Envisioning the future: A neuropsycho-pedagogical intervention on resilience predictors among inmates during the pandemic

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Abstract

Research about the predictors of resilience in the inmate population needs further explorations. This study examines the predictors of resilience in male inmates from Padua prison, before and after a 9-session neuropsychopedagogical intervention, entitled Envisioning the Future (EF), which took part in remote during Covid-19 pandemic. Using two linear regression models, a change in the factors determining inmates' resilience was found from before to after the intervention. In the pre-course group (n = 24), only low avoidance emerged as a statistically significant predictor of the level of resilience. In the post-course group (n = 24) low avoidance, flexibility, high levels of social support, and self-efficacy in managing positive emotions emerged as significant predictors of inmates' resilience. The results show that the constellation of factors predicting resilience in prisoners can be enriched by participating to neuropsychopedagogical interventions like EF, that increases individuals' resources in a challenging context such as prison.

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Introduction

Resilience in the prison context during Covid-19 pandemic

According to the American Psychological Association resilience is "the process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioral flexibility and adjustment to external and internal demands" (APA Dictionary of Psychology, 2022). The taxonomy of resilience proliferated in literature, resulting in a multiplicity of definitions (White & McCallum, 2021). Commonly psychologists identify resilience as the ability of individuals to adaptively handle and cope with adverse events (Luthar et al., 2006). Although the metaphor inspired by metal physics of resilience as the ability to 'bend without breaking', humans who experience adversities and traumas do not naturally return to the biopsychosocial state prior to the event (Allen, 2011). In fact, the negative event can awaken and strengthen the vital resources of those who experience it (Grotberg, 1995; Cyrulnik, 2001), testing their emotional stamina (Wagnild & Young, 1990). In this sense, resilience is a response to adversities which brings the opportunity to learn about one's potential, improving oneself and reprogramming individual future while coping with a high level of stress (Connor and Davidson, 2003). In addition, resilience is not a static characteristic in the person, but a dynamic and ever-evolving factor (Herrman et al., 2011). Although different theoretical models base the explanation of resilience on the individual or on contextual variables (Masten, 2001), individual resilience is the result of a complex interplay of personal resources, innate ways of being, genetic arrangements, coping skills, and contextual characteristics (Grych et al., 2015). Thus, in a psycho-pedagogical conception, resilience can be trained (O'Doughterty, 2012), representing a resource for the well-being of individuals and society (Cyrulnik, 2001; Richardson, 2002), even in the most challenging contexts for adaptation, including prison.

Research has shown that the experience of incarceration is associated with psychological distress (Sykes, 1958). The incarcerated population, across gender, tends to develop depressive symptoms, psychotic symptoms, substance abuse and, post-traumatic stress disorder more

frequently than the normative population (Fazel et al., 2016; Baranyi et al., 2018). Such symptomatology occurs more frequently during initial incarceration and/or if the person presents risk factors for the onset of PTSD, such as previous psychiatric symptoms (Fovet et al., 2022). Covid-19 pandemic worsened inmates' mental health wellbeing as they had to spend time locked in one's cell to prevent and contagion, feeling trapped, isolated, and neglected (Kothari et al., 2022; Kim et al., 2022).

During Covid-19 pandemic, the investigation of predictors of individual resilience assumes a central role in understanding how to prevent and counteract psychological suffering and trauma and/or its consequences among inmates. In Italy and in several countries affected by Covid-19, the pandemic in prison represents a risk factor for self-harm, suicide attempts, psychiatric disorders and violent behaviour among prisoners (Hewson et al., 2020; Associazione Antigone, 2011). In some countries, the emergency has caused the courts to postpone trials, lengthening the time in prison of several inmates (Hewson et al., 2020), thus increasing their distress and perception of uncertainty about the future, already naturally associated with waiting in the penal circuit (Freeman & Seymour, 2010). The pandemic has also aggravated prisoners' perceptions of social isolation (Vignali, 2021) as the contacts with the outside world were reduced, both in terms of visits from relatives and access to psychological support services (Johnson et al., 2021; Ronco, 2020). From today's perspective, resilience can be a resource that inmates can draw on through educational interventions for two main purposes: (i) to cope with the challenges of the prison context in an adaptive way, including difficulties related to the international health emergency, (ii) to increase personal well-being towards the future reintegration into the community, which represents a complex adaptive process (Lorenzon, 2020).

