Reconsidering the concept of sustainability: personal adaptability dynamics as predictor of positive change

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Abstract. The article deals with the attempt to reconstruct the concept of sustainable development in the context of the COVID-19 pandemic. The literature review supported the idea that the studies devoted to the features of sustainability in social systems are extremely fragmentary. The authors provided a holistic vision of the process of sustainable development in terms of a dialectical self-organization of open living systems. To accomplish this goal, a number of studies have been conducted at different stages of the COVID-19 pandemic. The findings confirmed a strong relationship between the psychological and social level of adaptation (as a manifestation of the adaptability/sustainability of the individual) to the conditions of the pandemic. This helps considering indicators of psychological stability as a predictor of social sustainability. The prospect of the further research consists in the reinterpretation of the current world in terms of a rhythmic, emergent, hybrid and innovative (REHI-world) self-organization of open living systems.

1. Introduction
Currently we are witnessing the emergence of novel models of the world as well as the concepts of sustainability integrated into them. In particular, understanding of the world changed at least three times over the span of 20 years: SPOD-, VUCA-, BANI-world. The traditional idea of sustainability is challenged by the VUCA world model (volatile, unpredictable, complex and ambiguous) [1], [2], [3]. Analyzing the concept of sustainability, it is assumed that psychological and social processes constitute a shared ecosystem in which every individual element has a certain impact on the whole system, and vice versa. On the one hand, global crises are often human-made, in particular, the origin of COVID-19 pandemic has still been problematic (“...these elements indicate that there is no evidence to support the hypothesis of a man-made origin of SARS-CoV-2” [4]) but there are very few who are hesitant as to the fact that its spread and transmission could be attributed to some artificial impact. On the other hand, the global events of the ongoing pandemic cannot but influence the individual who may bear the signs of external turbulences and environmental change. Further we will study the perspectives of reconstructing and redefining the concept of sustainability in terms of its personal correlate – individual adaptability during the COVID-19 pandemic.
2. The COVID-19 pandemic literature review

Recent theoretical findings reveal the complex impact of COVID-19 pandemic on (a) the progress of reaching the goals of sustainable development [5], (b) on the resource potential – which has turned to be dualistic and ambivalent – within social and economic spheres of life. The pandemic displayed the fundamental deficiencies and fragilities of current systems as well as fostered the post-pandemic change of thinking and practice towards accepting ambiguity, unpredictability, and variability into options of economic, social and political transformation [6]; it enables the formation of the collective vision of alternatives in detecting the principal roots of risks, and in building nondiscriminatory perspectives for sustainable social and economic development [7]. The research has underlined the resourcefulness of the corona-crisis for the future policy of social transformation in predicting, assessment and generating adequate response to the climate change problem [8]. New data were collected to prove that utilitarian and capability approaches to nature may be among prominent sources of the corona-crisis. To eliminate its negative consequences the humanity needs to stay more non-manipulative, constructive and pro-ecological [9]. It has been found that the COVID-19 outbreak opened up the alternatives to broaden the sphere of common mobility [10], [11], emphasized the role of long-term investment to youth organizations which proved to be efficient in preparation for natural disasters by providing first aid options especially during the COVID-19 pandemic [12]. Being aware of the problems caused by the COVID-19 pandemic, as well as understanding the growing complexities (consistent with Kondratieff’s wave theory), a group of authors formulated an alternative approach to sustainable development in terms of transformative learning paradigm. It presupposes an adequate change in thinking, formation of new competencies for harmonious administration and management of life problems, which concern nature and building life perspectives [13].

