REVISTA DE PSIHOLOGIE

Vol. 69 ***2023*** ***Nr. 4***

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REVISTA DE PSIHOLOGIE

(JOURNAL OF PSYCHOLOGY)

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SECONDARY TRAUMATIC STRESS AND VICARIOUS POSTTRAUMATIC GROWTH IN HEALTHCARE PROFESSIONALS: THE ROLE OF RUMINATION

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Abstract

Due to the nature of their job, healthcare professionals are at a higher risk of developing secondary traumatic stress (STS). However, there is some evidence that it is still possible for positive changes to appear, in the form a vicarious posttraumatic growth (VPTG). The aim of this study was to investigate the relationship between STS and VPTG in the case of healthcare professionals, both for the global scores and their dimensions. We have also tested if intrusive and deliberate rumination act as mediators in this relationship. The sample consisted of 146 healthcare professionals. Our results showed that between STS and VPTG there is a significant positive relationship, which confirms the idea that it is necessary to have a level of distress in order for growth to be a possible outcome. Moreover, both intrusive and deliberate rumination each fully mediated this relationship. These results could offer us some insight regarding the process through which some individuals manage to attain growth in different areas of their life even in the aftermath of exposure to a traumatic event. Thus, it is important for organizations to take both preventive and protective measures, to offer education and support groups in order to encourage self-disclosure and the cognitive processing of the event.

Cuvinte-cheie: STS, VPTG, cadre medicale, ruminare, mediere.

Keywords: STS, VPTG, healthcare professionals, rumination, mediation.

1. INTRODUCTION

After being indirectly exposed to stressful events, if they are perceived as highly disruptive, there is the risk that healthcare professionals will develop secondary traumatic stress (STS). Yet, experiencing distress can also be a catalyst for the emergence of vicarious posttraumatic growth (VPTG). The medical field is defined by difficult decisions regarding treatment, being alongside the patients for the whole process, having tough conversations with patients and caregivers, working with scarce resources and being exposed to a wide variety of trauma as to the type, cause and level of severity. As a result, the personnel are prone to STS, but also, if the right steps are taken, they have the possibility to experience growth

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in different life domains. Thus, it is important to study the relationship between STS and VPTG in the case of health staff, to identify in which instances growth is possible, and which steps should be taken in order to offer the right support both as prevention and intervention.

1.1. THE RELATIONSHIP BETWEEN STS AND VPTG

STS appears as a result of working with patients that experienced traumatic events and/or are suffering and it can impact the functionality of an individual through the presence of symptoms such as avoidant behaviors, arousal (e.g., difficulties maintaining attention) and intrusions (e.g., nightmares) (Figley, 1995).

Posttraumatic growth (PTG) refers to the positive consequences that could appear after the individuals are exposed to events that are perceived as being deeply disruptive (Tedeschi & Calhoun, 2004). VPTG appears as a result of the same adaptive process, its characteristic being the fact that it refers to the changes that appear after being indirectly expose to trauma (Arnold *et al*., 2005). These positive consequences may appear in five domains: relating to others (e.g., prioritizing relationships with persons that are valuable in the life of an individual, recognizing that asking for and accepting help may be beneficial), appreciation of life (e.g., being more appreciative of what every day may bring), spiritual and existential change (e.g., considering more spiritual, existential and religious takes regarding life), personal strength (e.g., appreciating themselves as being stronger after the traumatic event and being more prone to take on new challenges) and new possibilities (e.g., discovering new trajectories in life) (Tedeschi *et al*., 2018).

The Theoretical Model of Posttraumatic Growth (Tedeschi & Calhoun, 1995; Tedeschi *et al*., 2018) underlines the way in which exposure to traumatic events can lead to PTG. It also highlights the fact that the cognitive processing of the event is an essential element in this process (Tedeschi *et al*., 2018). If the potentially traumatic event is perceived as being highly disruptive and representing a threat for the assumptions and beliefs of the individuals, affecting their day-to-day functioning, then the cognitive processing of the experience will begin (Tedeschi & Calhoun, 2004). Its role is to attempt to reduce the level of distress, but initially, the rumination will be more intrusive, the individuals experiencing frequently automatic thoughts related to the event (Zoellner & Maercker, 2006). Over time, if they succeed in letting go of the beliefs and assumptions that are no longer compatible with their new reality, the rumination will become more deliberate and reflective, the cognitive processing being focused on an accurate appraisal of the event (Zoellner & Maercker, 2006). At this point, even though the individuals still experience a level of distress, the focus will be more on finding meaning in the experience and on modifying or developing new core beliefs. Once the individuals manage to incorporate the traumatic experience in their life narrative, to modify their beliefs and to adapt to the new circumstances, growth will be possible (Tedeschi *et al*., 2018). Therefore, it is suggested that there is a relationship between distress and PTG,

especially because a certain level of distress is needed in order for changes related to growth to continue to appear (Tedeschi *et al*., 2018).

The literature is varied. Some studies found a significant positive relationship between STS and VPTG (Hamama-Raz & Minerbi, 2019; Zeng *et al*., 2023), while others found a negative (Măirean, 2016; Ogińska-Bulik, 2018) or the absence of a relationship (Hamama-Raz *et al*., 2021). Consequently, it is important to further study this relation, as well as the variables that intervene in this relationship.

1.2. RUMINATION AS A MEDIATOR

Rumination is seen as a key element in the occurrence of PTG, the cognitive processing being at the center of the modified assumptions and beliefs (Xu *et al*., 2016). This is also in line with the Theoretical Model of Posttraumatic Growth (Tedeschi & Calhoun, 1995; Tedeschi *et al*., 2018), where rumination appears both in the first instances after the traumatic event and the appraisal of its severity took place, and subsequently. As mentioned before, the rumination will be initially more automatic, the level of distress being higher (Tedeschi *et al.*, 2018). This happens because after experiencing a traumatic event that disrupted their goals and beliefs, the individuals are losing precisely what could help them understand and give meaning to the event (Cann *et al*., 2011). Yet, the search for a new meaning for the event represents an essential element in overcoming the negative consequences of exposure to trauma and the occurrence of growth (Tedeschi *et al*., 2018). In order for the individuals to be able to do this, it is necessary for them to resort again to rumination, but this time, a deliberate one which is more reflexive, thoughtful and implies a focused effort on the re-appraisal of the experience (Cann *et al*., 2011). To reach this stage, the coping strategies used by the individuals when experiencing automatic thoughts need to be successful in helping to let go of the beliefs and goals that are no longer attainable in the current life circumstances, which will also reduce the level of distress to a more manageable degree (Tedeschi *et al*., 2018).

Therefore, cognitive responses to situations that are aversive involve to some degree rumination, but they will lead to different results. A person who will focus only passively on the causes and consequences of the event, without engaging in emotional regulation strategies, or one that will try to suppress these thoughts will suffer more symptomatology (Brooks *et al*., 2017). In contrast, when the person makes a conscious effort to understand the implications of the event and has the attention oriented towards finding a solution, as in deliberate rumination (Carr, 2019), though it could be initially associated with negative consequences, there is a higher change to attain growth (Cann *et al*., 2011; Tedeschi *et al*., 2018).

There is evidence that between traumatic stress and rumination is a significant positive relationship among healthcare workers (Portoghese *et al.*, 2021). Between deliberate rumination and PTG research shows a significant positive relationship (Cui *et al*., 2021; Ogińska-Bulik, 2016), while for intrusive rumination some studies show a positive relationship in populations exposed to

trauma (Ogińska-Bulik & Juczyński, 2015), while others show a negative one (Cui *et al*., 2021).

1.3. THE PRESENT STUDY

The aim of this study was to investigate the relationship between STS and VPTG in the case of healthcare workers. Our objectives were to study this relationship between the global scores of STS and VPTG, between the dimensions of STS and VPTG and between STS and the domains of VPTG, as well to investigate if rumination acts as a mediator in this relationship. We hypothesized that: (H1) there is a significant positive relationship between STS and PTG in the case of health professionals; (H2) intrusive rumination mediates the relationship between STS and VPTG, and (H3) deliberate rumination mediates the relationship between STS and VPTG in the case of medical workers.

2. METHOD

2.1. PARTICIPANTS

The sample consisted of 146 healthcare professionals working in hospitals and clinics, with experience ranging from one year to 40 years (M = 15.55, SD = 11.27), aged 22 to 69 years (M = 42.51, SD = 11.16). The majority of the sample was comprised of women (78.8%). Regarding professional category, 48.6% of the participants were physicians, 36.3% were nurses and 3.4% other categories of medical workers. They were from multiple specializations (e.g., emergency medicine, intensive care medicine, family and internal medicine). 48.6% worked only with adults, 9.6% only with children and 41.8% with both adults and children.

2.2. MEASURES

STS was measured using The Secondary Traumatic Stress Scale (*STSS; Bride et al., 2004*). This scale has 17 items rated on a 5-point Likert Scale (1 = *never* to 5 = *very often*). It measures STS and its three aspects: intrusion (e.g., "Reminders of my work with clients upset me."), avoidance (e.g., "I was less active than usual.") and arousal (e.g., "I felt jumpy."). Alpha Cronbach varied from .790 to .925.

Intrusive and deliberate rumination were measured using The Event Related Rumination Inventory (ERRI; Cann *et al*., 2011). There are 10 items each for intrusive (e.g., "I thought about the event when I did not mean to.") and deliberate rumination ("I deliberately thought about how the event had affected me") rated on a 4-point Likert Scale (0 = *not at all* to 3 = *often*). The instructions were presented oriented to the secondary exposure to the traumatic experiences of health workers patients. Alpha Cronbach was .942 for intrusive and .916 for deliberate rumination.

VPTG was measured using the Posttraumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). PTGI consists of 21 items rated from 0 (*I did not*

experience this change) to 5 (*I experienced this change to a very great degree as a result of my crisis*). It measures PTG and its five outcomes: relating to others (e.g., "I better accept needing others"), personal strength (e.g., "I have a greater feeling of self-reliance"), new possibilities (e.g., "I developed new interests"), spiritual change (e.g., "I have a stronger religious faith.") and appreciation of life (e.g., "I can better appreciate each day"). Alpha Cronbach varied from .772 to .960.

The participants also offered information such as age, gender, professional category, years of experience, specialization, and the type of population cared for.

2.3. PROCEDURE

This study was approved by the ethical commission of the faculty (number 3645/10.11.2021). As at the time of conducting this research access in the hospitals was still not possible, the data was collected through Google Forms. The link was distributed to staff working in hospitals and clinics through a number of designated persons of contact. The only restriction was that the participants had to be medical workers. At the start of the form, the participants were informed that participation is voluntary, the answers are anonymous and that they could withdraw from the study at any point in the time. They also received a contact address if they wanted to ask any questions. There was no remuneration for taking part in this research.

2.4. STATISTICAL ANALYSES

For our analyses, we have used SPSS 22 and Process v. 4 (Hayes, 2022). A statistical significance value .05 was adopted. We have checked for the normality of distribution, for differences based on gender and professional category, we ran analyses to verify the correlations between our variables and mediation analyses.

3. RESULTS

3.1. PRELIMINARY ANALYSES

After checking the normality of the distribution of the data, we verified the mean scores and the frequency of STS in order to assess its prevalence. The mean scores were 39.69 (SD = 11.42) for STS, and 61.32 (SD = 22.21) for VPTG. A number of 21 participants (14.4%) had "little or no STS", 46 participants (31.5%) had "mild STS", 29 participants (19.9%) had "moderate STS", 22 participants (15%) had "high STS" and 28 participants had "severe STS" (Bride, 2007).

There were significant differences in STS and VPTG based on professional category (F(2, 143) = 3,10, p = .048; F(2, 143) = 9.61, p < .001), but only between physicians and nurses, with nurses having higher scores (M_{STS} = 42.77, SD = 11.07; M_{VPTG} = 70.33, SD = 17.44) than physicians (M_{STS} = 37.97, SD = 11.11; M_{VPTG} = 55.15, SD = 23.22). As for gender, we have found differences only for VPTG (t(144) = –3.50, p = .001) with women having higher scores (M_w = 65.17, SD = 19.08; M_m = 47.03, SD = 27.09).

As for the correlational analyses, the relationship between the variables included in the mediation models were all significant (see Table no. 1).

Table no. 1

Correlations, means and standard deviations for the study variables

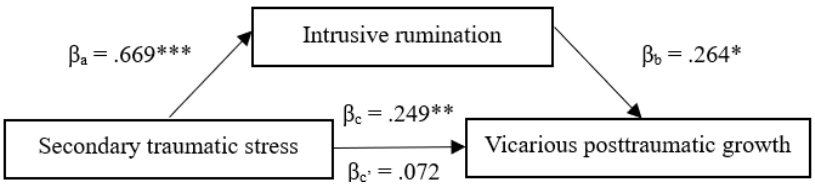
Variables	M	SD	1	2	3	4
1. Secondary traumatic stress	39.69	11.42	–			
2. Intrusive rumination	12.50	6.74	.670***	–		
3. Deliberate rumination	14.46	6.91	.587***	.656***	–	
4. Vicarious posttraumatic growth	61.32	22.21	.249**	.312***	.513***	–

Note: ** p < .010; *** p < .001.

We have observed a significant positive relationship between STS and VPTG (r = .249, p = .002). A significant positive was also observed between STS and four domains of VPTG: relating to others (r = .210, p = .011), new possibilities (r = .294, p < .001), spiritual change (r = .174, p = .035) and appreciation of life (r = .321, p < .001). We did not find a significant relationship between STS and personal strength (r = .096, p = .247). VPTG had also a significant positive association with all dimensions of STS: intrusion (r = .320, p < .001), avoidance (r = .175, p = .035) and arousal (r = .207, p = .012).

3.2. MEDIATION ANALYSES

We first wanted to verify if intrusive rumination acts as a mediator for the relationship between STS and VPTG (see Figure 1). The indirect effect was significant (β_{ab} = .177, 95% CI [0.007; 0.347]). The total effect was significant (β_c = .249, p = .002, 95% CI [0.173; 0.794]), while the direct effect was not significant ($\beta_{c'}$ = .072, p = .501 95% CI [–0.270; 0.550], which shows that intrusive rumination fully mediates this relationship.

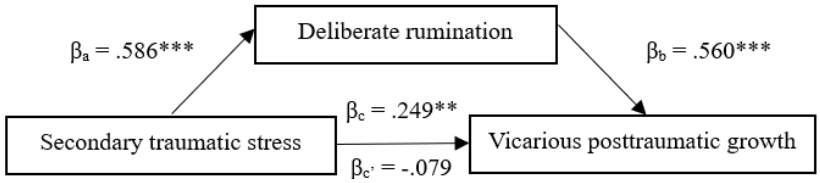


Note: * p < .050; ** p < .010; *** p < .001.

Figure 1. Intrusive rumination as a mediator.

In the second model, deliberate rumination was the mediator (see Figure 2). The indirect effect was significant (β_{ab} = .328, 95% CI [0.235; 0.427]). The total effect was significant (β_c = .249, p = .002, 95% CI [0.173; 0.794]), while the direct

effect was no longer significant ($\beta_{c'}$ = –.079, p = .368, 95% CI [–0.494; 0.184]), which shows that deliberate rumination fully mediates the relationship between STS and VPTG.



Note: ** p < .010; *** p < .001.

Figure 2. Delibrate rumination as a mediator.

4. DISCUSSION

This study aimed to investigate the relationship between STS and VPTG in health professionals, as well as the role of intrusive and deliberate rumination in this association. This was important because even though there is evidence for this relationship, the number of studies is still small and the result are heterogeneous.