Predictors of resilience in prison and interventions to promote it

Several studies have investigated the factors determining resilience in the normative population. Certain coping styles, meant as individual's modalities to cope with stressful events (Cramer, 1998), such as problem-oriented coping (De la Fuente et al., 2017), are associated with resilience: according to this coping mode, persons activate to counteract stressors and their immediate consequences, increasing their resilience. Similarly, flexibility, as the ability to cope with adversity through long-term values and goals, is a predictor of resilience (Hayes et al., 2006). Perceiving oneself as self-efficacious may predispose to goal attainment and, indirectly, to resilience (Judge & Bono, 2001). Self-efficacy is also crucial in regulating emotions since perceiving oneself as able to

modulate the intensity and frequency of positive and negative emotions (Caprara et al., 2008; Perasso & Velotti, 2020) is a key skill for resilience in clinical and subclinical populations (Baghjari et al., 2017; Mestre et al., 2017; Arici-Özcan et al., 2019). An additional predictor of resilience is social support, which increases individuals' ability to proactively cope with difficulties (Ozbay et al., 2007) and trauma (Sippel et al., 2015), as they can rely on a strong network of interpersonal relationships.

Resilience in prison is often investigated as a predictor of mental health (Sygit-Kowalkowska et al., 2017) or as a factor counteracting distress (Wolff & Caravaca Sánchez, 2019). To date only a few studies specifically investigated the predictors of resilience among inmates. Much of the data on the association between these variables comes from retrospective studies on war prisoners. Research on American Vietnam War veterans, who had experienced captivity showed that across a broad constellation of variables (e.g., hierarchical-military status, age at capture, duration of captivity, level of antisociality, level of post-traumatic symptoms after return home, and optimism) the most significant predictor of resilience was the level of individual optimism (Segovia et al., 2012). Maercker et al.'s (2013) study of East German political prisoners retrospectively classified different profiles of recovery from trauma, identifying the resilient profile in the persons who were able to re-narrate their experience and seek social support.

Similarly, a five-year longitudinal qualitative study of adolescents in the juvenile penal circuit revealed that the most resilient young people, who fully recover from the prison experience and positively reintegrate into society, have the following characteristics: determination, optimism, future orientation, defined life goals (Todis et al., 2001). Directly regarding inmates, the ability to make sense of traumatic events prior to incarceration (i.e., sexual abuse) has been shown to determine prisoners' resilience level (Bradley & Davino, 2007), as it implies the ability to regulate emotions, contextualise memories and engage in meaningful relationships with others. The cross-sectional study by Hanik et al. (2021) shows that individual religiosity can also predict prisoners' resilience: trusting God supports adaptation in such a challenging context.

To fully understand resilience in the prison context and its predictors, it is equally important to analyse interventions aimed at promoting it. In the normative population, resilience is promoted mainly through psychotherapeutic interventions. A systematic review of the literature (Helmreich et al., 2017) reports that, in the normative population, the preferred psychotherapeutic interventions to cultivate resilience are

individual or group – preferably face-to-face –, such as cognitive behavioural therapy, acceptance and commitment therapy, mindfulness-based therapy, attentional-interpretive therapy, problem solving-based therapy and stress inoculation therapy. Some of these treatments have recently been tested on inmates: cognitive behavioural therapy has been shown to be effective in directly increasing prisoners' resilience (Budiyoo & Sugiharto, 2020); similarly, prisoners practicing Acceptance and Commitment Therapy were found to have higher levels of cognitive flexibility and resilience compared to a control group (Valizadeh et al., 2020). Finally, integrated forms of therapy, with a focus on spirituality, can be effective in promoting prisoners' resilience and decreasing symptoms of anxiety and depression (Rezaei & Mousavi, 2019). However, to date there is little evidence regarding the practice of interventions that educate prisoners on resilience through a neuropsychopedagogical focus.

