.1309	"state", "state of disagreement or argument between people, groups, countries"	*choroba* (lit. disease) –	0.0526	"disease", "violation of the normal vital activity of the body"

Exploring cognitive responses to the Polish WOJNA (WAR) and PANDEMIA (PANDEMIC) stimuli reveals insightful triads of reactions, each shedding light on the emotional and psychological processing of these concepts in Polish culture.

For WOJNA, the triad comprises *śmierć* (death) with a brightness index of 0.3172, *strach* (fear) at 0.2603, and *conflict* at 0.1309. The progression from *śmierć*, seen as the inevitable "result" of war, to *strach*, a profound "state of emotion" characterized by fear, and finally to conflict, a broader societal "state", reflects a predominantly negative perception. War is thus perceived as a phenomenon that not only leads to the tragic end of life but also instigates a chain of emotional and social turmoil, ending in conflict. This sequence underlines a view where war, rooted in enmity, culminates in a cascade of adverse outcomes, from personal loss to collective discord.

In response to PANDEMIA, the cognitive triad is marked by *izolacja* (isolation) with a brightness index of 0.3182, *strach* (fear) at 0.2018, and *choroba* (disease) at 0.0526. Here, the pandemic is initially perceived as a "state" of isolation, a profound emotional experience that triggers fear, defined as a "state of dangerous, painful, or threatening emotion". This fear, in turn, leads to *choroba*, a "disease" representing a disruption of normal bodily functions. The pandemic, therefore, is not just a medical or epidemiological event but a profoundly personal experience that encompasses loneliness, fear, and its physical manifestations.

These cognitive triads demonstrate how the Polish people emotionally navigate the concepts of war and pandemic. In both cases, there is a clear progression from an initial state or event to an emotional response and a broader implication or consequence. This insight into the Polish psyche offers a nuanced understanding of how these global crises are perceived and processed on a personal and societal level.

Discussion

The analysis of responses to the English WAR, PANDEMIC and the Polish WOJNA (WAR), PANDEMIA (PANDEMIC) stimuli reveals commonalities and differences in the associative perceptions of these two linguistic cultures.

A notable common reaction between the English and Polish responses to WAR/WOJNA is the concept of death, which both cultures associate with the cessation of human vital activity. This reaction reflects a universal understanding that war, regardless of duration or scale, inevitably leads to loss of life and destruction. The similarity in the brightness indices for this reaction indicates a shared perception of the gravitas of war across both cultures.

However, the reactions to isolation, represented by the English *isolation* (0.2001) and the Polish *izolacja* (0.3182), diverge slightly in their brightness indices. While both groups associate the term with separation from society or a loss of connection, the higher index among Poles suggests a more significant challenge in coping with isolation. This difference may indicate that Poles have a more vital need for social interaction and may be more susceptible to adverse psychological effects, such as depression or stress, in the face of prolonged isolation. In contrast, the lower brightness index for the English suggests a higher degree of resilience and a better ability to cope with adversities related to isolation.

Another typical response is observed in reactions to the PANDEMIC/PANDEMIA stimuli. The English *covid* (0.1053) and Polish *choroba* (0.0526) align with the archiseme "disease". However, while the English predominantly associate the pandemic with COVID-19, reflecting the significant impact of the virus in Britain, the Polish response is broader, encompassing various diseases caused by disruptions to normal bodily functions due to adverse environmental factors.

These differences in associative perceptions highlight how cultural contexts and experiences shape the cognitive processing of similar stimuli. While there are overarching common themes in understanding war and pandemic, the nuances in reactions speak to the unique psychological, social, and cultural landscapes of the English and Polish people.

The reactions to the stimuli of WAR and PANDEMIC in English and Polish contexts reveal significant differences in the associative perceptions and emotional responses of these two cultures.

Regarding the topic of WAR, the English respond with *different* at a low brightness index of 0.1023, whereas the Polish response is *strach* (fear) at a higher average brightness index of 0.2603. The term *different* may encompass negative and positive connotations for the English. On the one hand, it could signify the unfortunate aspects of military events, such as destruction and death. Conversely, it might represent a positive shift or a new beginning for the country and society. In contrast, for Poles, *strach* embodies excitement, anxiety, and restlessness, driven by the anticipation of unpleasant and undesirable events. This reaction is likely influenced by Poland's proximity to Ukraine, contributing to a constant fear among the Polish people. The average brightness index calculated by CS STIMULUS suggests a moderate level of anxiety in the Polish response.

In the context of the PANDEMIC, there is also a notable difference in reactions. The English responded with *adaptation* at a low brightness index of 0.1078, indicating a quick adjustment to the changing living conditions brought about by the pandemic. In contrast, the Polish response is again *strach* (fear), with a higher average brightness index of 0.2018. This implies that, for Poles, the pandemic is primarily associated with fear and anxiety as the highest degree of epidemic development.

Interestingly, Poles exhibit a similar level of fear in response to WOJNA (WAR) and PANDEMIA (PANDEMIC), although with varying brightness indices: 0.2603 for WOJNA and 0.2018 for PANDEMIA. This suggests that the "state of excitement, anxiety, and restlessness" is a predominant emotional state in the Polish psyche in response to these stimuli.

Regarding reactions to WAR/WOJNA, the English and Poles show distinct differences. The English reaction of *peace* at a brightness index of 0.0823 indicates a belief in the cessation of conflict and the establishment of harmony. Despite its relatively low brightness index, it suggests an optimistic outlook. Conversely, the Polish reaction to *conflict* at a brightness index of 0.1309 reflects a perception of war as a sharp dispute, likely between countries or peoples. This difference in responses and brightness indices underscores a contrast in outlooks: the English lean towards optimism and peace, while the Poles are more inclined to view military events as sources of profound disagreement and conflict.