Over half of our sample presented moderate to severe levels of STS, and the majority had moderate levels of VPTG. Our results also confirm the idea that women experience higher VPTG, and nurses, higher STS and VPTG (Hamama-Raz *et al*., 2020; Taubman-Ben-Ari & Weintroub, 2008). It is possible that because women tend to have more emotional responses, it also gives them the opportunities to engage in the cognitive processing of the event, which favors VPTG (Hamama-Raz *et al*., 2020). As for the professional category, nurses usually spend more time with their patients and tend more to their needs, which increases the risk for STS. Yet, they have more support available and more opportunities for self-disclosure (Duffy *et al*., 2015), two elements that were shown to promote changes in one's perspective and finding new meanings for the events (Tedeschi *et al*., 2018).

4.1. THE RELATIONSHIP BETWEEN STS AND VPTG

The first hypothesis was confirmed, STS and VPTG having a significant positive association, so a high level of STS is associated with high VPTG and vice-versa. It is in accord with the Theoretical Model of Posttraumatic Growth (Tedeschi & Calhoun, 1995; Tedeschi *et al*., 2018), and solidify the idea that the presence of VPTG is not equal to the absence of distress. They should be seen as independent constructs that can co-exist, because for growth to occur, it is necessary to first experience enough distress to trigger the cognitive processing of the event (Tedeschi *et al*., 2018). Also, the idea of growth assumes the fact that the individuals, as they are no longer able to return to their pre-crisis functioning, need to find new benefits in order to develop (Zoellner & Maercker, 2006).

A significant positive association was observed between STS and all domains of VPTG, except personal strength. Thus, some of the changes that might appear can be observed in the nature and quality of the individuals' relations with others, with them finding a new value for these interactions, especially if they perceived that they had support and acceptance in their pathway to growth (Calhoun & Tedeschi, 2006). As a result, they tend to be more compassionate, to re-evaluate all of their relations and to be more inclined to express their struggles (Tedeschi *et al*., 2018). These changes could also have a positive impact in the relations between the medical staff and their patients, with them being more attentive to their needs, which could bring more satisfaction. Simultaneously, it could facilitate the creation or strengthening of support systems that improve future exposure to patients' trauma and it could encourage professionals to be more open to accept help.

The changes in appreciation of life may be favored by the context in which professionals work. As they are exposed to a variety of trauma and some of them care for persons with long term or terminal illnesses, they might make the decision to appreciate what each day can bring, including ordinary things and to live as their patients would have done. These interactions could also help them identify new opportunities and encourage them to involve in more beneficial activities, which may be related to the domain of new possibilities (Tedeschi & Calhoun, 2004). Furthermore, seeing the experiences that their patients go through is possible to make them reflect on existential problems and questions, as well as to focus on matters regarding faith, specific to the spiritual change (Tedeschi *et al*., 2018).

As for personal strength, the changes could be more regarding recognizing that there are situations in which medical workers are limited in what they can do, and that is important to do the best that they can within their limits, as well as the accumulation of new information that could help them in future interactions, which could explain the absence of an association with STS (Beaune *et al*., 2018).

A positive relation was also found among all dimensions of STS and VPTG. This is in line with the idea that intrusion and avoidance thoughts are related to the processing of the event and benefit detection, and arousal is related especially to changes visible at a behavioral level (Helgeson *et al*., 2006; Taku *et al*., 2007).

4.2. RUMINATION, STS AND VPTG

Our second and third hypothesis were confirmed, intrusive and deliberate rumination acting as mediators for the relationship between STS and VPTG. As for the relation with STS, and VPTG, there was a significant positive association with the both types of rumination, which is in line with some of the previous research (Ogińska-Bulik, 2016; Ogińska-Bulik & Juczyński, 2015; Portoghese *et al*., 2021).

Although both types of ruminations are positively related with STS, we have observed a stronger relationship in the case of intrusive rumination. This is to be expected, because, even though intrusive thoughts can have both a positive and a

negative valence, in the case of trauma, they are maladaptive (Cann *et al*., 2011). As for the fact that the relationship remains positive even when the rumination becomes more reflexive, a possible explanation is that it is necessary to still experience distress in order to have the base for working towards finding a perspective that is more appropriate for the new reality and to identify a meaning in the negative exposure that shattered the individuals' beliefs (Calhoun *et al*., 2010).

For VPTG, the stronger association was with deliberate rumination, in line with the Theoretical Model of Posttraumatic Growth (Tedeschi & Calhoun, 1995; Tedeschi *et al*., 2018). This is because if the event is not processed at the cognitive level, and the assumptions, beliefs and goals of the individuals are not revised, or in some cases, rebuild, a more meaningful outlook on life and ultimately, growth cannot be achieved (Tedeschi *et al*., 2018). As for the positive relationship with intrusive rumination, although intrusive thoughts generate more distress, these types of thoughts are normal and anticipated after experiencing events that are perceived as traumatic (Cann *et al*., 2011). They are part of the cognitive struggle and the cognitive work that foster the path to growth (Calhoun *et al*., 2010). In the immediate aftermath of trauma, we will observe the presence of intrusive thoughts, which in time, are accompanied by a more reflexive type of processing, which is the catalyst for positive changes in different domains of life (Cann *et al*., 2011).

Thus, both intrusive and deliberate rumination are important components that could lead help the individuals solve their crises and facilitate growth as an outcome (Tedeschi *et al*., 2018). In the case of medical staff, there is a possibility that in the process of finding meaning to their experiences, besides the changes in the domains specific to growth, they will end up discovering that these hardships brought them a new found set of knowledge, a sense of competence, more confidence in their decisions and a stronger professional identity (Cui *et al*., 2021; Tedeschi *et al*., 2018). These aspects can help them in future situations where they will come into contact with patients who have gone through traumatic experiences.

4.3. LIMITATIONS

The current study has a few limitations. The first one is that our sample is predominantly composed of women, which makes it difficult to generalized the results. The second one is that we did not have control over the completion of the form, with the research being online and that this was a convenience sample. The third one, is that the study is cross-sectional. A longitudinal study could offer us more information regarding the actual steps in the trajectory of growth.

4.4. CLINICAL IMPLICATION

Our results highlight the importance of cognitive processing in the road to growth, as well as the fact that STS and VPTG co-exist (Tedeschi *et al*., 2018). Thereby, even though prevention is still the most appropriate solution, there are also some directions we could take in order to promote growth, even after experiencing

STS symptoms. Organization should offer education regarding the impact that working with people exposed to trauma can have on professionals, and a guideline to recognizing the first signs of STS and the typical responses that could appear. They should also encourage self-disclosure, offer support groups and teach techniques in order to manage the distress that comes from these interactions.

5. CONCLUSION

This study further expended the research on the type of association between STS and VPTG in the case of health professionals. Our results showed that there is a significant positive association between STS and VPTG, and that both intrusive and deliberate rumination act as mediators. Thus, there is the possibility of growth even after experiencing STS and rumination is one of the cognitive responses that could encourage growth, if appropriate coping strategies are used.

Received: 2.10.2023

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REZUMAT

Prin natura muncii lor, cadrele medicale au un risc mai mare de a experimenta stres traumatic secundar (STS). Cu toate acestea, există dovezi care arată că încă pot să apară schimbări pozitive, sub forma dezvoltării posttraumatice vicariante (VPTG). Scopul acestui studiu a fost de a investiga relația dintre STS și VPTG la cadrele medicale, atât pentru scorurile globale, cât și pentru dimensiuni. Am testat de asemenea și dacă ruminarea intruzivă și cea deliberată joacă rolul unor mediatori în această relație. Lotul a fost format din 146 de cadre medicale. Rezultatele arată faptul că între STS și VPTG este o relație semnificativă pozitivă, ceea ce confirmă ideea că este necesar să ai un anumit nivel de distres pentru ca dezvoltarea să reprezinte o posibilă urmare. Mai mult, atât ruminarea intruzivă, cât și cea deliberată au mediat total această relație. Aceste rezultate ar putea să ne ofere anumite informații în ceea ce privește procesul prin care anumite persoane reușesc să se dezvolte în diverse domenii din viața lor după expunerea la un eveniment traumatic. Prin urmare, este important pentru organizații să ia atât măsuri preventive, cât și protective, să ofere educație și grupuri de suport pentru a încuraja autodezvăluirile și procesarea cognitivă a evenimentului.

COMMUNICATION STYLES INVENTORY-BRIEF VERSION (CSI-BV): PRELIMINARY VALIDATION AMONG ROMANIAN STUDENTS

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Abstract

The study aims to validate and analyse the psychometric properties of the *Communication Styles Inventory-Brief Version (CSI-BV)* in the case of a sample of a Romanian student population. The instrument that assesses the interactive communication styles was translated and adapted through the forward-backward translation procedure. The data were collected from 630 students ($Mean_{age}$ = 21.22; 51.45% males). In order to investigate and confirm the factor structure, the sample was split into two sub-samples which were the subject of exploratory (EFA) and confirmatory (CFA) factor analyses, respectively. The CSI-BV reliability was examined from the perspective of internal consistency. The concurrent validity was conducted by associating CSI-BV with the instrument BFI-10 which assesses the personality traits based on the Big Five model. In the case of the analysed sample, both the EFA and the CFA (χ^2/df = 1.13; CFI = 0.99; RMSEA = 0.017; SRMR = 0.059) support a five-factor structure of the instrument, different from the original three-factor structure, that suggests the presence of the following styles: emotional, dominant, seductive, flattering and interrogative. The internal consistency, measured for the two sub-samples as well as for the total sample, is acceptable (Cronbach's α McDonald's ω vary between 0.57 and 0.79). The study indicates that the five-factor version of the CSI-BV constitutes a valid tool for the assessment of communication styles. However, subsequent research on the psychometric properties of the CSI-BV is needed for other categories of population.

Cuvinte-cheie: stiluri de comunicare, validitate de construct, fidelitate, Inventarul Stilurilor de Comunicare-Versiunea scurtă.

Keywords: communication styles, construct validity, reliability, Communication Styles Inventory-Brief Version.

1. INTRODUCTION

Being aware of one's communication styles is vital for understanding one's own behavioral tendencies, for refining one's communication abilities, and for improving one's personal and professional relations (Waldherr and Much, 2011). For the last two decades, research has increasingly focused on communication styles in various domains: medical (Leonard, 2017; Matusitz and Spear, 2015; Park *et al.*,

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2023; Pérez-Fuentes *et al*., 2020; Torper *et al*., 2022), educational (Ahmed and Naqvi, 2015; Iskandarova and Griffin, 2018; Ghasemi, 2022), sales (Kang and Hyum, 2012; Keeling *et al*., 2010; Yao *et al*., 2022), management (Bakker-Piepper and De Vries, 2013; Crews *et al*., 2019; Yang *et al*., 2020) etc., to mention only some of the most important domains that have been intensely researched on with regard to communication styles. Given all these, the existence of some appropriate instrument meant to identify the way in which people communicate is essential for all fields of activity. In both academic and organizational settings, the study of communication styles helps to better understand and manage interpersonal communication (Iskandarova and Griffin, 2020). Under these conditions, the present study aims to evaluate the psychometric properties and validate the Communication Styles Inventory-Brief Version (CSI-BV) (Diotaiuti *et al*., 2020) developed to identify and analyse interpersonal communication styles. CSI-BV represents an important addition in the evaluation of communication in different contexts: companies, professional selection, psychotherapy, etc. and helps individuals to know their own communication style and to establish successful relationships with others.

2. DESCRIPTION OF THE CSI-BV INSTRUMENT

CSI-BV (Diotaiuti *et al*., 2020) is based on the lexical hypothesis, and it is derived from the Communication Styles Inventory (CSI – De Vries *et al*., 2013). The instrument's purpose is to assess three communication styles and their facets. Unlike CSI (De Vries *et al*., 2013), which has 96 items and covers five communication styles (Expressiveness, Preciseness, Verbal Aggressiveness, Questioningness, Emotionality, and Impression Manipulativeness), CSI-BV has 18 items, and the measured styles are:

1. *Impression Manipulativeness* – entails the ability of a person to create an impression during a conversation. The two facets identified in the respective style: a) *charm* (a mixture of attraction, including physical attraction, sensuality, and inner confidence), and b) *ingratiation* (refers to the conscious choice of a rational strategy which aims at reaching one's objectives, namely captivating the interlocutor, almost seducing him/her). This communication style is based on the wish to please other people, so that they should be ready to accept the requests they receive.

2. *Emotionality* – refers to the emotional effect that verbal interaction has on the interlocutor. The three components are: a) *sentimentalism* (the emotional charge of the person's conversation), b) *defensiveness* (the level of vulnerability perceived by the person when they are criticized and verbally attacked), and c) *worrisomeness* (the person's inability to hide their emotions during the verbal interaction; therefore, the individual fears that every negative emotional state will immediately be sensed by the interlocutor).

3. *Expressiveness* – refers to the individual's capacity to be efficient during the conversation by monitoring and balancing the communication elements, such as the quality of the illustrated subject, supported by the variety of data and sources; clarity and consistency, the presentation of the topic so as to hold interest and attention. In this case, there are also three facets: a) *conversational dominance* (the choice and the approach of the conversation subjects), b) *inquisitiveness/ curiosity* (the involvement of the interlocutor through many questions which aim at testing the latter's opinion) and c) *talkativeness* (the tendency to speak at length).

Obtaining a high average score in the case of one style signifies its dominance at the behavioral level. CSI-BV was validated on two samples of Italian respondents with the average young age recruited from the general population. The factorial and concurrent validity of the CSI-BV was tested (Diotaiuti *et al*., 2020). Regarding the structure, as we have shown, the CSI-BV proved to be a significantly reduced version compared to the original instrument of De Vries *et al.* (2013) having only three factors. The significant correlations with the Multidimensional Personality Profile personality test (MPP – Caprara *et al*., 2006) supported the concurrent validity of the tool.

3. COMMUNICATION STYLES AND PERSONALITY

A communication style can be defined as a person's disposition toward a certain kind of interrelationship (Beatty *et al*., 1988). According to the author of the four-dimensional model of communication, Schulz von Thun (2003), styles represent a specific way of contacting, communicating, and managing relations with other people. They are associated with states of mind and intentions that manifest themselves through words and non-verbal signals. In a more nuanced way, De Vries *et al*. (2009) define the communication style as "the way a person sends verbal, paraverbal, and nonverbal signals in social interactions denoting a) who s/he is or wants to (appear to) be, b) how s/he relates to interactants, and c) in what way his/her literal messages should be interpreted" (p. 2).

Various communication styles are not mutually exclusive, but rather come together in a specific combination that, as a whole, expresses the individual's preferred pattern of contact. In fact, the communication style shows the way in which a person organizes the world of their social relations, by combining all the right styles in a given context and by not reducing them to a certain style (Pânişoară *et al*., 2010).