A neuropsychopedagogical intervention focused on resilience: Envisioning the Future

In Italy, Envisioning the Future (EF) is one of the rare research experiences (Augelli et al., 2017; Busetti et al., 2018; Galli et al., 2018) aimed at improving prisoners' well-being through education and, to date, the first Italian neuro-psycho-pedagogical pathway to increase inmates' resilience levels. Envisioning the Future was developed by Patrizio Paoletti Foundation within the interdisciplinary framework of Pedagogy for the Third Millennium (PTM) (Paoletti, 2008) and, in particular, within the Sphere Model of Consciousness (SMC) (Paoletti, 2022; Paoletti & Dotan Ben Soussan, 2019). The intervention aims to increase physical, psycho-emotional, relational, spiritual, and work resources to restore persons' hope in the future (Snyder, 2000; Paoletti, 2008). The intervention aims to trigger the transition from the reactive mind to the conscious mind (Paoletti, 2008) through: theoretical notions on brain functioning in a state of stress, management and transformation of emotions, meditation practices. The reactive mind automatically responds to contextual stimuli favouring the onset of frustration, anxiety and stress. Conversely, the conscious mind, based on the regulation of automatic emotional and behavioural responses, through the activation of the functions of the prefrontal cortex (related to intention, reasoning, emotion management, planning), favours awareness of individual psycho-physical state, the intentional use of a proactive language to re-signify the experience, emotion regulation and the reprograming of individual future. For inmates, the shift from the reactive to the conscious mind is a fundamental resource to rethink their lives in the

present and in the future. To achieve this goal, EF nine sessions – led by psychologists and neuroscientists – convey basic information on automatic and conscious mental functioning and provide participants with strategies and practical tools for self-improvement and resilience education.

EF, revisited ad hoc for the prison reality, is structured on a thematic pathway presenting ten keys to resilience, a summary of the main scientific findings on resilience, well-being and related neural correlates (Korb, 2015; Tabibnia & Radecki, 2018; Paoletti, 2018; Tabibnia, 2020), deepening how it is possible to recover from uncertainty and stress, training in everyday life through practical exercises. In Italy EF was conducted, with encouraging results, with communities of earthquake victims (Di Giuseppe et al., 2023 in press), and juvenile penal justice circuit educators (Paoletti et al., 2022b). According to the Sphere Model of Consciousness and its principles (Paoletti, Selvaggio, 2011a, 2011b; 2012; 2013): the first block of keys/sessions (1-2-3) deepen the principle of Observation as the ability to neutrally intercept automatic responses and activate an active reflection towards intentional and proactive responses to stimuli. The second block (keys/sessions 4-5-6) refers to the pedagogical idea of Mediation, working on the recognition and management of both positive and negative emotions to increase self-motivation and search for meaning and purpose, through resilience models and values; the third block (keys/sessions 7-8) refers to the pedagogical principle of Translation and stresses the importance of self-determination and connection with the others, valuing every experience as a learning and improvement opportunity; the fourth block (keys/sessions 9-10) refers to the pedagogical idea of Normalisation and guides the subject to continually re-signify the experience through a proactive narration through psycho-body techniques based on Silence and Prefiguration. EF, in Italy, is also one of the first scientific interventions that brings meditation practices in prison. The benefits of this type of interventions have been deepened by a wide strand of literature, which attests meditation benefits on biopsychosocial well-being, emotional regulation, and prevention of recidivism among inmates (Vannoy et al., 2004; Rucker, 2005; Samuelson et al., 2007; Sumter et al., 2009; Perelman et al., 2012; Dafoe & Stermac, 2013; Kristofersson & Kaas, 2013; Griera & Clot-Garrell, 2015).

Study Aim

The present study aims to explore the relationship between the variables associated with resilience among inmates, deepening eventual differences in the constellation of predictors of individual resilience at

two different moments of daily life in the prison, namely before and after the EF educational path, focused on resilience and the education about its dimensions and correlates.