There is a growing field of research dedicated to predictors, dynamics and resources of sustainable development under COVID-19 pandemic. They are such personal qualities as openness to experience, conscientiousness, extraversion, agreeableness, emotional stability. The drivers of sustainability are family and social status, conditions of work during the pandemic. The health predictors, that mitigate the outcomes of COVID-19 could be anxiety, depression, life satisfaction [14]. Compliance, diligence are most likely to prevent certain behaviors, while such maladaptive qualities as negative affectivity and psychological detachment correlate with markers of depression, anxiety, suicidal risks and symptoms of COVID-19 [15]. Honesty, obedience, life satisfaction, tolerance for ambiguity and hope are the most prominent drivers and predictors of personal safety and alleviation of COVID-19 outcomes [16], [17]. A special longitudinal study revealed a strong correlation between faiths, science mindset and anxiety related to COVID-19: science mindset has increased during the first period of the pandemic, while religious mindset showed the signs of a certain decrease [18]. Positive and negative psychological states under the pandemic correlate with extraversion and negative affectivity, at the same time life satisfaction is determined by the parameters of economic threat, unrealistic optimism and trust in governmental decisions [19]. It is through the action of community members, via the majority of people adhering to social distancing, respiratory and hand hygiene recommendations, that the spread of a disease is attenuated [20]. In the context of the unprecedented and long-term corona-crisis the population displayed high level of personal and social resilience and health restoration [21]. The major resource of personal resilience came from social support, strong marital relations and caring attitude of the loved ones [22], [23]. An illustration of the centrality of family processes in buffering against risk in the context of COVID-19, as well as promoting resilience through shared family beliefs and close relationships, is provided [24]. Flexibility of psychotherapeutic assistance has been considered relevant in increase of subjective well-being [25].
3. On the emergence of a psycho-social sustainability model: theoretical substantiation

The sustainability is a phenomenon of economic, social and psychological self-organization which also constitute a basic quality of living open systems [26]. The open systems are defined as those capable of transcending from one context to another by which they survive, renovate the existing potential. The other quality of a living open systems is that their transitions are characterized by a certain rhythmical flow of different states, among which are critical periods. This flow or periods of transcending are—in terms of dialectics—a marker of sustainability of development process (thesis-antithesis-synthesis [27]).

This research is based on the assumption that the ability to psychological and personal change could constitute a precondition for administration of social and even global self-organization. This precondition lies in a reassessment or reinterpretation of a role of negative (antithetical) factors/critical destabilizations (which is the sphere of ecology).

During the latest decades ecology criteria and its understanding has critically changed in psychology. Formerly, a certain state or phenomenon was considered ecologically valid on condition it proved its non-adversarial nature. The latest research of the second wave of the Positive Psychology supported the idea that a critical and even a traumatic event may promise positive results in the course of personal development (which is “post-traumatic growth”). The task of a psychologist or a clinician is to support/facilitate personal self-organization which transcends the stages of negative and/or even “abnormal” response as being temporal and, thus, transient by nature [28]. By this the start of a new understanding and practice of ecology criteria in the context of social and political system’s sustainability is marked.

We assumed that the positive personal response to adversity (especially through the dialectical lens of the COVID-19 pandemic evolution) can determine an adequate social response and, thus, be the predictor of system’s stabilization. Consequently, the ongoing COVID-19 global crisis may support the paradoxical nature of system’s sustainability within the emerging REHI-world model (R-rhythmical, E-emerging, H-hybrid and I-innovative [29]).

**Research goal** is to study the perspectives of reconstructing and redefining the concept of sustainability in terms of its personal correlate during COVID-19 pandemic.

4. Methodology

In order to verify the hypothesis, we examined the adaptability potential mostly in young adults, 25–44 years of age. The overwhelming majority of them are master students with a professional experience in the spheres of education, social services, economy, finance, IT-business, medicine and the military. The research period is ranging from April, 2019 till February, 2022. During the period we had four assessment sessions. First psychodiagnostics or assessment – April, 2019 (N=117 the average age 31.3±7.6), second – April, 2020 (N=70 the average age 34±6.7), third – October, 2021 (N=87 the average age 32.4±6.2), fourth – February, 2022 (N=117 the average age 33.4±6.6). Total – 350, male – 129, female – 221.