Studies on personality recognize the lexical hypothesis according to which the most important characteristics in people's lives will, eventually, become a part of their language. The more important these characteristics, the most probable for them to be encoded in language. Individuals communicate the same way they act, feel, or behave (Adler and Rodman, 2006). The communication styles are not personality traits, but they appear under the influence of these traits and of the environment. Research revealed that every personality trait is related to a certain way of expressing oneself (De Vries *et al*., 2013). Empirical studies (Ahmed and

Naqvi, 2015; De Vries *et al*., 2013; Diotaiuti *et al.*, 2020) correlated communication styles with personality by using various measuring instruments (for example: NEO-FFI – Costa and McCrae, 1992; NEO-PI-R – Costa and McCrae, 1992; Hoekstra *et al*., 1996; Hexaco – Ashton *et al*., 2008; MPP – Multidimensional Personality Profile – Caprara *et al*., 2006). The results confirmed that certain communication styles correspond to certain personality traits. For example, the Emotionality style which entails difficulty in keeping calm as well as the visible expression of emotions exhibits elements that seem to fit Neuroticism (Ahmed and Naqvi, 2015; De Vries *et al*., 2013); the Expressiveness communication style, based on the ability to have relaxed and pleasant conversations, is related to Extraversion (Ahmed and Naqvi, 2015; De Vries *et al*., 2013), Agency, Self-regulation (Diotaiuti *et al*., 2020), and Conscientiousness (Ahmed and Naqvi, 2015). The style called Impression Manipulativeness, a communication style based on deception, the ability to manipulate one's own image in the conversation with the interlocutor so that he perceives him in a positive light, is correlated with Concision (Diotaiuti *et al*., 2020) and with the Honesty-Humility factors (De Vries *et al*., 2013). The Inquisitiveness communication style, oriented towards disputes and nonconventional subjects, highly correlates with Openness to experience and reflectivity (De Vries *et al*., 2013). The style based on Verbal Aggressiveness, authoritarianism, and pejorative behavior is inversely correlated with Agreeableness (De Vries *et al*., 2013) and Neuroticism (Ahmed and Naqvi, 2015).

4. METHOD

4.1. THE TRANSLATION AND THE ADAPTATION OF THE SCALE

The scale was translated in accordance with the recommendations proposed by Beaton *et al*. (2000), recommendations regarding the adaptation of self-reporting scales. An English teacher and a psychologist collaborated for the translation from English into Romanian. The back-translation was made independently by another bilingual person, who speaks both Romanian and English fluently. The two versions were compared, and semantic modifications were made with a view of fitting the conceptual clarity of the original items. The differences resulted from the comparison of the translations were revised until a consensus was reached. The last version was piloted on a sample of 18 students who were asked to assess how clear the items are and how difficult they are to understand. They were not included in the final sample, and the minor reformulations made by them in the case of the items did not lead to significant changes in the structure of the instrument.

4.2. PARTICIPANTS AND THE DATA COLLECTION PROCEDURE

The present study has a quantitative and cross-sectional approach which included 630 students. Between October 2022 and March 2023, they completed an

online survey that was distributed using e-mail addresses and social networks (Facebook and WhatsApp). The participants' eligibility conditions were: being over 18 years old, being a native Romanian speaker, and being a Romanian resident. It took 7–8 minutes to fill in the questionnaire. The questionnaire was secured so as to allow its completion only once by one and the same participant. An introductory text posted above the instrument set informed the participants with regard to the aim of the research and to the informal consent. We underlined the fact that the respondent could stop filling in the questionnaire anytime with no consequences whatsoever. The participation was anonymous, in accordance with the recommendations on bias methods (Podsakoff *et al*., 2003). The students did not receive any credits for the completion of the instruments.

4.3. MEASURES

1. *Communication Style Inventory-Brief Version (CSI-BV) (*Diotaiuti *et al.*, 2020) with 18 items assessed from 1 – *completely disagree*, to 5 – *completely agree* included in three subscales, each with six items and representing three communication styles:

– Impression Manipulativeness (e.g.: I sometimes use my charm to get something done; I sometimes praise somebody at great length, without being really genuine, in order to make them like me).

– Emotionality (e.g.: When describing my memories, I sometimes get visibly emotional; People can tell that I am emotionally touched by some topics of conversation.)

– Expressiveness (e.g.: I often take the lead in a conversation; I always ask how people arrive at their conclusions).

The score for every style was obtained by adding up the total sum of the items included in subscales corresponding to the respective style.

2. *Big Five Inventory-10 – BFI-10* (Rammstedt and John, 2007) uses 10 items (five of which are inversely scored) to measure the personality factors within the Big Five model (Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness) on a scale from 1 – *strongly disagree* to 5 – *strongly agree*. The instrument demonstrated good psychometric properties, adequate construct and convergent validity in the case of samples of Romanian students (Balgiu, 2018).

4.4. SOCIODEMOGRAPHIC DATA

The following data were collected: gender, age, residence (urban versus rural), and education (bachelor and master).

4.5. DATA ANALYSIS STRATEGY

The construct validity of the scale was tested through EFA and CFA. Thus, by using syntax from SPSS: Data/Select cases/Random sample of case, the general

sample was divided into two relatively equal sub-samples: the first one (N = 316) was used for EFA and the second (N = 314) for CFA. EFA was based on the two essential conditions: the Kayser-Meyer-Olkin coefficient (KMO) > 0.80 (Chauhan *et al.*, 2018; Field, 2009) and the significance of the Bartlett's test of sphericity (Tabachnick and Fidell, 2013). In the case of CFA, in order to determine the statistical fit of the model, we used the coefficients χ^2 (chi-square), df (degrees of freedom), χ^2/df (criterion chi squared/df), CFI (comparative fit index), TLI (Tucker-Lewis index), GFI (goodness-of-fit index), RMSEA (root mean squared error of approximation), SRMR (standardized root mean square residual) and AIC (Akaike's Information Criterion). In the case of these indices, we took into consideration the following cut-off level: the value of χ^2/df is acceptable if it is < 3 (Schermelleh-Engel *et al.*, 2003). CFI, GFI and TLI, values close to 0.90 or greater are acceptable to good (Hooper *et al.*, 2008). RMSEA and SRMR have good values if they are almost 0.06 (Brown, 2015); AIC, used to compare the models of measuring CFA, deems the model with the lowest value of the AIC indicator to be statistically adequate (Hu and Bentler, 1999). The concurrent validity was performed by associating CSI-BV and BFI-10. The reliability was examined by using α Cronbach and ω McDonald, considered to be good when they are ≥0.70 (Chin *et al*., 2010). The SPSS22 and JASP 0.16.10 programs were used to analyse all of the data.

5. RESULTS

5.1. THE SOCIODEMOGRAPHIC ANALYSIS OF THE SAMPLE

The analysed group was made of 630 students with the average age M = 21.22, (*SD* = 3.99), selected within two universities, the National University of Science and Technology Politehnica Bucharest (former name Polytechnic University of Bucharest) (74.92%) and the Academy of Economic Studies (25.07%). Of these 51.45% (319) are male subjects ($Mean_{age}$ = 21.07; *SD* = 3.02) and 48.54% (301) are female subjects ($Mean_{age}$ = 23.11; *SD* = 3.20). Most participants lived in the urban area (84.6%), the rest of 15.4% lived in the country areas. 18.25% (113) of the students are master students and 81.74% (515) are undergraduates.

5.2. DESCRIPTIVE STATISTICS

Firstly, the descriptive statistics of the items were analysed (the average, the standard deviations, asymmetry, CSI-BV univariate normality). In this respect, we considered the recommendation made by Kim (2013) according to whom for samples larger than 300, an absolute value of skewness over 2 and an absolute value of kurtosis over 7 can be used as reference values to determine the data normality. The absolute values of the two indicators, the skewness (between –0.04

and 1.07) and the kurtosis (–1.21 and 0.22) highlight the normality of the data distribution (Table no. 1). The item with the highest average value was retained: *Sometimes I use my charm to do something* (M = 3.47; *SD* = 1.21). The one with the lower average scores is item 16: *During discussions, I sometimes express an opinion which I don't really hold in order to make a good impression* (M = 1.97; *SD* = 1.17).

Table no. 1

Descriptive statistics of the items (N = 630)

Items	M	*SD*	Min.-Max	Skewness	Kurtosis
Item1	3.47	1.21	1–5	–0.49	–0.66
Item2	3.31	1.24	1–5	–0.28	–0.90
Item3	3.42	1.12	1–5	–0.30	–0.61
Item4	2.75	1.32	1–5	0.24	–1.08
Item5	3.40	1.22	1–5	–0.33	–0.85
Item6	3.51	1.08	1–5	–0.42	–0.33
Item7	3.03	1.37	1–5	–0.04	–1.21
Item8	2.96	1.29	1–5	0.10	–1.06
Item9	3.56	1.21	1–5	–0.41	–0.92
Item10	2.11	1.23	1–5	0.86	–0.36
Item11	3.09	1.25	1–5	0.02	–1.02
Item12	3.51	1.21	1–5	–0.42	–0.77
Item13	2.35	1.33	1–5	0.60	–0.88
Item14	2.55	1.26	1–5	0.41	–0.83
Item15	3.23	1.31	1–5	–0.11	–1.08
Item16	1.97	1.17	1–5	1.07	0.22
Item17	2.68	1.25	1–5	0.34	–0.88
Item18	3.14	1.23	1–5	–0.05	–0.92

5.3. THE EXPLORATORY FACTOR ANALYSIS

The conditions of the EFA implementation showed it was possible to apply the latter. Thus, Kayser-Meyer-Olkin (KMO) = 0.80 and Bartlett's test of sphericity is significant $\chi^2 = 3155.138$, df = 157, $p < 0.001$, hence supporting the factorability of the correlation matrix (Chauhan *et al*., 2018; Field, 2009). The factorial solution (Principal component analysis with varimax rotation) showed the presence of five factors that accounted together for 61.55% of the total variance of the scale. Every factor included items whose loading is >0.40 (Tabachnik and Fidell, 2013). As can be seen in Table no. 2, the only factor fully found in the resulting matrix is the Emotional style (factor 1). The Impression manipulativeness style is divided into two factors each with three items representing Seduction (factor 3) and Flattery (factor 4). Expressive style is split into two factors with an unequal number of items including items representing Verbal dominance (factor 2) and Curiosity-Inquisitiveness (factor 5).

Table no. 2

The result of the exploratory factor analysis (N = 316)

Items	Factors				
	1	2	3	4	5
item14	**0.80**	–0.02	–0.06	0.20	–0.06
item 17	**0.73**	0.08	–0.12	0.22	–0.12
item 2	**0.72**	–0.03	0.11	–0.03	0.10
item 8	**0.69**	–0.25	–0.06	0.07	0.12
item 5	**0.60**	0.16	0.14	–0.19	0.16
item 11	**0.58**	0.08	0.02	0.03	0.26
item 18	–0.03	**0.87**	0.03	0.00	0.09
item 15	0.19	**0.70**	0.05	0.13	0.00
item 3	–0.13	**0.76**	0.26	0.00	0.04
item 6	–0.02	**0.69**	0.27	0.09	0.14
item 1	0.07	0.33	**0.77**	0.15	–0.09
item 4	0.03	0.21	**0.70**	0.02	–0.08
item 7	–0.00	0.06	**0.74**	0.11	0.05
item 10	0.00	0.06	0.17	**0.75**	0.23
item 16	0.08	0.10	–0.04	**0.72**	–0.19
item13	0.08	–0.03	0.28	**0.77**	0.23
item 9	0.20	0.16	0.07	0.17	**0.78**
item12	0.08	0.06	–0.08	0.06	**0.77**

5.4. THE CONFIRMATORY FACTOR ANALYSIS

Next, the CFA was calculated for the second subsample, using the robust version of maximum likelihood estimator. The Mardia coefficient was considered when checking for normality conditions. Since the critical ration value (c.r.) of 12.15 ($p < 0.001$) demonstrated multivariate non-normality, bootstrapping with 2000 resamplings (95% confidence interval) was applied in order to solve non-normality. Five models were calculated: model 1 with a single factor proved to be inadequate due to the coefficient values. Models 2 and 3 (with and without correlated errors) postulate three factors in conformity with the results obtained by Diotaiuti *et al.* (2020). Models 4 and 5 (with and without correlated errors) are in conformity with the EFA carried out in the present study. Investigation of modification indices suggested the inclusion of correlation errors. To determine how many error correlations are allowed to be made, we considered that the modification indices should be greater than the $\chi^2/25$ ratio (Sava, 2011). Thus, in the case of model 3, we made nine correlated errors, and for model 5 there exist five correlated models. The analysis of the obtained indices highlights the superiority of model 5 with five factors and five correlated errors: $\chi^2 = 217.462$; df = 120; $\chi^2/df = 1.81$; CFI = 0.94; TLI = 0.92; GFI = 0.94; RMSEA = 0.051 (90% Confidence Interval – $_{90\%}$CI: 0.040–0.062); SRMR = 0.056; $p < 0.001$ (Table no. 3). Within this last model, two pairs of items were correlated in the first factor, which represents the Emotional style: items 14 (When people criticize me, I am visibly hurt) with 17 (The comments of others have a noticeable effect on me), and 2 (People can tell that I am emotionally touched by

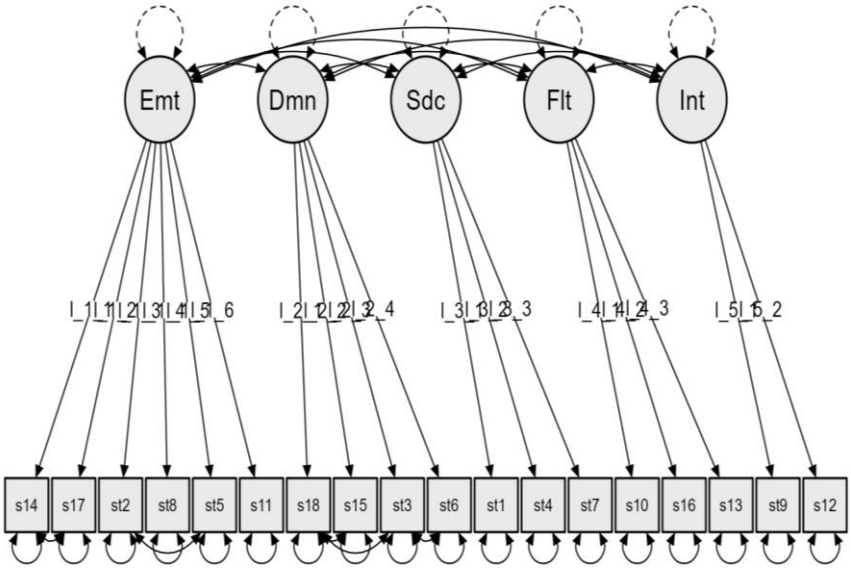
some topics of conversation) with 5 (When describing my memories, I sometimes get visibly emotional). For the second factor, which represents the Dominant style, the errors of items 18 (I always have a lot to say) and 15 (I like to talk a lot) were correlated, next items 3 (I often take the lead in a conversation) with 6 (I often determine the direction of a conversation), and 3 (I often take the lead in a conversation) with 18 (I always have a lot to say) (Figure 1).

Table no. 3

Goodness-of-fit indices of the CFAs (N = 314)

Model	χ^2	df	χ^2/ df	CFI	GFI	TLI	RMSEA [90%CI]	SRMR	AIC
M1	1047.418	135	7.75	0.40	0.67	0.33	0.147 [0.139–0.155]	0.136	17647.093
M2	549.067	132	4.15	0.73	0.81	0.68	0.100 [0.092–0.109]	0.087	17154.742
M3	252.718	123	2.05	0.91	0.91	0.89	0.058 [0.048–0.069]	0.068	16876.394
M4	326.817	124	2.63	0.87	0.89	0.84	0.072 [0.063–0.082]	0.060	16948.492
M5	217.462	120	1.81	0.94	0.94	0.92	0.051 [0.040–0.062]	0.056	16847.137

Note: M1 – one factor solution; M2 – three factors according to Diotaiuti *et al*. (2020); M3 – three factors with correlated errors; M4 – five factors in accordance with the present EFA; M5 – five factors with correlated errors.



Note: Emt – Emotional, Dmn – Dominant, Sdc – Seductive; Flt – Flattering, Int – Interrogative.

Figure 1. Confirmatory factor analysis of the CSI-BV.