Method

Participants

The sample includes two sub-groups of male inmates of the prison of Padua who voluntarily took part in the Envisioning the Future program and the related study. Participants were selected by pedagogical referents on the basis of individuals' will to participate and their capacity to understand and speak Italian. All the participants were "medium-security level" inmates: this label, according to Italy's law (DAP n. 3359/5890, April 21st, 1993,) refers to not particularly vulnerable and dangerous prisoners, who have committed different types of crimes that cannot be classified in the " high-security level" (e.g., which includes belonging to criminal organizations, committing terrorism, having high roles in drug-dealing). To participate, inmates had to complete an informed consent form about the research and the data treatment, guaranteeing the anonymity in the participation. Twenty-four inmates (Males = 100%; average age = 42.89, SD = 9.53; average years of imprisonment already served = 5.81, SD = 5.07) completed scientific questionnaires before the EF programme (Group 1). Twenty-four inmates (M = 100%; average age = 42.79, SD = 10.34; average years of imprisonment already served = 5.89, SD = 4.18) completed the same questionnaires after the EF programme (Group 2).

Measures

To measure the inmates' scores on the variables of interest (i.e., resilience, coping, self-efficacy in managing emotions), four questionnaires were administered. i. The Resilience Scale-14 (RS14; Wagnild & Young, 1993; Callegari et al., 2016): through 14 items on a Likert scale from 1 to 7 (1 = strongly disagree, 7 = strongly agree) it measures the individual's level of resilience as "emotional stamina" by investigating personal purpose, perseverance, self-confidence, equanimity and existential loneliness. ii. The Connor-Davidson Resilience Scale-10 (CD-RISC-10; Connor & Davidson, 2003; Di Fabio & Palazzeschi, 2012; Ehrich, Mornane & Powern, 2017): through 10 items on a Likert scale from 1 to 5 (1 = not at all true, 5 = almost always true) it measures the level of resilience as the ability to cope with stress, investigating subdimensions such as flexibility, self-efficacy, emotional regulation, optimism, cognitive focus. iii. The Scales of Personal Self-

efficacy in the Management of Negative and Positive Emotions (APEN/A - APEP/A; Caprara & Gerbino, 2001): through 15 items on a Likert scale from 1 to 5 (1 = not at all capable, 5 = fully capable), the scales assess the level of personal self-efficacy in the management of both negative and positive emotions. iii. The COPE-NVI questionnaire (Coping Orientation to the Problems Experienced-New Italian Version) (Sica et al., 2008): through 60 items on a Likert scale from 1 to 4 (1 = I usually don't do it, 4 = I almost always do it) it measures 5 dimensions of coping (e.g., social support; avoidance; positive attitude; problem orientation; transcendental orientation).

Procedures

The present research is part of Envisioning for the Future (EF) experience. EF was developed and conducted by the Fondazione Patrizio Paoletti and carried out among inmates in collaboration with the Padua prison and the University of Padua. The study was approved by University of Padua ethical committee on June 15th, 2022. The project was co-founded by Fondazione Mediolanum Onlus. (dossier code: 2020-III/13.41.4). EF and the related research were conducted in Padua's "Casa di reclusione" (house of confinement), a penitentiary facility that hosts prisoners condemned with a final sentence higher than five years. The study took part when the pandemic emergency was at its peak (May 2021-July 2021) and the prison was overcrowded (i.e., 500 inmates with a capacity of 440).

EF was led by trainers experienced in the Pedagogy for the Third Millennium (PTM) (Paoletti, 2008; Paoletti, Selvaggio, 2012), and included four live webinars of 180 minutes each and 5 sessions of 60 minutes, combining notions and practical exercises about resilience, deepening "The Ten Keys to Resilience". In each session, moments of group interaction were solicited, with space for questions and insights into the daily practice of the suggested techniques. The pandemic framework, a "new normal" that has changed the horizons of individuals and the social norms of reference (Bozkurt & Sharma, 2020; Paoletti et al., 2022a), implied addressing the global challenge of the digitization of psycho-pedagogical and educational interventions (Bozkurt, 2022), leading to the remote delivery of all the sessions of EF.

Analytic Plan

Two different linear regression models were computed for the two groups, with the dependent variable being resilience (measured by RS14), according to the definition of "emotional stamina" by Wanglid and Young (1990). The independent variables (or predictors) were

imputed in blocks, where block 1 included self-efficacy in managing positive and negative emotions (measured with APEN; APEP), block 2 coping skills measured with COPE-NVI (i.e., social support, avoidance, problem orientation, transcendental orientation, positive attitude), block 3 flexibility, self-efficacy, emotional regulation, optimism, cognitive focus (resilience dimensions focused on coping with stress, measured by CD-RISC-10).