The study of personal and behavioral changes in young adults during the pandemic was carried out by the following psychological referents. **Basic coping strategies** were analyzed through the study of a coping strategies indicator (D. Amirkhan, adaptation by N. Sirota, V. Yaltonsky). The problem-solving strategy is defined as an active use of personal resources in dealing with problems; search for support – active search for communicative resources among referent others (family, friends, etc.); avoidance – escape from the contact reality, certain flight from solving problems [30]. **Personal readiness for change and different aspects of the uncertainty tolerance (TU)** was administered with the PCRS “Personal change-readiness survey” (S. Rodnyk, R. Heather, T. Gold, M. Hal, adapt. N. Bazhanova, G. Bardier). It defines some general and specific targets: passion as energy and vitality level, indefatigability; resourcefulness – cognitive component of TU, a capacity to find solutions and utilize new resources; optimism
– hope, faith in the ability to succeed, orientation on solving problems; adventurousness – motivational aspect of TU, craving for something new, the unknown, rejection of the formerly tested and reliable; adaptability – resource-based component of TU, ability to change plans, decisions, to adjust to unexpected situations; confidence – trust in oneself and the ability to reach goals when needed; tolerance for ambiguity – activity and emotional component of TU, confidence in dealing with “no-clear-answer” or ambiguous situations [31]. Meaningfulness of life, meaningful goals were measured with the test of meaningful life orientations (D. Leontiev): life goals – having meaningful goals that open up life perspectives; process – process of life that brings interest and emotional richness to life; result – life effectiveness and self-realization satisfaction, appreciation of productivity of a certain life period; locus of control I – self-confidence, an ability to take care of life and to build it in accordance with her/his own goals, tasks and meaning; locus of control life – a measure of taking control over life and making decisions as well as independently putting them to life [32].

In scientific and experimental terms, the situation of the COVID-19 pandemic is a unique natural laboratory that provides an opportunity to study the peculiarities of the development and response of the individual and the community to global challenges and environmental transformations. We consider the COVID-19 pandemic as a factor whose varying degree of spread and manifestation affects and changes a person. Clarification of psychological patterns of this process will allow us to deepen the idea of sustainable systemic development of the surrounding (external) environment, socio-psychological environment of the individual, relevant socio-psychological resources and technologies (psychological and pedagogical including) as well as to determine their applied importance for the sustainable development of cities and society.

Each period, when diagnostic sections were carried out, was specific in terms of the degree of spread of the COVID-19 pandemic and its impact on the development and psychological state of the individual:

1. **April 2019**, the first assessment. We associate it with the zero level of impact or the pre-pandemic situation in the world and in Ukraine. It is eight months before the COVID-19 coronavirus outbreak (December 2019, China); the key event of this period in Ukraine is the end of the presidential elections (other background events we consider more or less predictable and could be qualified as the zone of actual development, i.e., existing within accessible resources of the population). Generally speaking, the humankind hasn’t yet faced the threat of a global and catastrophic nature, so further we mark this stage as a stable pre-pandemic.

2. **April 2020**, the second assessment. We associate it with the shock level of impact associated with the announcement of the COVID-19 pandemic (March 2020, WHO), the introduction of the first hard lockdown in Ukraine; this period is characterized by the maximum level of discomfort and threats due to the uncertainty of the situation, a minimum of knowledge about the infection, the course of the disease, lack of medical resources, a sharp change in the way of life in all spheres, at all levels. So, we mark this time as a shock stage of the pandemic.

3. **October 2021**, the third assessment. We associate it with the expected or “normative” level of impact in the context of the third wave of the COVID-19 pandemic in Ukraine; opportunities for vaccination are accessible, the population is provided with more or less sufficient information for making personal decisions. It gives grounds for characterizing this stage of the pandemic as adaptive or stabilizing.

4. **February 2022**, the fourth assessment. We associate it with a predictable impact of the pandemic in the context of the spread of a new strain called “Omicron”. There is a radical increase in the spread of the virus and a relatively mild course of the disease. On the one hand, this period is characterized by the strengthening of quarantine measures, on the other hand – an unpredicted activation of the influence factor of another kind – the threat of Russian military aggression, and massive information campaign in the media. This situation encourages us to designate the factors of influence at this stage as hybrid, and the stage itself as hybrid or
transient. It lasts from the “normative” phase of the pandemic (on the ground of predictability, variability in decision-making and implementation of the coping strategies by the individual) to the stage of sudden threats of the military crisis.