Conclusions

The thorough examination of the concept of resilience, especially in the context of escalating global challenges, underscores its interdisciplinary importance and widespread applicability. This analysis illuminates how resilience operates across various domains, affirming its role as a critical factor in confronting and adapting to the complex dynamics of the modern world. Resilience, as understood across various disciplines, encompasses a broad spectrum of meanings and applications, reflecting the complexity and multifaceted nature of the concept. Firstly, resilience is crucial in understanding how individuals and systems adapt and respond to stress, crisis, and change. This is particularly evident in socio-economic systems, where resilience is critical to navigating and recovering from crises, such as the 2007–2008 global economic downturn. The capacity of regions and economies to withstand, recover, and potentially enhance their conditions post-crisis underlines the critical role of resilience in ensuring economic stability and fostering growth. Moreover, resilience transcends simple adaptation or recovery. In the realms of psychological and social sciences, resilience is understood as a dynamic process that encompasses the ability to endure adversity and pursue positive development in response to challenges. This concept is exemplified by how individuals mobilize resources, sustain psychological well-being, and cultivate personal growth amidst stressors. Similarly, in ecological and environmental studies, resilience is crucial for comprehending how ecosystems adapt to, and recuperate from, environmental changes and disturbances, thereby maintaining their functionality and integrity. The concept of resilience is paramount, particularly in the context of global environmental challenges such as climate change, where the ability of ecosystems to adapt and maintain stability is crucial. As highlighted by Mazur and others, the interdisciplinary nature of resilience research emphasizes the need for a comprehensive approach that simultaneously considers ecological, social, and economic systems. This transdisciplinary perspective is indispensable for devising effective sustainability and growth strategies in response to global challenges.

At the geopolitical level, the relevance of resilience is accentuated as it becomes central to understanding and strategizing national and regional responses to external threats and internal instabilities. This is exemplified by the development of national resilience strategies to hybrid threats, such as those implemented by the National Institute for Strategic Studies in Ukraine. Such strategies demonstrate how resilience extends beyond environmental and economic contexts to include significant political and geopolitical dimensions, where it informs policy-making and strategic planning.

Furthermore, at the psychological level, resilience involves not merely the capacity to recover from adversity but also the ability to engage in positive growth as a result of challenges faced. This aspect underscores the importance of resilience across various disciplines, revealing its broad applicability and influence in shaping responses at individual, community, and national levels.

Thus, resilience is a multifaceted concept with broad implications across various disciplines. Its study offers invaluable insights into how individuals, societies, economies, and ecosystems can survive and thrive in the face of adversity and change. A comprehensive understanding of resilience is crucial for developing strategies that ensure stability, growth, and sustainable development in an increasingly complex and challenging global environment.

The experimental diagnostics conducted using CS STIMULUS on the responses of English and Polish speakers to WAR, PANDEMIC, WOJNA (WAR), and PANDEMIA (PANDEMIC) stimuli have yielded insightful results about the most relevant reactions from these two linguistic cultures. The study uncovered that the English reaction to the WAR stimulus was predominantly *different* with a brightness index of 0.1023. At the same time, the Polish response to WOJNA was *śmierć* (death) with a significantly higher index of 0.3172. Similarly, for the PANDEMIC stimulus, the most relevant English response was *adaptation* (0.1078), contrasting with the Polish response of *strach* (fear) (0.2018). These findings suggest a higher resilience among the English than the Poles in crises.

The concept of resilience varies across linguistic cultures, with its degree influencing how societies respond to crisis and stress. Cultures with lower resilience often exhibit societal disorganization in challenging times, whereas those with higher resilience tend to quickly adapt and develop effective behavioural models to confront and overcome crises. In societies with excessive resilience, there is often a tendency to downplay the state's role in ensuring a successful life, emphasizing the importance of democratic rights and freedoms in such contexts. The study reinforces the idea that an individual's country of residence significantly impacts their worldview, mental reactions, and behaviours in situations that demand resilience to cope with psycho-traumatic events.

This study successfully achieved its objective of assessing the levels of resilience (high or low) among English and Polish individuals by utilizing a pair-by-association experiment with the stimuli WAR and PANDEMIC, and their respective Polish equivalents, WOJNA and PANDEMIA. The findings of this research confirm the proposed hypothesis: individuals from English and Polish linguistic cultures exhibit distinctly different patterns of resilience when confronted with these stimuli. These differences, reflective of the entrenched adaptive behavioral models within their cultural and linguistic frameworks, manifested through varied emotional and cognitive responses. This not only substantiates the hypothesis but also contributes valuable insights into the development of stereotypical behaviors associated with each group's approach to crisis management. Thus, the study underscores the significant role of cultural and linguistic contexts in shaping resilience, offering a deeper understanding of how diverse populations respond to global crises.

Future research prospects include using the CS STIMULUS platform to investigate social groups from various linguistic cultures. This approach is designed to identify both commonalities and distinctions in how different cultural backgrounds perceive various challenging phenomena. By exploring these perceptions across diverse groups, we aim to enhance our understanding of global psychological and emotional responses. This broader perspective will contribute to a more comprehensive grasp of how resilience manifests in varied cultural contexts, potentially informing more effective cross-cultural interventions and support mechanisms.

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