Results

Results from two linear regression models indicated different resilience predictors in the two groups. In Group 1 (pre-EF), resilience (as measured by RS14) was determined only by low avoidance (β = -.64, p<.05), in a model that explained 69% of the variance (R2 = .69) (Table 1). In group 2 (post-EF) resilience (as measured by RS14) is determined by low avoidance (β = -.34, p<.05), flexibility (β = .56, p<.05), self-efficacy in managing positive emotions (β = .51, p<.05) and perceived social support (β = .56, p<.05), in a model explaining 88% of the variance (R2 = .88) (Table 2).

Tab. 1 - *Linear Regression Model of Group 1*

	Unstand. Coefficients		**Stand. Coefficients**		
Variables	**B**	**SDE**	**Beta**	**t**	**Sig.**
(Costant)	,01	1,21		,01	,99
Self Efficacy in managing Negative emotions	,17	,41	,10	,41	,69
Self Efficacy in managing Positive emotions	-,34	,52	-,19	-,65	,53
Social Support	,40	,20	,45	2,03	,07
Avoidance	-,74	,26	-,64	-2,82	,02*
Problem orientation	,63	,74	,36	,85	,42
Trascendence orientation	-,65	,44	-,40	-1,48	,17
Positive attitude	,37	,39	,27	,95	,36

Fexibility	3,07	1,91	,54	1,61	,14
Self Efficacy	-2,19	2,17	-,59	-1,01	,33
Emotion regulation	-1,10	2,43	-,13	-,45	,66
Optimism	2,73	1,29	,84	2,11	,06
Cognitive Focus	-3,26	1,56	-,54	-2,09	,06

*Significancy level at $p<.05$

Tab. 2 - *Linear Regression Model of Group 2*

	Unstand. Coefficients		**Stand. Coefficients**		
Variables	**B**	**SDE**	**Beta**	**t**	**Sig.**
(Costant)	-,26	1,36		-,19	,85
Self Efficacy in managing Negative emotions	,90	,77	,28	1,16	,27
Self Efficacy in managing Positive emotions	1,39	,43	,50	3,26	,01*
Social Support	1,26	,50	,56	2,50	,03*
Avoidance	-,64	,28	-,34	-2,30	,04*
Problem orientation	-,78	,49	-,29	-1,60	,14
Trascendence orientation	,08	,43	,03	,19	,85
Positive attitude	,03	,56	,01	,05	,96
Fexibility	4,14	1,41	,57	2,93	,01*
Self Efficacy	1,10	1,70	,23	,65	,53
Emotion regulation	-2,58	2,78	-,20	-,93	,37
Optimism	-1,97	,97	-,45	-2,03	,07
Cognitive Focus	-,61	2,42	-,06	-,25	,81

*Significancy level at $p<.05$

Discussion

Envisioning the Future (EF) is one of the still rare psychopedagogical experiences in Italy underlying the improvement of prisoners' well-being (Augelli et al., 2017; Busetti et al., 2018; Galli et al., 2018) and is the only intervention with a specific neuropsychopedagogical focus on resilience. Prior to the programme, the resilience of inmates in Padua prison appeared exclusively associated with a low use of avoidance as a coping strategy. In the nomenclature of coping, understood as the modality or style with which the individual takes action to cope with contextual stressors (Cramer, 1998), avoidance means evading the problematic situation and the emotions connected to it. According to Rutter (1993) resilience cannot be produced by avoidance, but rather by gradual exposure to adversity. In line with this framework, the result obtained reports that, in a context such as prison, being able to face difficulties rather than running away from them predicts a higher level of resilience.