The factors which represent the communication styles were named depending on the items included within the latter, namely, emotional, seductive (it contains the items that aim at using personal charm in conversations), flattering (items that aim at manipulating the interlocutor by flattering the latter), verbally dominant (items which aim at leading and establishing the direction of a conversation), and interrogative (items that entail the curiosity to know one's interlocutors). The factor loading varies between 0.45 and 0.76.

5.5. RELIABILITY

Table no. 4 presents the α and ω coefficients for the total samples and for the two sub-samples used in the EFA and the CFA. The values of coefficients are acceptable, above 0.70 in the case of the styles emotional, dominant, flattering and seductive.

Table no. 4

The consistency coefficients in the case of the total sample and of the two sub-samples

Samples	Styles									
	Emotional		Dominant		Seductive		Flattering		Interrogativ	
	α	ω	α	ω	α	ω	α	ω	α	ω
1	0.79	0.79	0.78	0.78	0.71	0.71	0.74	0.73	0.61	0.61
2	0.78	0.79	0.79	0.79	0.72	0.72	0.72	0.73	0.57	0.57
3	0.74	0.75	0.79	0.78	0.70	0.70	0.72	0.72	0.57	0.57

Note: 1 – total sample, 2 – the sample on which EFA was carried out, 3 – the sample on which CFA was carried out.

As expected, the factor that underlies the interrogative style presents moderate coefficients, between 0.57–0.61. According to Furnham (2008), the α Cronbach coefficients are influenced by the number of items in the scale, and Thalmayer *et al*. (2011) consider that in the case of the extra-short two-item scales the minimum admitted is 0.45.

5.6. CONCURRENT VALIDITY

There were weak, but significant correlations between the communication styles and the personality traits in the Big Five model. As Table no. 5 shows, the extraversion correlates positively and significantly with the styles Dominant ($r = 0.36$), Seductive ($r = 0.14$), Flattering ($r = 0.23$) (all at $p < 0.01$), and Interrogative ($r = 0.11$; $p < 0.05$). Agreeableness is inversely associated with the Dominant style ($r = –0.10$; $p < 0.05$), while Neuroticism correlates with the styles Emotional ($r = 0.19$ $p < 0.01$) and Flattering ($r = 0.10$; $p < 0.05$). Openness to experience correlated with the styles Emotional ($r = 0.14$), Seductive ($r = 0.10$), and Interrogative ($r = 0.10$) (all at $p < 0.01$).

Table no. 5

The correlations between CSI-BV and BFI-10

	Ex	Ag	Co	Ne	Op
Emotional	0.02	0.08	0.08	0.19**	0.14**
Dominant	0.36**	–0.10*	0.01	–0.03	0.02
Seductive	0.14**	0.07	0.02	–0.00	0.10*
Flattering	0.23**	–0.00	0.07	0.10*	0.05
Interrogative	0.11*	0.00	0.08	0.00	0.10*

Note: Ex – Extraversion, Ag – Agreeableness; Co – Conscientiousness, Ne – Neuroticism, Op – Openness to experience.

6. DISCUSSION

The main objective of the present study was to assess the validity and the instrument CSI-BV (Diotaiuti *et al*. 2020), filled in by a group of students. The results conclude that the tool structure proposed by Diotaiuti *et al.* (2020) is not supported in the case of the population we studied. For the present research, the five-factor model showed the most satisfying adequacy from a statistic point of view. The reliability for the general sample and for the sub-samples on which EFA and CFA were carried out highlight that there is a good internal consistency.

The concurrent validity revealed moderate, but significant relationships between personality traits and communication styles. Specialized literature has shown that every personality type has its own way of communicating with others (De Vries *et al*., 2013, Ahmed and Naqvi, 2015; Bakker-Pieper and De Vries, 2013; Diotaiuti *et al*., 2020). In addition, the manner in which people communicate with each other can be learned. It is a continuous, never-ending process. But over time the experience gets more refined and one particular style becomes much more prominent. The results of the present studies show that the Emotional style correlates with Neuroticism and Openness to experience. The relation we found suggests that the Emotional style is specific to emotionally weak individuals who tend to become depressed and anxious. In general, neurotic individuals are more afraid to communicate, they have an emotional approach to things, and they are excessively dramatic (Emanuel, 2013; Singh, 2019). The result obtained in the present study is not surprising. Studies have reported that people who use emotional communication always score highly in neuroticism since neurotic personality communicates much more emotionally and defensively (De Vries *et al.*, 2013; Ahmed and Naqy, 2015). The obtained result corroborates other pieces of research carried out on various groups of subjects. For example, there are high positive correlations between the Emotionality style and

Neuroticism in the case of groups of students (Ahmed and Naqy, 2015; Barnett *et al*., 2020).

The styles Dominant and Interrogative, whose common root is the Expressiveness style, correlate with Extraversion and Openness to experience (the Interrogative style) and negatively with Agreeableness (the Dominant style). Similarly, De Vries *et al*. (2013) found a correlation between Extraversion and the Expressive style in the case of a group of students. The fact that extraverted people are more open, more relaxed, friendlier and funnier is well-known; they are individuals who like to communicate with others (Emanuel, 2013). De Vries *et al*. (2011) empirically demonstrated that expressivity has the characteristics of extraversion. The authors highlight that extraverts interact with others in a friendlier way and they are more dominant than their fellow-beings. On a different note, prior studies showed that these individuals are optimistic, creative, open to experimenting new things, and they are expressive when they talk (De Vries *et al*., 2013). The relation between Inquisitiveness and Openness, on the one hand, and verbal Dominance and low Agreeableness, on the other hand, is in line with prior research (De Vries *et al*., 2009, 2013) according to whom the communication style Inquisitiveness is related to Openness to experience, while the style based on verbal Aggressiveness is inversely correlated with Agreeableness. The extracted styles Seductive and Flattering correlate with Extraversion and Openness to experience (the Seductive style) and Neuroticism (the Flattering style). The result suggests that the Flattering style is specific to emotionally unstable individuals who need support and who, in order to win others over, choose to compliment the interlocutor so that the latter should be ready to accept possible requests. Conscientiousness is not related to the analysed communication styles. In prior studies, Conscientiousness appears to be correlated with the Preciseness communication style characteristic to people who always structure their communication, a style which seems to be specific to efficient managers (De Vries *et al*., 2013). The association of the two instruments used in the study suggests that the communication styles may be considered the communicative expression of personality factors. Certain personality factors have certain specific communication styles.

The limits of the study. We admit to certain limits in our paper. Firstly, the study is carried out on a convenience sample comprising students who come only from two universities, both in the same city. Therefore, the results cannot be generalized. The second limitation is related to the fact that the instruments of the research were based exclusively on using some *self-report scales* through which a global picture of the investigated variables was obtained. On the other hand, snowball sampling facilitates data collection, but it should not be forgotten that this

technique involves the possibility that respondents recommend people with similar characteristics to their own (Etikan *et al*., 2015).

7. CONCLUSIONS

The findings of the study show promising psychometric properties for the Romanian version of CSI-BV; thus, its applicability is supported for the case of young adults. In addition, the results confirm the relationship between communication styles and personality. The development of a certain communication style by an individual tends to match his/her fundamental personality traits. The study contributes to the knowledge about communication styles and, implicitly, to the improvement of the communication among students. However, given the limitations of the study, it is recommendable that CSI-BV should be analysed in correlation with other instruments that measure not only styles but also communication skills and the potential to communicate effectively with other people.

Received: 30.05.2023

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REZUMAT

Studiul se ocupă de validarea și analiza proprietăților psihometrice ale Communication Styles Inventory-Brief Version (CSI-BV) în cazul unui eșantion de populație studențească din România. Instrumentul care evaluează stilurile interactive de comunicare a fost tradus și adaptat prin procedura *forward-backward translation*. Datele au fost colectate de la 630 de studenți ($Mean_{age}$ = 21.22; 51.45% males). Pentru investigarea și confirmarea structurii factoriale, eșantionul a fost scindat în două subeșantioane care au constituit obiectul analizelor factoriale exploratorii (EFA) și, respectiv, confirmatorii (CFA). Fidelitatea CSI-BV a fost investigată din perspectiva consistenței interne. Validitatea concurentă a fost performată prin asocierea CSI-BV cu instrumentul BFI-10 care evalueaza trăsăturile de personalitate bazate pe modelul Big Five. Atât EFA, cât și CFA (χ^2/df = 1.13; CFI = 0.99; RMSEA = 0.017; SRMR = 0.059) susțin în cazul eșantionului analizat o structură cu cinci factori a instrumentului, diferită de structura originară cu trei factori, care sugerează prezența stilurilor emoțional, dominant, seducător, lingușitor și interogativ. Consistența internă măsurată pentru cele două subeșantioane ca și pentru eșantionul total este acceptabilă (coeficienții α Cronbach și ω McDonald variază între 0.57 și 0.79). Studiul indică faptul că versiunea cu 5 factori a CSI-BV se constituie într-un instrument valid pentru evaluarea stilurilor de comunicare. Totuși, cercetări ulterioare de analiză a proprietăților psihometrice ale CSI-BV sunt necesare pe diferite categorii de populație.

ORGANIZATIONAL STRESS AND RESILIENCE. THE ROLE OF INTERNAL RESOURCES

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Abstract

Theoretical background. For military gendarmerie to survive potential threats to integrity, safety or their own lives, resilience is essential. Soldiers' ability to recover from job stress may also determine how well they can reintegrate into their families and communities after participating in high-risk missions without developing mental disorders or other behavioral problems. Stressors have the power to enhance or diminish resilience (Cavanaugh *et al*., 2000). Perceived self-efficacy has been found to play a key role in determining reactions to stress (Bandura, 1997). Also, the literature states that workplace stressors correlate negatively with work engagement (Podsakoff *et al*., 2007). *Methodology*. The research was carried out on a number of 214 gendarmerie military personnel, who completed self-report questionnaires regarding organizational stress, resilience, work commitment and perceived self-efficacy. This a cross-sectional correlational study of the relationship between perceived organizational stress and resilience. Moreover, the mediating role of perceived self-efficacy and commitment work was examined. *Results*. Stress has a significant negative effect on resilience. Perceived self-efficacy and commitment work acts as mediators of the relationship between organizational stress and resilience. *Discussions and conclusions*. The results show that work commitment and perceived self efficacy are partial mediators of the relationship between organizational stress and resilience of military gendarmes. The results have implications for improving the resilience of military gendarmes, by developing intervention strategies focused on raising awareness of the importance of internal resources, such as perceived self-efficacy and commitment work.

Cuvinte-cheie: stres organizațional, angajament în muncă, autoeficacitate percepută, reziliență.

Keywords: organizational stress, work commitment, perceived self-efficacy, resilience.

1. INTRODUCTION

Military gendarmes represent a professional group at risk, being constantly exposed to potentially traumatic events. This makes them vulnerable to developing mental health problems such as depression, substance abuse, post-traumatic stress symptoms, family violence (Hoge *et al.*, 2002). Cooper and colleagues (2001) mentioned six primary stressors related to the workplace: (a) factors intrinsic to the workplace, associated with the performance of specific tasks, such as the work environment and aspects of work planning (noise, vibration, overtime, overload at

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work, etc.); (b) the organizational roles, behaviors and job requirements that an individual fulfills; (c) workplace relations; (d) career development issues such as job insecurity, attrition, low pay;(e) organizational structure and climate, such as excessive formalization or discouragement of participation in decision-making; (f) the home-work interface, representing family problems that may arise due to work (lack of free time) or workplace problems generated by personal difficulties (dealing with a divorce, having an illness).

The stress faced by military gendarmes comes both from the nature of the tasks they have to perform, common to other occupations, such as shift work, working hours, dealing with excessive bureaucracy, but also from the specific pressures of their own profession, such as the risk of and puts his own safety at risk while protecting those around him. Previous studies are inconsistent regarding the type of work events that are most stressful. Some research cites organizational stressors as more stressful than operational stressors (Taylor & Bennell, 2006), while others find that for officers, mission-related, inherent stressors are more stressful than organizational stressors (Hartley *et al*., 2011).

The significant costs associated with the recruitment, training and retention of military personnel make it important to identify and capitalize on psychological support resources. Thus, it is possible to avoid the loss of valuable military personnel, following the negative effects associated with stress (Keller *et al*., 2005). Given the many negative effects that traumatic impact factors have on mental and physical health, this is the first study to clarify the influence of organizational stress on resilience. Based on a parallel mediation model, the role of internal resources, work engagement and perceived self-efficacy, as protective factors in the relationship between organizational stress and resilience of military gendarmes, was also investigated.

Organizational stress and resilience

The present study refers to the organizational stress factors faced by military gendarmes. These are both stress factors associated with organizational tasks, such as (a) role ambiguity: lack of understanding of work objectives, colleagues' expectations or workplace responsibilities; (b) role conflict: tensions between the demands of the job and the employee's perception that he is doing things he does not want to do or does not consider to be part of the job; (c) responsibility: the tension the employee feels because of the responsibility he has towards goods or people; (d) role overload, in the form of the large number of different roles that a person has to fulfill, as well as stressors associated with work relationships. In this sense, stress can be the result of a difficult relationship with bosses, generated by a lack of respect, trust or consideration or with colleagues, the appearance of conflicts, lack of social support etc. (Gomez & Afonso, 2016). Organizational stressors have a negative impact on employee health, job satisfaction and efficiency (Dudchenk, 2011).

Resilience is a dynamic, complex and multidimensional phenomenon (Waugh & Koster, 2014), defined as a person's ability to recover, recover, adapt, thrive after facing adversity, misfortune or change (Garcia-Dia *et al*., 2013). Military resilience is the ability to achieve high performance and maintain honorable military traits, such as courage, bravery, and strength, despite hardship and loss (Moran, 1967). It is currently measured from a perspective that includes several components, such as optimism, self-efficacy, problem-solving ability, social competence, humor, family cohesion, or spiritual influences (Windle *et al*., 2011).

Resilience represents the set of mental and behavioral processes that protect the individual from the negative effects of stress factors (Fletcher & Sarkar, 2012), being critical for military training. It plays an essential role in the face of cognitive, emotional and social stressors because a psychologically exhausted soldier will not cope during military operations, regardless of how physiologically capable he is (Nidl *et al*., 2018).

In an organizational context, resilience represents the ability to bounce back from positive or negative changes or adversities (Luthans & Youssef, 2004), the ability to remain focused on tasks, productive and connected to the organization's missions (Warner & April, 2012).

The challenges and obstacles stress framework (Cavanaugh *et al*., 2000) states that workplace stressors have the power to enhance or diminish resilience. Research differentiates between challenging and hindering stressors. Obstructive stressors are demands that become barriers to achieving goals and become inhibitors of personal growth, as opposed to challenging stressors that create opportunities for personal growth and development (Cavanaugh *et al*., 2000). The effects of stress can vary depending on the intensity and duration of exposure, from relaxation to intense physiological activation (Oken *et al*., 2015). The specialized literature provides a broad picture of the effects of stress on resilience, in different categories of populations. The present research complements previous studies by providing important insights into how organizational stress affects resilience in the military population.

Internal resources: Work engagement and perceived self-efficacy

The specialized literature mentions resilience as a dynamic process (Waugh & Koster, 2014), influenced by a number of inter and intrapersonal factors. Determining the psychological variables with a role in the development of psychological resilience are key elements in the development of interventions to ensure the resilience of military gendarmes working in a high-stress environment. Gendarmerie soldiers adhere to a strong code of ethics, guided by work commitment, responsibility and integrity. They also show permanent resistance and competitiveness, elements that are based on perceived self-efficacy. In this sense, this research addresses the role of internal resources: commitment to work and perceived self-efficacy, in the relationship between organizational stress and resilience, at the level of military gendarmes.