Statistical processing of the data included ANOVA analysis, a posteriori estimation was carried out with Bonferroni and Tamhane’s tests, the details are provided in interpretations below. Data processing was administered via SPSS.17 statistical package.

5. Results and discussions
Thus, diagnostic measures were carried out at the pre-crisis, crisis, stabilization and hybrid stages of the pandemic. Dispersion data analysis (ANOVA) is represented in the table below (table 1).

| Researched parameters       | 2019 | 2020 | 2021 | 2022 | F     | Sig.  |
|----------------------------|------|------|------|------|-------|-------|
| Passion                    | 19.0 | 18.8 | 19.2 | 18.5 | 0.45  | 0.720 |
| Resourcefulness            | 20.1 | 19.5 | 22.6 | 21.6 | 10.01 | 0.000 |
| Optimism                   | 19.8 | 17.7 | 20.0 | 18.9 | 5.65  | 0.001 |
| Adventurousness            | 15.0 | 15.2 | 15.3 | 14.6 | 0.52  | 0.669 |
| Adaptability               | 15.8 | 15.2 | 15.7 | 14.8 | 1.18  | 0.317 |
| Confidence                 | 19.2 | 18.7 | 20.2 | 19.7 | 2.04  | 0.108 |
| Tolerance to ambiguity     | 15.7 | 13.9 | 14.3 | 12.2 | 12.34 | 0.000 |
| Readiness for change Overall | 124.6 | 119.0 | 127.3 | 120.3 | 6.25  | 0.000 |
| Life goals                 | 27.8 | 26.2 | 33.3 | 32.8 | 21.06 | 0.000 |
| Process                    | 27.7 | 26.4 | 31.0 | 30.4 | 7.65  | 0.000 |
| Result                     | 23.3 | 22.2 | 26.7 | 26.3 | 14.26 | 0.000 |
| Locus of Control – I       | 19.9 | 18.0 | 21.5 | 21.3 | 10.57 | 0.000 |
| Locus of Control – Life    | 31.4 | 26.1 | 31.4 | 31.3 | 10.37 | 0.000 |
| Meaningfulness Overal      | 97.1 | 87.5 | 106.5 | 105.9 | 17.68 | 0.000 |
| Problem-solving            | 23.6 | 23.9 | 24.2 | 24.5 | 1.13  | 0.338 |
| Search for support         | 20.9 | 19.9 | 21.1 | 21.1 | 1.05  | 0.369 |
| Avoidance                  | 17.0 | 19.3 | 16.3 | 17.9 | 10.69 | 0.000 |

During the excessive spread of the pandemic and the first lockdown in Ukraine people responded with “psychological closure”. According to the posterior comparisons between the first and the second assessments (April 2019 to April 2020) there was a decrease in their overall readiness for change (124.6–119.0, 0.006), including optimism (19.8–17.7, 0.001) and tolerance for ambiguity (15.7–13.9, 0.025). This means that people’s hope and faith in success have been noticeably shaken; it has become more difficult for them to be balanced about the lack of clear answers; to regulate and master themselves in situations where it is not clear what is happening and what will come out in the end, when goals and expectations are blurred or uncertain, and the work cannot be completed. A marker of psychological tension of a person is fixation on problems with an increased coping strategy avoidance, as well as avoiding contact with the surrounding reality in general (17.3–19.3, 0.001). The overall comprehension of life in this period decreased (97.1–87.5, 0.002). This was not so much due to changes in life goals, depreciation of the present and the past but due to disbelief in one’s own freedom of choice and the control
of life (19.9–18.0, 0.003), manifestations of fatalism, the belief that life cannot be consciously controlled, that freedom is an illusion, that there is no point in trying to take care of and think about the future (31.4–26.1, 0.000).