After EF, the constellation of predictors associated with resilience resulted strengthened, both in terms of explained variance and in terms of the amount of statistically significant predictors. In inmates trained in resilience, its neural correlates, and dimensions, resilience was not only determined by low avoidance but also with high levels of social support, flexibility and self-efficacy in managing positive emotions. In agreement with previous studies supporting the association between social support and resilience (Ozbay et al., 2007; Sippel et al., 2015), high levels of social support for the inmates represent the possibility of achieving a higher level of psychosocial well-being and a higher long-term quality of life when reintegrated into society (Jacoby & Kozie-Peak, 1997). It can be hypothesised that participation in EF counteracted inmates' perceptions of social isolation (Hewson et al., 2020; Johnson et al., 2021) triggered by the pandemic, which limited contact with key sources of social-emotional support (e.g., family members, psychological support services) (Wallace et al., 2014). Indeed, more prisoners simultaneously participated in EF sessions, where the group was used as a catalyst for individual change (Imel, 1999; Guarino & Serantoni, 2008). In this sense, the training may have fortified the sense of community (Wenger, 1999), reinforcing the sense of belonging, mutual support, and bonds within the group of inmates, and fostering the understanding of social connections as a fundamental resource to face adversities.

Flexibility also emerges as a determinant of prisoner resilience. Flexibility is the ability to implement shifting, at behavioural or cognitive level, and it leads persons to maintain a lasting balance in the

resources individual deploys in different life-domains, promoting high level of awareness and open-mindedness (Kashdan & Rottenberg, 2010). Indeed, it should be noted that, in some psychopathological conditions, flexibility is absent or replaced by cognitive rigidity (Nolen-Hoeksema et al., 2008). In the past, the literature has identified flexibility as a protective factor with respect to trauma exposure and the subsequent impact on mental health (Galatzer et al., 2012; Bryan et al., 2015). Recent research on the impact of the pandemic on individuals' health has identified coping based on psychological flexibility as a protective factor for anxiety, depression, stress and insomnia (Arslan & Allen, 2021; McCracken et al., 2021), as well as a predictor of resilience (McCracken et al., 2021). The association between flexibility and resilience, which emerges after the participation to EF, assumes a peculiar significance for the prisoners: the influence of the daily techniques transmitted through the training (e.g., silence and meditation) facilitates inmates' awareness and capacity to re-plan their future (Paoletti, Selvaggio, 2011; 2012; 2013) with a greater flexibility and, consequently, greater resilience.

In line with studies on different populations and age groups (Arici-Özcan et al., 2019), present study highlights that perceiving oneself as self-efficacious in managing positive emotions is a determinant factor for prisoners' resilience levels. In a challenging context for mental health such as prison (Sygit-Kowalkowska et al., 2017), made even more complex by pandemic-related isolation (Hewson et al., 2020; Johnson et al., 2021), self-efficacy in managing emotions allows to regulate the frequency and intensity of emotions (Perasso & Velotti, 2020), and to maximize the moments in everyday life marked by joy and appreciation for life itself (Caprara et al., 2008).

The present research has several limitations. The use of self-report questionnaires could have caused a social desirability bias in participants' responses (Dicken, 1963), made even more accentuated by the perception of stigma among inmates (LeBel, 2011) that might have distorted the responses to show a good behavior. In addition, the complex context in which the research took place (Ferreccio & Vianello, 2014) required particular care in personal data management: in order to ensure maximum confidentiality in the compilation of questionnaires, it was not possible to use identification acronyms and, consequently, to longitudinally analyse the levels of resilience of the same subjects over time. Neverthless, the present research was developed to analyse the predictors of resilience in prison, before and after the EF, which focused on educating inmates about resilience. An increased awareness of what resilience is, its neural correlates and dimensions has led to an enrichment of the constellation of resilience predictors among inmates.

The results also attest that neuropsychopedagogical interventions can be successfully implemented in remote since EF represented a timely response to the global emergency challenge for digitalization in educational systems (Bozkurt & Sharma, 2020; Bozkurt, 2022), regarding not exclusively schools but all the institutions where education is needed.

Conclusion

The study is one of the first in Italy to analyse the predictors of resilience in inmates, considering the effect of the neuro-psycho-pedagogical intervention Envisioning the Future (EF) on the relationship among the variables associated with resilience. Before the intervention inmates' resilience was only determined by low avoidance. After being educated about resilience through EF, a constellation of resilience-determining variables emerged, such as low avoidance, high flexibility, high self-efficacy in regulating positive emotions, and perception of social support. In light of the pandemic and the need to conduct the training remotely, the study lays the groundwork for subsequent investigations regarding predictors of resilience among inmates and the effective neuropsychopedagogical strategies to enrich the constellation of variables that determine it.

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