Self-efficacy is related to an individual's past experiences, core beliefs, and spiritual beliefs and has an important impact on how the individual manages stressors (Rees *et al*., 2015). Perceived self-efficacy has been found to play a key role in determining reactions to stress, being related to the quality of coping with stressful and threatening situations (Bandura, 1997). It represents the interpretation that individuals give to their own training and achievements (Hudson, 2007) and directly affects the motivation to succeed in future situations (Pajares, 1996). Thus, perceived self-efficacy is strongly associated with resilience (Li & Nishikawa, 2012), generating its increase (Luthans *et al*., 2006) and determines lower levels of anxiety, better adaptability and lower intentions to leave the place of work (Saks, 1994).

Work commitment is a psychological condition that determines the employee's strong desire to stay in the organization (Meyer & Allen, 1991). Work engagement is characterized by the association of three factors: strong acceptance of the organization's values and goals, the willingness to exert effort on behalf of the organization, and the desire to maintain its membership (Vakola & Nikolaou, 2005). The literature states that workplace stressors correlate negatively with work engagement (Podsakoff *et al*., 2007). Likewise, work engagement correlates significantly positively with resilience (Vohra & Goel, 2009).

This study addresses the role of internal resources that the military can activate as a priority when facing various challenging situations of the organizational environment. Given the major importance of this population category in society, the results are of major importance for both managers and mental health professionals.

2. METHOD

2.1. RESEARCH OVERVIEW AND HYPOTHESES

Considering the previously mentioned theoretical and empirical framework, we aim to explore a possible model of investment that not only refers to satisfaction and commitment, but also includes forgiveness. Our main hypotheses are as follows:

Hypotheses 1: The level of perceived stress is a significant predictor of resilience.

Hypotheses 2: Work engagement and perceived self-efficacy mediate the relationship between organizational stress and resilience of military gendarmes.

2.2. MEASURES

We used the following four instruments to assess the main concepts of the study.

Organizational stress was measured using the *Organizational Police Stress Questionnaire* (PSQ-Org, McCreary, D. R., & Thompson, M. M., 2001). The 20-item PSQ-Op questionnaire assesses stressors associated with organizational culture and

the organization as a work environment. Each item ("I have the feeling that I always have to prove my competences") is rated on a 7 – point scale ranging from 1 ("not at all stressful") to 7 ("very stressful") with 4 indicating moderate stress. The total score is obtained by summing the values of the items. A higher value of the total score indicates a higher level of organizational stress. The Cronbach's Alpha value for this study is 0.928.

The *Connor-Davidson Resilience Scale* (CD-RISC, Connor & Davidson, 2003) was used to measure the resilience of police officers. The instrument consists of 25 items "Things happen for a reason"; "I don't give up even when things seem hopeless/solution"), each rated on a 5-point Likert scale, from 0 – not at all true, up to 4 – true almost all the time. High scores, obtained by summing the items, indicate increased resilience. The authors reported high internal consistency of the scale, with a Cronbach's alpha coefficient of .89. The Cronbach Alpha coefficient for this study is 0.754.

Perceived self-efficacy was measured using the *General Self-Efficacy Scale* (GSES, Schwarzer & Jerusalem, 1995). The scale consists of 10 items and measures the general sense of perceived self-efficacy in the face of daily challenges faced by military gendarmes and adaptation after experiencing stressful life events. The total score was obtained by summing the items, a higher level indicating a higher level of perceived self-efficacy. The Cronbach Alpha coefficient for this study is 0.838.

Professional Commitment (Meyer, Allen, & Smith, 1993) was used to measure work engagement. The instrument consists of 18 items, 6 in each of the following scales: AC – affective occupational commitment ("*I really feel as if this organization's problems are my own*"), CC – awareness of the effects of leaving ("*It would be very hard for me to leave my organization right now, even if I wanted to*"), NC – feeling pressured to stay (*"Even if it were to my advantage, I do not feel it would be right to leave my organization now*"). A higher level of the total score indicates a higher work engagement. The Cronbach's Alpha coefficient for this study is 0.714.

The instruments used were not validated on the Romanian population.

2.3. PROCEDURE

The study procedure and the instruments administered were in full compliance with the Declaration of Helsinki and the University's Code of Ethics. The testing was carried out individually, by applying the tools using the pencil-paper method, in an appropriate environment, without a time limit. Participants completed a consent form and were informed about the purpose of the study, the research design, and the confidentiality of responses. Information related to age, sex, seniority, status held in the organization was collected. Participation was voluntary and participants could withdraw from the study at any time without prior justification.

The instruments were administered in April 2022 and were not part of an official evaluation of the group of military gendarmes

2.4. PARTICIPANTS

The research was carried out on a group of military gendarmes from a military unit, operative and non-operative personnel, with an experience in the organization of at least 6 months, N = 214 military personnel (95.32% men and 4.67% women). The participants have a mean age of M = 38.41 years, standard deviation was SD = 9.04 and a mean seniority of M = 14.48 years, with a standard deviation SD = 7.95. 9.34% of the respondents are officers and 90.65% are non-commissioned officers.

3. RESULTS

3.1. PRELIMINARY ANALYSIS

In the first step, we performed descriptive and correlational statistical analyzes using the SPSS 28.0.1.0 software. Means, standard deviations, and Pearson correlations between study variables were calculated.

In the second step we proposed and analyzed a parallel mediation model using Model 4 (Hayes, 2018) of Process version 4.0 with IBM SPSS 28. We adopted 5000 bootstrap samples by constructing bootstrap-based confidence intervals to estimate intervals 95% confidence (Hayes, 2017). Confidence intervals that do not include zero indicate significant effects (Hayes & Scharkow, 2013). Mediation analysis was conducted to verify the mediating role of internal resources: perceived self-efficacy and work engagement in the relationship between organizational stress and resilience of military gendarmes.

Organizational stress correlates significantly negatively with the resilience of military gendarmes ($r = –0.64$, $p < 0.05$), perceived self-efficacy ($r = –0.55$, $p < 0.05$), work commitment ($r = –0.60$, $p < 0.05$).

Descriptive statistics and correlational analysis are shown in Table no. 1.

Table no. 1

Pearson correlations among the variables of the study

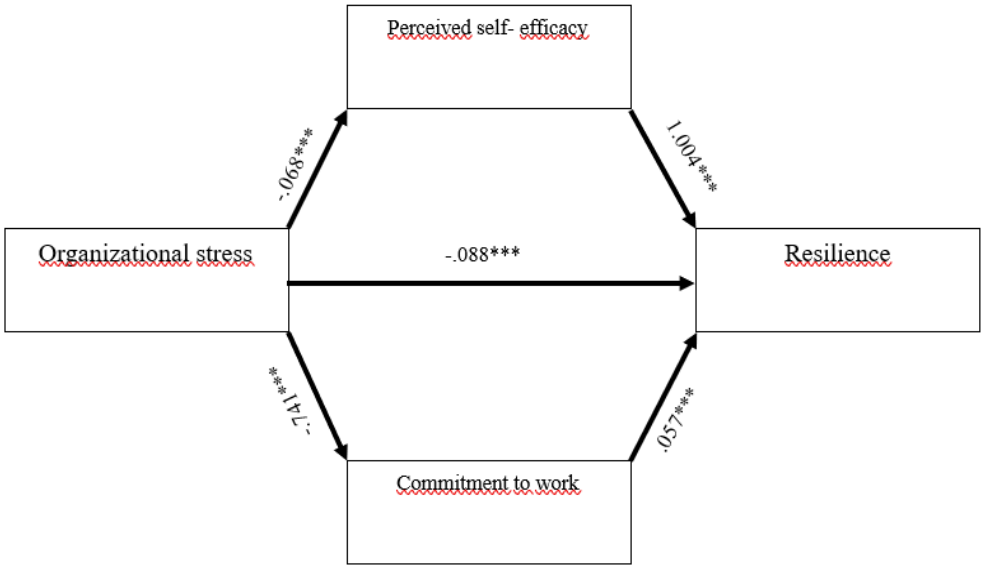
Variable	Measures					
	M	*SD*	*1*	*2*	*3*	*4*
1.Organizational stress	37.66	22.55	1			
2.Resilience	93.77	6.97	–.647**	1		
3.Perceived self- efficacy	37.52	2.81	–.550**	.704**	1	
4.Commitment to work	144.87	27.85	–. 600**	.650**	.612**	1

Note: ** p < .010.

3.2. MEDIATION ANALYSIS

The parallel mediation model of the study addressed the predictive effect of organizational stress on resilience, as well as the mediating effect of internal resources of the military gendarmerie: work commitment, perceived self-efficacy. Organizational stress significantly negatively predicts perceived self-efficacy ($\beta = –.068$; $p < .001$) and work engagement ($\beta = –0.741$; $p < .001$). The direct effect is statistically significant, indicating that organizational stress significantly negatively predicts military resilience ($\beta = –0.088$; $p < .001$), in a relationship partially mediated by work engagement and perceived self-efficacy, confirming thus the research hypothesis (Figure 1).

Figure 1 shows the unstandardized coefficients.



Note: *** $p < .001$.

Figure 1. The relationship between organizational stress and resilience mediated by perceived self-efficacy and work engagement.

Both the direct effect of organizational stress ($c = –0.881$; 95% CI [–0.1219; –0.0543) and the indirect effect of perceived self-efficacy ($a*b = 1.0042$; 95% CI [.7307; 1.2777]) and of work engagement ($a1*b1 = .0577$; 95% CI [.0288; .0867]) are statistically significant because the confidence interval does not include 0 (see Table no. 2). This demonstrates that work engagement and self-efficacy perceived partially mediates the relationship between organizational stress and resilience, as the direct path still remains significant.

Table no. 2

Direct, indirect and total effects of the relationship between organizational stress and resilience

Independent measures (IV)	Dependent measure (DV)	Self-eficacy (M_1)		Total indirect effect									
		Total direct effect				IV→ M_1		M_1→ DV		Indirect effect		95% CI	
		c				*a*		*b*		*a*b*			
OrgS	RES	b	SE	b	SE	b	SE	b	SE	b	SE	BootLLCI	BootULCI
		–.088***	.017	–.069	.014	–.068***	.007	1.004***	.138	–.043	.011	.730	1.277
Independent measures (IV)	Dependent measure (DV)	Commitment to work (M_2)		Total indirect effect									
		Total direct effect				IV→ M_2		M_2→ DV		Indirect effect		95% CI	
		c				*a1*		*b1*		*a1*b1*			
OrgS	RES	b	SE	b	SE	b	SE	B	SE	b	SE	BootLLCI	BootULCI
		–.088***	.017	–.042	.011	–.741***	.067	.057***	.014	–.070	.013	.028	.086

4. DISCUSSION

The present study explores the relationship between organizational stress and resilience, as well as the mediating role of internal resources in the case of military gendarmes, constantly exposed to organizational stress factors. A mediation model was proposed and tested that investigated the relationship between organizational stress and resilience and its explanatory mechanisms: the perceived self-efficacy and work engagement.

Organizational stress and resilience

In emergency situations, critical incidents can create a sense of psychological disequilibrium, during which personnel lose the ability to organize their experiences in meaningful and effectively manageable ways (Paton, 1994). The military organization is the context in which police officers experience and interpret critical incidents and challenging events (Weick & Sutcliffe, 2007), influencing their thoughts and actions. The present research indicates that organizational stress is significantly negatively associated with resilience. It is shown that military gendarmes are exposed to organizational stress, which can arise from difficult relationships, unpredictable changes, role responsibilities, competition, service location, excessive bureaucracy, etc. Moderate stress can create excitement and energy, but too much stress can cause disruptive events to be perceived as adversity (Warner & April, 2012). The present research may illustrate either the existence of an episode immediately following exposure to a stressful event, in which initial life disruption may precede an increase in resilience, or how experiencing adversity causes limited resilience. Very strong negative emotions can cause an overwhelming response, with associated dysfunctions (Warner & April, 2012).

As a result of the interaction between biological, psychological and environmental factors, the resilience of military gendarmes is influenced by the severity of the stressors they face (Yao *et al*., 2019). Organizational environments with low to medium levels of organizational stress can have a positive effect on resilience. But high-level situations can temporarily impair coping and cause impairment (Ord *et al*., 2020).

The mediating role of internal resources

The results of this research demonstrate the mediating role of internal resources: perceived self-efficacy and work commitment, which partially explain the relationship between organizational stress and resilience of military gendarmes. In agreement with previous research, resilience is increased when, when faced with professional stress factors, internal resources are activated (Back *et al*., 2016).

The study demonstrates a negative association between the organizational stress felt by military gendarmes and perceived self-efficacy. Military gendarmes with a higher level of perceived self-efficacy experience a lower level of organizational stress, compared to those with a lower level of self-efficacy. Consistent with previous studies, soldiers with increased self-efficacy have greater confidence in their ability to perform job duties despite organizational stressors (Jex *et al*., 2001). They can challenge themselves to a greater extent, are more motivated to build harmonious work relationships and approach problems in a more innovative way (Phelan & Young, 2003).

In agreement with previous literature, the present research demonstrates a positive association between perceived self-efficacy and resilience (Violanti *et al*., 2014) of military gendarmes. A high level of perceived self-efficacy determines proactive responses to the stressful organizational environment (Prilleltensky *et al*., 2001). Perceived self-efficacy is essential for the development of resilience (Lightsey, 2006) of military gendarmes. According to Flach's Resilience Theory (1989), perceived self-efficacy is part of the repertoire of strengths that allow individuals to evolve towards positive change.

Work engagement represents an internal resource that intervenes as a mediator in the relationship between organizational stress and resilience. In agreement with previous research, organizational stress correlates negatively with work engagement (Amin *et al*., 2018). Military gendarmes with a high level of work engagement report a lower level of organizational stress compared to those with a higher level of work engagement.

Also, high commitment causes an increase in the resilience of military gendarmes. Commitment to work provides the emotional, motivational, affective and cognitive resources that favor the return to a state of equilibrium after confronting organizational stress factors, something that influences the increase of resilience (Youssef & Luthans, 2007).

5. LIMITATIONS AND FUTURE DIRECTIONS

Limitations can be attributed primarily to the way data is collected. The research was based on information collected from self-report questionnaires. Future studies could consider other methods of investigation, such as observation. Second, another limitation is represented by the sample of military gendarmes from a single military unit. Future studies can be carried out on the basis of samples also represented by the populations of other structures active in the field of public order and safety. Likewise, future research can focus on longitudinal designs to investigate both the stability of internal resources and the role of other variables that can contribute to maintaining or strengthening the resilience of military gendarmes.

The study has important practical implications, guiding military leaders and mental health professionals toward developing an organizational environment that fosters resilience, both through individual training and organizational interventions. The role of internal resources that perceived self-efficacy and work commitment have in the relationship between organizational stress and resilience guides us towards the development of prevention programs. Last but not least, the study orients us towards the selection activity. Recruiting staff with a high level of perceived self-efficacy and commitment to work will ensure the existence of resources that can be capitalized in the face of organizational stress factors

6. CONCLUSION

Psychological resilience is a central construct, important for the way military gendarmes respond to organizational stressors. The present research investigated the relationship between organizational stress and resilience, mediated by the internal resources of military gendarmes. Organizational stress significantly negatively predicts resilience. Perceived self-efficacy and work engagement mediate the relationship between organizational stress and resilience. The variables thus represent internal resources that ensure psychological growth and development, following the confrontation with stress factors at work. The study of internal resources of the military gendarmerie in increasing resilience has important practical implications and can represent the starting point of some intervention strategies aimed at reducing the negative effects of organizational stress.