Between the second and third diagnostic assessments (April 2020 – October 2021), Ukrainians experienced two waves of the pandemic. During the period they largely developed individual and herd immunity to new strains of coronavirus at both biological and psychological levels, and practically returned to a sustainable way and rhythm of a novel life style. Over the year and a half they have gained the unique and paradoxical experience of living in conditions of isolation, self-isolation, pressure, threats and losses nobody could have imagined in pre-pandemic years.

There arises a question – how did all this affected the psychological portrait of Ukrainians and in what psychological state did they enter the third wave of the pandemic? Being in difficult conditions, people managed not only to adapt to them, but also to increase their own psychological, personal capital. Compared to 2019, in 2021 they became more inventive (21.1–22.6, 0.001): Ukrainians acquired a clearer-than-pre-pandemic comprehension and meaning of life (97.1–106.5, 0.002). The goals of life (27.8–33.3, 0.000) became more understandable, the process of life – according to the “here and now” principle (27.7–31.0, 0.006), its experience, and the result (23.3–26.7, 0.000) – became more valuable. People began to trust themselves more, to also believe in their own strength, to appreciate their understanding of freedom of choice and building their own goals and meanings (19.9–21.5, 0.012). Thus, the October 2021 pandemic situation seems more stable and predictable, especially on psychological level of young adults in Ukraine.

However, in February 2022, on the background of the fourth and almost normative wave of the pandemic, Ukraine faces a powerful military threat from a neighboring country. Significant psychological markers of hybrid pandemic-military challenges at this time were the lowest for the entire study (2019-2022): indicator of tolerance to ambiguity range is 13.9–12.2, 0.000. This is a clear evidence that to tolerate the synergistic effects of uncertainty, to calmly treat the lack of clear answers, to show self-control in incomprehensible, unpredictable situations, and at the same time to be in limbo related both to the pandemic and the military threat is extremely difficult... Against the background of a significant decrease in tolerance to ambiguity and general readiness for change (127.3–120.3, 0.043), the strategy of avoiding problem solving (16.3–17.9, 0.009) has also intensified. In general, these markers are associated with the deployment of a new phase of “psychological” closure, similar to the one that took place in April 2020.

The results of the study are consistent with the conclusions of other authors about the relevance and role of personality traits, their ability and contribution to amortizing the effects of the COVID-19 pandemic. The latter manifest themselves as a prognostic potential regarding the state of health [14], adaptation, recovery from situations of a high degree of uncertainty [16], optimization of behavior patterns at different stages of the spread of the pandemic [17], perception of a threat to health and the economy, unreasonable optimism, lack of control, trust in government regulations and approval of the conspiracy [19], as well as a generalized orientation that allows to perceive the world as understandable, manageable and meaningful, providing various means to cope with the situation of the pandemic [21].

6. Conclusion

Theoretical analysis of the problem has shown that the studies of the pandemic period are actually extremely fragmentary describing the negative and positive aspects of its influence, predictors and factors that determine the stability of social and economic systems. In this regard, we have attempted to reveal a general picture of their relationship and dynamics over time in the context of the Covid-19 pandemic.

We have put forward the hypothesis that the self-organization of systems at the personal level is inextricably linked with the level of social self-organization and exerts a certain influence on
the signs of stability of the latter. Hence, it seems logical to consider personal self-organization and stabilization as a predictor of the sustainability of social systems.

Having conducted a special study of the influence of pandemic on the properties of personality adaptation, we have established a stable or, more precisely, rhythmical nature of the stabilization of the personal system. Moreover, we have found that the diverse phenomenology of personality manifestations in adversity (COVID-19 pandemic) fits into and corresponds to the dialectical sustainability model of development (thesis-antithesis-synthesis).

This can also support the emergence of an original understanding of the world in terms of a rhythmical, emerging, hybrid and innovative self-organization (REHI-world [29]), while the concept of sustainability being – facilitation of the rhythmical change of self-organization in any open living system, such as social or/and psychological by nature.

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