Acknowledgements

This article is part of the Ph.D. Project Stress and well-being in military personnel, written by Ph.D. student Ana-Diana Balcan, under the coordination of Prof. Univ. Dr. Maria Nicoleta Turliuc.

Received: 12.07.2023

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REZUMAT

Pentru ca militarii jandarmi să gestioneze cu succes potențialele amenințări la adresa integrității, siguranței sau propriei vieți, reziliența este esențială. Capacitatea jandarmilor de a gestiona stresul de la locul de muncă poate asigura, de asemenea, reintegrarea în familie și comunitate, după participarea la misiunile cu grad ridicat de risc, fără dezvoltarea unor tulburări mintale sau probleme de comportament. *Cadru teoretic*: Factorii de stres au puterea de a spori sau de a diminua reziliența (Cavanaugh *et al.*, 2000). S-a constatat că autoeficacitatea percepută joacă un rol-cheie în determinarea reacțiilor la stres (Bandura, 1997). De asemenea, literatura de specialitate afirmă că factorii de stres la locul de muncă corelează negativ cu implicarea în muncă (Podsakoff *et al*., 2007). *Metodologie*: Cercetarea a fost efectuată pe un număr de 214 militari jandarmi, care au completat chestionare de autoraportare privind stresul organizațional, reziliența, angajamentul în muncă și autoeficacitatea percepută. Acesta este un studiu corelațional transversal care investighează relația dintre stresul organizațional perceput și reziliența militarilor jandarmi. Mai mult, a fost examinat rolul de mediere al autoeficacității percepute și al angajamentului în muncă. *Rezultate*: Stresul are un efect negativ semnificativ asupra rezilienței militarilor jandarmi. Autoeficacitatea percepută și angajamentul în muncă acționează ca mediatori ai relației dintre stresul organizațional și reziliență. *Concluzii și discuții*: Rezultatele au implicații pentru îmbunătățirea rezilienței, prin dezvoltarea strategiilor de intervenție axate pe creșterea conștientizării importanței resurselor interne, cum ar fi autoeficacitatea percepută și angajamentul în muncă.

ARTIFICIAL INTELLIGENCE AND PSYCHOLOGY

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Abstract

Artificial intelligence (AI) has been swiftly progressing and caused many changes and improvements in various fields. Psychology is one such field deeply impacted by AI and in this brief article, we will explore whether AI is a threat or an advantage for psychologists. We will examine the benefits and risks of using AI in psychology and how it can potentially change the way psychologists work. We also discuss the main areas in psychology where AI can help, whether it is in research, counseling, psychotherapy, or mental health in general. Besides those benefits, we analyze the potential risks it may bring along, such as the risk for bias and ethical issues. The main conclusion is that, besides the anxiety it may bring, it is a tool like any other and it is up to humans in general and, in this case, to psychologists, to use it responsibly. And although the outcomes of AI may seem impressive oftentimes, they are only as good as the input they receive and the data they are trained on.

Cuvinte-cheie: inteligență artificială, psihologie, beneficii, amenințări, viitor.

Keywords: artificial intelligence, psychology, benefits, threats, future.

1. INTRODUCTION

AI has revolutionized the field of psychology, offering new tools and technologies that can assist psychologists in their research and practice. AI has now the potential to improve the precision of psychological assessments, augment the effectiveness of psychotherapy, and give assistance in the development of new treatments for mental health disorders. At the same time, AI brings potential threats, such as the risk for bias and some ethical concerns.

2. BENEFITS OF AI IN PSYCHOLOGY

AI can bring many benefits to psychologists, especially in areas like research and clinical practice. One of the most significant benefits of AI is its ability to process big data, fast and correctly. This is mainly useful in the field of psychology, where researchers often need to analyze big quantities of data, to

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discover patterns and trends. Another benefit of AI is its ability to provide tailored treatment to patients. AI algorithms can analyze patient data and provide dedicated treatments, based on their individual needs. This can help psychologists give more effective treatments and improve patient outcomes. AI can also support psychologists in the development of new treatments for mental health disorders. By analyzing big data, AI algorithms can identify new patterns and discover correlations that may not be visible to human researchers, and this can speed up the development of more effective treatments for mental health disorders.

AI can be a positive tool for psychologists, as it can shorten the times needed for research, assessment, personalized treatments, or predictive modeling. In the following paragraphs, we have compiled a list of examples where AI can be seen as a positive tool:

1. Psychological Evaluations. AI can be used to develop automated psychological evaluations that can be administered online, thus making things easier and more time-efficient for psychologists to assess their clients (Malins *et al*., 2022). These evaluations can also be more precise and trustworthy than traditional paper and pencil tests.
2. Tailored Treatment Recommendations. AI algorithms can analyze a patient's data, including their symptoms and treatment history, to provide tailored treatment recommendations (Bohr & Memarzadeh, 2020). This can help psychologists develop more efficient treatment plans for their clients.
3. VR Therapy. AI can be also used to create virtual reality settings for therapy sessions, thus allowing patients to overcome their fears, their social or generalized anxiety, in a controlled and safe medium (Riva *et al*., 2019).
4. Early Recognition of Mental Health Disorders. AI can analyze big data to identify patterns and risk factors linked to mental health disorders (Balcombe & De Leo, 2022). This can help psychologists to discover disorders earlier, leading to better results for patients.
5. Predictive Modeling. AI can be used to develop predictive models that can identify persons who could be at risk of developing mental health disorders (Nemesure *et al*., 2021). This gives psychologists the possibility of early interventions and thus prevent the beginning of disorders.
6. Natural Language Processing. AI can analyze written and spoken language to identify patterns and detect emotions (Diwan, 2023). This can be of particular use in psychotherapy settings, where psychologists can use such information to better understand their clients.
7. Feelings Analysis. AI can analyze social media posts and other online content to identify changes in a patient's mood or mental health status (Kumar, Prabha & Samuel, 2022). This can give psychologists the

possibility to oversee their patients from the distance and interfere, if necessary.

8. Drug Development. AI has the potential to examine extensive data sets in drug development (Patel & Shah, 2022), aiding in the identification of promising targets for mental health disorders. Consequently, this could result in the creation of enhanced and innovative therapies.
9. Chatbots. Chatbots using AI have the capacity to deliver mental health assistance to individuals, especially in regions where psychologist availability is limited. These chatbots can offer immediate support to patients during critical situations as well (Pham, Nabizadeh & Selek, 2022; Noble *et al*., 2022).
10. Brain Imaging Examination. AI can be used in the analysis of brain imaging data, such as fMRI scans, to identify patterns and correlations associated with mental health disorders (Li *et al*., 2022). This can help psychologists to better understand the fundamental causes of these disorders and develop more useful treatments.
11. AI models for helping in depression, anxiety or preventing suicide have been built to foreseen suicide risky behaviors in certain individuals, thus permitting tailored interventions that can prevent such situations. Such models use machine learning algorithms to analyze information and data from different sources, including health records, social media activity and mobile devices usage (Barua *et al*., 2022).
12. Psychotherapy supported by AI has also been effective in the treatment of depression by giving tailored and adaptive interventions based on the patient's symptoms and needs (Sedlakova & Trachsel, 2022).
13. Cognitive evaluation tools based on AI have been designed to give more accurate and efficient evaluations of cognitive functioning, which can help in the diagnosis and treatment of various mental health disorders, such as Alzheimer's disease and attention-deficit/hyperactivity disorder (ADHD). These tools use machine learning algorithms to analyze data from different sources, such as cognitive tests and brain imaging (Graham *et al*., 2020).
14. Technology able to recognize emotions assisted by AI, has been designed and developed to improve the precision and consistency of emotion detection in many contexts, such as mental health evaluation and social interaction analysis. This technology uses machine learning algorithms to study facial expressions, voice tone, and other physiological indicators, to identify different emotions (Huang *et al*., 2023).
15. Cognitive behavioral therapy (CBT) assisted by AI has also proved useful in treating post-traumatic stress disorder (PTSD). The therapy uses natural language processing algorithms that can analyze the patient's speech and

provide feedback and assistance in real-time (Olaniyan *et al*., 2023; Peretz *et al*., 2023).

3. RISKS OF AI IN PSYCHOLOGY

AI has many benefits and at the same time it also has potential risks that need to be discussed. One of the most noteworthy risks of AI is the potential for bias, because AI algorithms and results are only as good as the data they are trained on. Therefore, if the data is biased, the algorithms will be biased as well. This can lead to erroneous evaluations and treatment recommendations. Another risk of AI is the potential for ethical concerns. If AI algorithms are used to diagnose mental health disorders, there is a risk that patients may be stigmatized based on their diagnosis. There is also a risk that AI algorithms may be used to make decisions about patient care, without sufficient human control, which could lead to unintended consequences.

On the other hand, there are situations where AI can be perceived as threatening in psychology. These examples are only hypothetical and based on potential concerns about the use of AI in psychological research and practice.

1. Diagnostic tools that use AI could lead to a dependency on technology and weaken the important role of human intuition and clinical judgment in mental health diagnosis (Asan, Bayrak & Choudhury, 2020).
2. AI algorithms that analyze social media data could be used to manipulate public opinion and spread destructive stereotypes and biases about mental health conditions (Mehrabi *et al*., 2021).
3. VR therapy based on AI could lead to a decrease in social skills and an increase in social isolation among people with mental health conditions (Cerasa *et al*., 2022).
4. Chatbots and virtual assistants that use AI could displace human therapists and undermine the therapeutic relation between therapist and client (Laestadius *et al*., 2022).
5. Brain imaging techniques using AI could be used to invade individuals' privacy and spread negative stereotypes about mental health conditions (Kaissis *et al*., 2020).
6. AI algorithms that analyze speech patterns and facial expressions could be used to detect and diagnose mental health conditions without individuals' consent or knowledge, leading to potential gaps of confidentiality and privacy (Almeida, Shmarko & Lomas, 2022).
7. Decision-making tools based on AI could spread universal biases and discrimination against individuals with mental health conditions (Sallam, 2023).
8. Digital therapeutics based on AI could be used to exploit vulnerable individuals with mental health conditions by charging overpriced fees or

spreading misinformation about the effectiveness of the treatment (Dang, Arora & Rane, 2020).

4. ADVANCEMENTS OF AI IN PSYCHOLOGY

The speed at which AI can learn depends on several factors, such as the complexity of the task and the quantity of data available. In general, AI models can learn at a much faster pace than humans, especially when it comes to tasks that involve big data. One example of this is image recognition. In 2012, a deep learning algorithm developed by researchers at the University of Toronto achieved a breakthrough in image recognition accuracy. The algorithm, called AlexNet, was able to correctly classify images from a large dataset with an error rate of just 15.3%. This represented a huge improvement over previous methods of image recognition and helped to boost the deep learning revolution. Since then, there have been many other examples of AI models learning at an impressive speed. For example, in 2016, a Google DeepMind AI system called AlphaGo defeated the world champion at the ancient Chinese board game Go. AlphaGo was able to learn the game in just a few months and went on to beat the world's top players. AI models can learn from large datasets much faster than humans can. For example, an AI model may be able to learn to recognize thousands of different objects in images after being trained on millions of examples, whereas a human may take years to develop the same level of expertise. At the same time, AI models need huge amounts of high-quality data to learn effectively. Finding and processing this data can be time-consuming and can require lots of resources for humans and much faster for AI, but the speed of AI learning is still limited by the availability and quality of data.

5. EFFECTIVE AI PROGRAMS IN PSYCHOLOGY

While this is not a definitive list of the most efficient AI programs today, as there are many different types of AI programs that excel in different areas and applications, we have compiled a few examples of highly effective and widely used AI programs (for scientific general use). This is by no means an exhaustive list, but these are some examples of very effective AI programs that are widely used today.

1. TensorFlow – a strong open-source machine learning framework built by Google, that is mainly used in industry and academia.
2. PyTorch – an open-source machine learning framework, known for its plasticity and user-friendliness.
3. Microsoft Cognitive Toolkit (CNTK) – a deep learning framework built by Microsoft and boosted for distributed computing.
4. Keras – a high-level deep learning API that can run on top of frameworks like TensorFlow, Theano, or CNTK.

5. OpenAI Gym – a toolkit for developing and comparing reinforcement learning algorithms.
6. Scikit-learn – a popular machine learning library for Python that includes a variety of algorithms and tools for data analysis and modeling.
7. Apache Mahout – an open-source machine learning library that is enhanced for distributed computing and large-scale data processing.
8. H2O.ai – a machine learning platform that is built to be scalable and user friendly.
9. IBM Watson – a suite of AI tools and services that can be used for natural language processing, image analysis, and other applications.
10. Amazon SageMaker – a machine learning platform that provides a range of tools and services for building, training, and deploying models in the cloud.

AI is also being used in a growing number of applications in the field of psychology, including areas such as mental health diagnosis, therapy, and neuroimaging analysis. Here are some examples of AI programs that are being used effectively in psychology:

1. Woebot – an AI-powered chatbot designed to provide cognitive behavioral therapy to individuals experiencing symptoms of depression and anxiety.
2. Mindstrong – a digital mental health platform that uses AI to analyze patterns in smartphone usage to identify potential signs of mental health conditions.
3. Qntfy – a data analytics platform that uses AI and natural language processing to analyze large amounts of social media data for research purposes.
4. Affectiva – a software platform that uses machine learning to analyze facial expressions and emotions in real-time.
5. NeuroLex – a natural language processing tool that can be used to extract information from neuroscience research papers.
6. EncephalApp – an AI-powered mobile app that can be used to help diagnose neurological conditions based on symptoms and medical history.
7. BrainNetCNN – an AI algorithm that can be used for brain network analysis and classification in neuroimaging data.
8. DeepBrain – an AI platform that uses deep learning algorithms to analyze EEG data for research purposes.
9. MindScope – a machine learning tool that can be used to analyze and predict brain activity based on fMRI data.
10. Cognitivescale – a cloud-based platform that uses AI to provide personalized mental health coaching to individuals.

This is also not an exhaustive list as there are many other AI programs and tools being developed and used in the field of psychology, but it is a good list to start with.

6. THE FUTURE OF AI PROGRAMS IN PSYCHOLOGY

The future of AI programs in psychology is most likely to be illustrated by continued growth and innovation, as researchers and practitioners explore new ways to use AI to improve mental health diagnosis, treatment, and research. One area of development is most probably the use of AI in virtual therapy and mental health coaching. Chatbots and virtual assistants which use AI are already being used to provide basic cognitive behavioral therapy and support for individuals with mental health conditions, and there is great potential for these tools to become even more sophisticated and adapted in the future. For example, AI could be used to analyze speech patterns and facial expressions to identify signs of distress or to tailor therapy sessions to an individual's specific needs. Another area of development is the use of AI in neuroimaging research. Machine learning algorithms are already being used to analyze fMRI and EEG data, and there is potential for these algorithms to become even more refined and accurate in the future. This could lead to new insights into the workings of the brain and the main causes of mental health conditions. Plus, there is unlimited potential for AI to be used to analyze big data from electronic health records and other sources to identify patterns and risk factors for mental health conditions. This could help improve early diagnosis and intervention for individuals who could be at risk for developing mental health problems.

It is unlikely that any positions in psychology will be completely replaced by AI soon. While AI can assist with certain tasks, such as data analysis and diagnosis, it cannot replace the human element of psychology, which involves understanding and empathizing with human emotions, thoughts, and behaviors. Still, there are some tasks within psychology that AI could potentially assist with, such as:

- Data analysis: AI can help process big data and identify patterns that might not be straightaway obvious to human researchers.
- Diagnosis: AI can help detect patterns and make predictions based on data, which could assist psychologists in establishing diagnoses.
- Therapy: Though it is unlikely that AI will replace human therapists, it could potentially be used to supplement therapy by providing patients with automated feedback and support.

Overall, while AI can assist with certain tasks within psychology, it cannot replace the human element of the field.

So, what should psychologists do in the near future to stay prepared for technology and AI? What meta competences should they develop? As AI and

technology continue to advance, it is important for psychologists to stay informed and prepared for the changes that may arise. Below are some meta competences that psychologists may find useful to develop:

1. Data mastery. With the increasing availability of big data, psychologists ought to develop the skills to collect, analyze, and interpret data. This includes knowledge of statistical analysis and data visualization tools.
2. Digital savvy. Psychologists should be well-informed about digital tools and platforms, including social media, online therapy platforms, and telehealth technologies. This includes understanding the ethical and legal implications of using digital tools in their practice.
3. Interdisciplinary teamwork. As AI and technology intersect with psychology, psychologists should work with other experts in various fields, such as computer science and engineering. This involves developing the ability to communicate and work successfully with people from various disciplines.
4. Critical thinking. As AI and technology become more established in psychology, psychologists should be able to critically assess the strengths and weaknesses of such tools. This includes understanding the biases that may be present in AI algorithms and the potential impact on patient care.
5. Lifelong learning. Because of the rapid pace of technological change, psychologists should develop a mindset of continuous lifelong learning, to keep up with new progresses in their field. This includes being aware of the latest research and participating in important conferences and workshops, online and offline.

By developing these meta competences, psychologists can better prepare themselves for the changes that technology and AI may bring to the field of psychology.

There are several major shifts that we see happening in the next five years in the field of psychology concerning technology and AI. Here are a few examples:

1. More use of online therapy and digital mental health tools. Since the COVID-19 pandemic, online therapy has become more widely accepted. We predict that this trend will continue, because online therapy offers many benefits, such as better accessibility and convenience. Plus, there will be an increase in the development and use of digital mental health tools (chatbots and virtual reality therapy), to complement classical therapy.
2. More data analytics and AI for diagnosis and treatment. As big data continues to grow, psychologists will increasingly use data analytics and AI to help diagnose and treat mental health problems. Tools that use AI can analyze big data, identify patterns, and make predictions about patient behaviors. In the near future, such tools will not replace human

decisions, but they can help to offer more comprehension and support for psychologists.

3. Greater focus on ethical and legal aspects. Psychologists will need to consider matters about data privacy, informed consent, and possible biases in AI algorithms. There will also be a need to set procedures and regulations for the use of AI in mental health care.
4. Training programs that smartly integrate technology and AI, to help certify that professionals are equipped with the necessary skills and knowledge to effectively use these tools in their practice.

Overall, we believe that the integration of AI and technology in psychology will continue to grow in the next five years, with many opportunities and challenges for the field.

7. AI AND PSYCHOLOGY IN ACADEMIA

What should the academic world and especially universities do to facilitate the collaboration between psychologists and AI/technology? Facilitating collaboration between psychologists and AI/technology experts is critical for the development of effective and ethical mental health tools. Here are a few suggestions of what universities can do to facilitate this collaboration:

1. Offer interdisciplinary courses and programs. Universities can offer courses and programs that bring together psychology and AI/technology. These courses can help students from various disciplines learn from each other and develop a better understanding of each other's perspectives.
2. Support collaboration through research centers and institutes. Universities can build research centers and institutes that bring together psychologists and AI/technology experts, to work on joint research projects. These centers can offer a space for collaboration and can help build relationships between these two groups.
3. Provide resources and support. Universities can offer resources and support for psychologists who want to integrate AI/technology into their practice. This can include access to training programs, funding for research projects, and access to AI/technology experts.
4. Create opportunities for networking and collaboration. Universities can create opportunities for psychologists and AI/technology experts to network and collaborate. This can include hosting conferences, workshops, and seminars that bring these two groups together to share ideas and collaborate on projects.
5. Encourage ethical and responsible use of AI/technology in psychology. Universities can support the development of ethical and responsible AI/technology in psychology by providing training on ethical and legal

considerations, promoting transparency and responsibility in the use of AI/technology, and encouraging the development of tools that prioritize patient privacy and autonomy.

By taking these steps, universities can help facilitate collaboration between psychologists and AI/technology experts, which can lead to the development of more effective and ethical mental health tools.

8. PSYCHOLOGICAL EDUCATION AND AI

How can psychologists educate their clients about the use of AI and technology in psychological services? It is important for psychologists to educate their clients about the use of AI and technology in psychological services. Here are some suggestions for how psychologists can do this:

1. Give information about the pluses and minuses of AI/technology. Psychologists can explain to their clients the pluses and minuses of using AI/technology in psychological services. This can include discussing the potential for increased accessibility and ease of use, as well as the limitations of AI/technology as compared to classical therapy (Irshad, Azmi & Begum, 2022).
2. Discuss privacy and security concerns. Psychologists can explain to their clients how their data will be collected, stored, and used when using AI/technology in psychological services. It is important to discuss any privacy and security concerns the client may have and provide assurance that their data will be protected (D'Alfonso, 2020).
3. Address any ethical concerns. Psychologists can discuss any potential ethical concerns connected to the use of AI/technology in psychological services. This can include concerns related to informed consent, potential biases in algorithms, and the role of the psychologist in using AI and interpreting AI results (D'Alfonso, 2020).
4. Give training on how to use the technology: If the client is using the technology on its own, it may be helpful to provide training on how to use it effectively. This can include showing how to use the technology, giving written instructions, and constant support, if needed.
5. Support open communication: Psychologists can encourage open communication with their clients about the use of AI/technology in psychological services. This can include offering opportunities for clients to ask questions and express any concerns they may have.

By educating their clients about the use of AI/technology in psychological services, psychologists can help build trust and confidence in these tools and ensure that their clients are well-informed and comfortable using them.

9. LEGISLATION IN AI AND PSYCHOLOGY

What laws should there be for a safe use of AI in psychology? What laws would protect the psychologists, and what laws would help the clients? The use of AI in psychology has the potential to provide many benefits, but it also brings about important ethical and legal questions. Here are some laws that could help ensure safe and ethical use of AI in psychology:

1. Informed Consent: Clients should be fully informed about the use of AI in their treatment and give their informed consent before any AI-based interventions are used.
2. Data Protection: Psychologists should be required to protect their clients' personal data, including any data generated by AI-based interventions, in accordance with relevant data protection laws.
3. Transparency: Psychologists should be required to explain the basis for any AI-based treatment recommendations or decisions to their clients in a transparent and understandable way.
4. Professional Standards: Psychologists who use AI-based interventions should be held to the same professional standards as those who do not, and any AI-based interventions should be subject to the same ethical guidelines and standards of care.
5. Liability: Psychologists should be held accountable for any harm caused by AI-based interventions, and clients should have access to legal remedies if they are affected by such interventions.
6. Certification: Psychologists who use AI-based interventions should be required to undergo specialized training and certification to ensure that they have the necessary knowledge and skills to use these tools safely and effectively.
7. Regulation: Governments and professional organizations should create regulatory frameworks for the use of AI-based interventions in psychology to ensure that these tools are used safely, ethically, and in the best interests of clients.

10. DISCUSSIONS AND CONCLUSIONS

AI has the potential to revolutionize the field of psychology with new tools for evaluation, diagnosis, and treatment of psychological disorders. Tools based on AI can help identify patterns in large datasets that may be difficult for humans to detect and provide tailored treatment recommendations. AI can help improve the precision and consistency of psychological evaluations, by reducing human errors and biases. Evaluations based on AI can be standardized and provide consistent results, which can improve the validity and reliability of psychological tests. AI can also help improve access to mental health services, especially in areas where there are few

mental health professionals available. Interventions based on AI can be delivered online and remotely and can help bridge the gap between supply and demand for mental health services. At the same time, AI raises important ethical and legal questions, especially concerning privacy, confidentiality, and informed consent. Psychologists must make sure that they are using AI in a way that is consistent with relevant laws and ethical procedures. Psychologists must also be vigilant about potential biases in interventions that use AI, because AI is only as unbiased as the data it is trained on, so it is important to ensure that the data used to train such interventions is representative and diverse. Finally, psychologists must be careful of the potential limitations that interventions based on AI can have. AI can provide valuable insights, but it cannot replace the human connection and therapeutic relationship, that is often a crucial part of effective psychological treatment. It is important to find an equilibrium between the use of AI-based interventions and the need for human empathy and understanding in the therapeutic relationship.

To conclude, AI has the potential to be both an advantage and a threat to psychologists. While AI can provide numerous benefits, such as improved accuracy and personalized treatment, it also brings certain risks, such as possible biases and ethical concerns. As AI continues to evolve, it will be important for psychologists to be aware of these risks and to take steps to diminish them. By doing so, psychologists can leverage the benefits of AI, while minimizing the risks.

Received: 12.06.2023

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REZUMAT

Inteligența artificială (AI) a progresat rapid și a provocat multe schimbări și îmbunătățiri în diferite domenii. Psihologia este un astfel de domeniu profund afectat de AI și, în acest scurt articol, vom explora dacă AI este o amenințare sau un avantaj pentru psihologi. Vom examina beneficiile și riscurile utilizării AI în psihologie și modul în care aceasta poate schimba modul în care lucrează psihologii. De asemenea, discutăm principalele domenii din psihologie în care AI poate ajuta, fie că este vorba de cercetare, consiliere, psihoterapie sau sănătate mintală, în general. Pe lângă aceste beneficii, analizăm riscurile potențiale pe care le poate aduce, cum ar fi riscul de părtinire și probleme etice. Concluzia principală este că, pe lângă anxietatea pe care o poate aduce, este un instrument ca oricare altul și ține de oameni în general și, în acest caz, de psihologi, să-l folosească în mod responsabil. Și, deși rezultatele AI pot părea deseori impresionante, ele sunt la fel de bune ca și inputul pe care îl primesc și datele pe care sunt instruiți.

IMPACTUL PANDEMIEI COVID-19 ASUPRA ADULȚILOR VÂRSTNICI

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Abstract

The onset of the COVID-19 pandemic has produced a series of changes in the daily routine of many adults. This has raised a number of barriers for the older population, given that some regulations have also been imposed using the chronological age criterion. This article examines the pandemic's impact on older adults' well-being. The pandemic has decreased the physical and mental well-being of older adults and adults in general, but studies reveal that, among other adults, older adults have been the most resilient. At the same time, it is noted that not all older adults experienced decreases in their well-being. However, some categories were more vulnerable in terms of the impact of the pandemic. These include dependent adults and older adults with limited financial resources or with pre-existing medical conditions or who have been discriminated against.

Cuvinte-cheie: adulți vârstnici, stare de bine, reziliență, pandemie.

Keywords: older adults, well-being, resilience, pandemic.

1. INTRODUCERE

Odată cu debutul pandemiei de COVID-19, multe persoane au fost nevoite să-și reorganizeze și să-și adapteze activitățile zilnice obișnuite. Pandemia a implicat, de multe ori, restricții de deplasare pentru anumite perioade de timp (Usman *et al.*, 2023), izolare la domiciliu (Hwang *et al.*, 2020), prioritizarea anumitor proceduri medicale (Rosenbaum, 2020), măsuri de limitare a contactelor sociale, măsuri de distanțare socială (World Health Organization, 2020) și exemplele pot continua, cu variații de la o țară la alta. În acest context nou generat de pandemie, se poate ridica întrebarea referitoare la impactul tuturor acestor schimbări și solicitări asupra adulților vârstnici. Deși nu există încă un consens asupra limitei de vârstă de la care un adult este considerat vârstnic, în cadrul acestui articol termenul de adult vârstnic va fi folosit cu referire la persoanele de peste 65 de ani, limită cronologică folosită cel mai frecvent de literatura de specialitate în ultimii ani (Man, 2017). Cu toate că o parte dintre clasificările recente împart adulții vârstnici în două mari categorii:

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adulții de vârsta a treia și adulții de vârsta a patra (adulții de vârsta a patra fiind, cel mai frecvent considerați, adulții cu vârsta de peste 80 de ani) (Man, 2017), acest articol face referire la ambele categorii de vârstă, la adulții de vârsta a treia și la adulții de vârsta a patra, atunci când se utilizează termenul de adulți vârstnici. Întrebarea mai sus ridicată, referitoare la impactul pandemiei asupra adulților vârstnici, este cu atât mai justificată, cu cât adulții vârstnici sunt grupul de adulți care au întâmpinat anumite provocări specifice în perioada pandemiei. Spre exemplu, adulții vârstnici au fost încadrați în grupurile de risc de către autoritățile medicale (Zhou *et al.*, 2020), au înregistrat rate mai ridicate ale decesului comparativ cu celelalte categorii de vârstă (Pormohammad *et al.*, 2020), au fost uneori plasați la finalul listei pacienților care puteau beneficia de terapie intensivă (Montero-Odasso *et al.*, 2020; Rosenbaum, 2020), li s-au stabilit reguli diferite de izolare și carantină, în funcție de vârsta cronologică (Barth *et al.*, 2021) sau li s-au alocat intervale limitate de timp pentru anumite activități cotidiene (Monahan *et al.*, 2020).

Totodată, independent de restricțiile din pandemie, adulții vârstnici aveau probabilitatea mai ridicată de a întâmpina unele provocări în mobilitate, unii dintre adulții vârstnici având nevoie de asistență din partea celor din jur pentru anumite sarcini cotidiene (Manton și Land, 2000) sau au fost obișnuiți să primească ajutor și asistență, apelând la anumite servicii externe (Chen, 2020). Un alt aspect pentru care întrebarea de mai sus este relevantă ține și de faptul că adulții vârstnici pot prezenta mai multe afecțiuni medicale, comparativ cu restul populației (Groessl *et al.*, 2007), și sunt în același timp și grupul de vârstă cu cea mai redusă rată de utilizare a tehnologiei în general (European Commission, 2017; Office for National Statistics, 2019), pentru a suplini lipsa contactelor sociale directe cu ajutorul teleprezenței. Prin urmare, această întrebare este justificată și din aceste rațiuni.

Studiul de față își propune să analizeze impactul pe care l-a avut pandemia de COVID-19 asupra stării de bine (fizice și psihice) la adulții vârstnici, concomitent cu realizarea unei analize comparative succinte cu celelalte categorii de adulți.

2. IMPACTUL PANDEMIEI ASUPRA STĂRII DE BINE A ADULȚILOR VÂRSTNICI

Studiile asupra sănătății psihice și fizice, realizate în Europa, Statele Unite ale Americii, dar și la nivel global, relevă faptul că măsurile de izolare și restricțiile impuse în timpul pandemiei au avut un impact asupra adulților vârstnici (Ausin *et al.*, 2021; Cocuzzo *et al.*, 2023; Webb și Chen, 2022). De exemplu, 40% dintre adulții vârstnici au raportat o înrăutățire a sănătății fizice, 70% au menționat că nu au mai realizat frecvent activități fizice sau au încetat să le realizeze, 50% au raportat o scădere a calității vieții, iar 57% au raportat faptul că singurătatea a crescut față de perioada pre-pandemică, conform unui studiu realizat în Irlanda (Bailey *et al.*, 2021). Regulile de carantină impuse populației au avut un impact și asupra creșterii simptomelor depresive și a simptomelor anxioase la adulții vârstnici, potrivit datelor unui studiu realizat în Regatul Unit al Marii Britanii, dar

și al datelor metaanalitice (Prati și Mancini, 2021; Zaninotto *et al.*, 2022), și aceasta în ciuda faptului că studiile relevă că, pe măsura avansării în vârstă, manifestările depresive (Kessler și Bromet, 2013) și anxioase în general scad (Bandelow și Michaelis, 2015).

Înrăutățirea stării de sănătate a adulților vârstnici, atât psihice, cât și fizice, poate fi explicată și de apariția unor provocări și modificări la nivelul rutinei zilnice sănătoase. Spre exemplu, adulții vârstnici au avut unele provocări în a menține o dietă alimentară sănătoasă pe parcursul pandemiei, potrivit unei metaanalize (Elisabeth *et al.*, 2021), au avut dificultăți mai ridicate în realizarea exercițiilor fizice zilnice, potrivit analizelor sistematice și a unui studiu realizat pe adulții vârstnici din Japonia (Cunningham și O' Sullivan, 2020; Harangi-Rákos *et al.*, 2022; Suzuki *et al.*, 2020), adulții vârstnici, într-un studiu realizat în SUA, au menționat faptul că au consumat mai mult alcool (Emerson, 2020). Un alt studiu realizat în Franța a subliniat faptul că adulții vârstnici au fumat mai mult (Constant *et al.*, 2020), iar un studiu realizat în Belgia a relevat faptul că adulții vârstnici au dormit mai puțin, totodată somnul fiind și mai puțin odihnitor (De Pue *et al.*, 2021). Sunt o serie de rezultate ale cercetărilor care atestă faptul că menținerea stilului de viață sănătos și menținerea obiceiurilor sănătoase sunt toate asociate cu sănătatea psihică și fizică (Blondell *et al.*, 2014 ; Potter *et al.*, 2008; Wendel-Vos *et al.*, 2004).

Înrăutățirea stării de sănătate a adulților vârstnici poate să fie explicată și de dificultățile de accesare a unor programe medicale, ca urmare a barierelor impuse de utilizarea deficitară a tehnologiei. În perioada pandemiei au existat programe profilactice și de intervenție pentru diferite tulburări care au fost însă oferite doar în format online. De exemplu, în Statele Unite ale Americii a fost semnalată dificultatea beneficiarilor vârstnici de a accesa programele terapeutice pentru dependența de alcool și droguri (Satre *et al.*, 2020).

Scăderea stării de bine a adulților vârstnici a fost mai puternic resimțită în cazul femeilor, a persoanelor care locuiau singure, a celor cu un statut socio-economic mai scăzut (Zaninotto *et al.*, 2022), a celor care aveau probleme medicale preexistente atât fizice, cât și psihice (Pierce *et al.*, 2020; 2021) sau a celor care au manifestat niveluri mari ridicate ale fricii (Kivi *et al.*, 2021). Studiile realizate pe populația din Israel, spre exemplu, atestă faptul că adulții vârstnici au avut dificultăți și cheltuieli emoționale mai mari, pe parcursul pandemiei, dacă simțeau că sunt mai aproape de moarte (Ring *et al.*, 2020), dacă resimțeau, pe parcursul pandemiei, discriminare sau că au fost supuși la multiple prejudecăți negative și stereotipuri negative, referitoare la vârsta avansată (Bergman *et al.*, 2020). Pe lângă toți acești factori care au fost asociați cu deteriorarea stării de bine, au fost identificați și câțiva factori care au fost asociați cu cheltuieli emoționale mai reduse, iar aici pot fi menționate credințele religioase, în cazul adulților vârstnici, într-un studiu realizat în Statele Unite ale Americii (Whitehead și Torossian, 2021), menținerea unui stil de viață activ din punct de vedere fizic în cazul adulților vârstnici, într-un studiu derulat în Japonia (Suzuki *et al.*, 2020), menținerea comunicarii sociale la un

nivel satisfăcător pentru adulții vârstnici, într-un studiu realizat în Elveția (McDonald și Hulur, 2021) și, nu în ultimul rând, accesarea posibilității de a ieși mai des în natură pentru adulții vârstnici, studiul fiind realizat pe un eșantion de adulți vârstnici din Statele Unite ale Americii (Bustamante *et al.*, 2022). O altă resursă care a fost utilizată de către adulții vârstnici în perioada pandemiei, cu scopul de a-și menține starea de bine, a fost muzica. Ascultarea muzicii a indus sentimente pozitive sau a contribuit la reducerea efectelor emoționale negative (Groarke *et al.*, 2022).

O altă consecință a pandemiei a fost reprezentată de resimțirea singurătății, potrivit studiilor realizate pe adulții vârstnici din Europa și America de Nord (Parlapani *et al.*, 2021; Savage *et al.*, 2021; Whatley *et al.*, 2020), în special de către vârstnicii care aveau probleme de sănătate și beneficiau de asistență sau ofereau ei la rândul lor asistență unui covârstnic dependent (Savage *et al.*, 2021), dar și de către vârstnicii cu dificultății financiare (Whatley *et al.*, 2020). În mod tipic, singurătatea nu are un tipar de manifestare în funcție de vârstă și nu este asociată cu vârsta, potrivit studiilor (Mund *et al.*, 2020), deși mulți ar fi tentați să considere că avansarea în vârstă este intrinsec asociată cu singurătatea. Este adevărat că, pe măsura avansării în vârstă, numărul contactelor sociale se diminuează (Lang, 2000), dar calitatea relațiilor sociale păstrate compensează aceste diminuări cantitative (Man, 2017), ori singurătatea este definită ca și aprecierea subiectivă a izolării (Wu, 2020) și nu neapărat ține de contabilizarea numărul contactelor sociale. Pe parcusul pandemiei, singurătatea și izolarea au reprezentat unele dintre sursele cele mai puternice de stres și preocupare, alături de teama pentru siguranța celor apropiați și stresul generat de restricțiile impuse de autorități (Whitehead și Torossian, 2021). De cealaltă parte, printre cele mai puternice surse de bucurie în perioada pandemiei la persoanele vârstnice a fost identificată posibilitatea de a intra în contact cu cei dragi prin mijloacele de teleprezență (Whitehead și Torossian, 2021).

3. ADULȚII VÂRSTNICI ÎN TIMPUL PANDEMIEI COMPARATIV CU CELELALTE CATEGORII DE ADULȚI

Cu toate aspectele negative menționate anterior, se constată că adulții vârstnici au făcut față pandemiei mai bine, dacă se compară modul în care au reacționat adulții din celelalte categorii de vârstă, pandemia fiind o provocare nu numai pentru adulții vârstnici (Popa *et al.*, 2022). Adulții vârstnici au prezentat mai puține probleme emoționale (Lebrasseur *et al.*, 2021) și și-au revenit mai repede, comparativ cu ceilalți adulți (Schlomann *et al.*, 2021). Dacă se analizează situația și mai specific, se constată că adulții vârstnici, când au fost comparați cu adulții tineri, au prezentat mai puține manifestări anxioase (Huang și Zhao, 2020). 7% dintre adulții vârstnici, potrivit unui studiu din Statele Unite ale Americii, în perioada pandemică, prezentau manifestări depresive comparativ cu 21% în cazul adulților cu vârsta cuprinsă între 18–34 de ani (Daly *et al.*, 2021). Alte studii mai relevă de asemenea că adulții vârstnici au prezentat mai puține simptome specifice stresului posttraumatic

(González-Sanguino *et al.*, 2020), au făcut mai bine față singurătății (Li și Wang, 2020), au folosit strategii de coping mai eficiente pe parcursul pandemiei (Klaiber *et al.*, 2021), au fost mai puțin înclinați să recurgă la consumul de substanțe pentru a face față adversităților generate de pandemie (Czeisler *et al.,* 2020), au luat mai puțin în considerare suicidul (Czeisler *et al.,* 2020), au recurs mai mult în perioada pandemiei la activități solitare plăcute (Emerson, 2020), totodată și-au modificat mai puțin așteptările și gândurile referitoare la procesul de îmbătrânire (Whatley *et al.*, 2020). Prin urmare, adulții vârstnici au fost mai rezilienți, comparativ cu celelalte categorii de adulți.

Printre explicațiile aduse de literatura de specialitate în ceea ce privește reziliența mai ridicată a adulților vârstnici, comparativ cu adulții tineri și adulții de vârstă mijlocie, pe parcursul pandemiei, se numără și următoarele: adulții vârstnici au avut mai multe experiențe și s-au confruntat mai des în perioada pre-pandemică cu reducerea numărului de contacte sociale, așa cum s-a menționat și mai sus, fie că această reducere a fost voluntară (Lang, 2000), fie datorată decesului celor din jur. Acest lucru, subliniază literatura de specialitate, ar putea explica reducerea sensibilității față de singurătate și implicit o reducere a sensibilității față de limitarea contactelor sociale generată de contextul pandemic (Palgi *et al.,* 2020). Totodată, impactul mai redus al izolării sociale și al regulilor de distanțare socială, generate de pandemie, asupra adulților vârstnici, ar putea fi explicat și de faptul că, pe parcursul vieții, relațiile sociale sunt valorizate după criterii diferite, iar satisfacția obținută din relaționarea socială este calculată diferit de adulții tineri și de adulții vârstnici. Tinerii acordă o importanță deosebită frecvenței întâlnirilor cu cei apropiați, pe când adulții vârstnici se orientează mai mult pe calitatea relației în sine și nu pe frecvența contactului direct cu apropiați (Nicolaisen și Thorsen, 2016). Pandemia, prin măsurile de izolare și distanțare socială, a interferat cu frecvența relaționării sociale directe și nu neapărat cu calitatea relațiilor sociale. Prin urmare, modul în care adulții vârstnici au reacționat la singurătate ar putea să explice reziliența mai ridicată a acestora, comparativ cu adulții din celelalte categorii de vârstă. De altfel, studiile relevă și faptul că, pe parcursul pandemiei, singurătatea a fost principalul factor de risc pentru manifestarea depresiei și a anxietății (Palgi *et al.,* 2020) și a reprezentat una din principalele surse de stres, așa cum s-a menționat și anterior (Whitehead și Torossian, 2021).

Tot literatura de specialitate explică reziliența mai ridicată manifestată de adulții vârstnici pe baza experienței mai vaste în confruntarea cu boala sau cu riscul bolii, comparativ cu celelalte două categorii de adulți, adulții tineri și adulții de vârstă mijlocie (Palgi *et al.,* 2020). Este cunoscut faptul că multe afecțiuni medicale tind să apară mai frecvent pe parcursul avansării în vârstă (Man, 2017).

Studiile pre-pandemice referitoare la reziliență evidențiază că avansarea în vârstă este asociată cu multiple resurse emoționale, semnalând apariția unor diferențe și avantaje în ceea ce privește reglarea emoțională (Charles și Carstensen, 2010). Aceste avantaje sunt susținute de altfel și de o modalitate distinctă de procesare a

informației cotidiene, astfel că informației cu conotație pozitivă i se acordă prioritate, comparativ cu informația cu conotație negativă. Acestă strategie, de prioritizare a informațiilor pozitive, este frecvent amintită atunci când se explică diferențele dintre adulții vârstnici și celelalte categorii de vârstă în ceea ce privește reglarea emoțională (Man, 2017). Când s-a investigat cum anume adulții vârstnici au făcut față contextului pandemic, s-a constatat că această strategie, utilizată în perioada pre-pandemică, și anume centrarea pe aspectele pozitive ale contextului, a fost utilizată frecvent și în pandemie de către adulții vârstnici (Fuller și Huseth-Zosel, 2021; Karmann *et al.,* 2023). Totodată, studiile pre-pandemice relevă prezența și a altor strategii, strategiile de evitare activă a situațiilor negative, conflictuale, concomitent cu concentrarea atenției pe alte activități, pentru a face față disconfortului (Birditt și Fingerman, 2005). Această strategie, la fel, s-a evidențiat că s-a folosit și pe parcursul pandemiei. Adulții vârstnici s-au distanțat de stimulii stresanți, au evitat activ anumite activități care aminteau de pandemie și și-au concentrat atenția pe alte activități nerelaționate cu pandemia, în încercarea de a face față disconfortului (Karmann *et al.,* 2023).

De cealaltă parte, explicațiile referitoare la reziliența regăsită la adulții vârstnici, comparativ cu adulții din celelalte categorii de vârstă, pe parcursul pandemiei, ar putea să se rezume la o simplă diferență de exprimare verbală. Literatura de specialitate menționează că există diferențe în exprimarea și descrierea emoțiilor între adulții tineri și adulții vârstnici (Sterina *et al*., 2022). Totodată, reziliența ar putea fi explicată de o simplă dificultate a adulților vârstnici de a diferenția stările emoționale pe care le-au experimentat pe parcursul pandemiei de cele pe care le experimentează ca urmare a îmbătrânirii naturale, prin urmare, reziliența ar fi generată și de confuzia dintre disconfortul emoțional produs de pandemie cu cel aferent procesului natural de îmbătrânire (Sterina *et al.,* 2022).

4. CONCLUZII

Adulții vârstnici se confruntă cu multe provocări, în mod obișnuit, de la limitările de mobilitate, până la unele atitudini discriminatorii; însă maniera în care aceștia au traversat perioada pandemiei relevă existența unor resurse importante și relevă de asemenea reziliența. În ciuda faptului că pe parcursul pandemiei s-au înregistrat scăderi ale stării de bine fizice și psihice, se constată totodată că aceste diminuări sunt mai reduse comparativ cu diminuările stării de bine de la nivel fizic și psihic, înregistrate la celelalte categorii de adulți.

Studiile viitoare ar putea să propună și să analizeze eficiența unor programe de intervenție și suport, conduse de către adulții vârstnici pentru celelalte categorii de vârstă, de exemplu pentru adulții tineri izolați sau care suferă de singurătate. Este mai mult studiată nevoia de intervenție pentru adulții vârstnici (Behrendt *et al.,* 2022), dar mai puțin este studiată posibilitatea ca adulții vârstnici să acționeze ca și surse de suport pentru ceilalți adulți. Totuși, cunoașterea grupurilor de risc,

care au înregistrat o înrăutățire a stării de bine, cum ar fi persoanele cu comorbidități, persoanele vârstnice dependente de un îngrijitor formal sau informal, persoanele supuse discriminării de vârstă, persoanele izolate, are o utilitate în elaborarea unor planuri de intervenție pentru posibilele situații din viitor, în care rutina zilnică ar putea fi perturbată din diferite rațiuni.

Studiile viitoare ar putea lua în considerare și analiza detaliată a folosirii roboților în asistarea adulților vârstnici din grupurile relevate de această analiză ca fiind vulnerabile, de exemplu a celor care au dificultăți de mobilitate și sunt dependenți de cei din jur sau sunt izolați.

Primit în redacție la: 25.09.2023

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REZUMAT

Debutul pandemiei COVID-19 a produs o serie de modificări, în rutina zilnică, pentru mulți adulți. Acest lucru a ridicat unele bariere pentru populația vârstnică, ținând cont de faptul că au fost elaborate unele reglementări folosindu-se și criteriul vârstei cronologice. Articolul de față analizează impactul pe care l-a avut pandemia asupra stării de bine a adulților vârstnici. Pandemia a diminuat starea de bine fizică și psihică a adulților vârstnici și a adulților în general, însă studiile arată că dintre toți adulții, cei vârstnici au fost aceia mai rezilienți. Totodată, se constată că nu toți adulții vârstnici au înregistrat diminuări la nivelul stării de bine, dar s-au evidențiat, totuși, anumite categorii care au fost mai vulnerabile în fața contextului generat de pandemie, cum ar fi spre exemplu: adulții vârstnici dependenți, care au fost supuși discriminării, adulții vârstnici cu resurse materiale limitate sau adulții vârstnici cu probleme medicale preexistente.

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