**Mindfulness and self-compassion mediate increased psychological
wellbeing in penitentiary officers with a mental training based on mindfulness,
ethics and compassion: An exploratory study**

Skaiste Kerusauskaite¹, Luca Simione², Salvatore G. Chiarella¹, Lucia Calabrese¹, Susanna
Sardilli³, Dario Girolami³, & Antonino Raffone^{1,3,4}

¹*Department of Psychology, Sapienza University of Rome, Italy.*

²*Institute of Cognitive Sciences and Technologies (ISTC), CNR, Rome, Italy.*

³*Arco Zen Center, Rome, Italy.*

⁴*School of Buddhist Studies, Philosophy, and Comparative Religions, Nalanda University, Rajgir,
India.*

Abstract

Numerous studies alarm about stressfulness of penitentiary working environment and consequent mental health issues. To aid this problem an integrated mindfulness, ethics and compassion training program was implemented. Its efficacy on the well-being improvement was measured by four markers: general health, satisfaction with life, affect (both positive and negative) and anxiety. Additionally, a mediating role of mindfulness and self-compassion was explored. The results revealed that after the course participant's anxiety and negative affect decreased, while positive affect and satisfaction with life increased. These improvements in wellbeing were mediated by both mindfulness and self-compassion variables.

Keywords: Meditation; Right mindfulness; Compassion; Penitentiary; Anxiety; Affect;
Satisfaction with life; Wellbeing.

1. Introduction

1.1. Stress factors and burnout in penitentiary officers

Penitentiary personnel, more than other professions, are subject to mental health problems (Ghaddar, Mateo, & Sanchez, 2008), post-traumatic stress disorder (Konda, Reichard, & Tiesman, 2012), and addiction (Campos, Schneider, Bonafé, Oliveira, & Maroco, 2016; Useche et al., 2019). Being in a direct contact with the imprisoned population causes ongoing cognitive, emotional and physical tension (Baudino, 2014; Bezerra, Assis, & Constantino, 2016; Dowden & Tellier, 2004), as well as to exposure to physical abuse and bullying, as observers or as direct participants (Coldwell, Lyons, Bruce, Garner, & Miller, 2011). More than 87% of officers within correction institutions have been victims of verbal, physical or armed assaults (Boudoukha et al., 2013). Aggression in detainees can provoke impulsive reactions in officers, thus creating a vicious circle.

Besides direct contact with detainees, organizational factors may also play an important role in burnout of correctional personnel. Therefore, administrative staff can show even more work-related stress, as compared to operational one (Tewksbury & Higgins, 2006). Common organizational stressors are: high responsibility, work overload, monotony, under-engagement of one's competences, inadequate to the experienced work-related stress retribution, and night shifts interfering with family life (Castle & Martin, 2006). The study of Prati and Boldrin (2011) with personnel of Italian penitentiary institutions highlighted additional stressors due to organizational factors, i.e. unfair telling-offs and poor support from the side of the superiors. Moreover, law enforcement officers often share audacious and masculine culture and tend to stigmatize mental health problems (Workman-Stark, 2017), which diminishes resilience to burnout (Garland, 2004). Penitentiary institutions overtake the hierarchical structure of detainees, contributing to social inequality and poor solidarity among colleagues (Armstrong, Atkin-Plunk, & Wells, 2015).

Furthermore, lack of perceived procedural justice at work is one of the most powerful factors in predicting turnover of correctional staff (Lambert, 2001).

Finally, detention personnel is under a role conflict, having to take two equally important responsibilities: to maintain the security and discipline inside the institution, and to engage in rehabilitation of detainees (Ghaddar, Matteo, & Sanchez, 2008). Due to lack of formation for the second of these, penitentiary personnel often experience an emotional dissonance, i.e. a conflict between experienced and poorly expressed emotions (Sbraccia & Vianello, 2010). Such internal conflict may be an antecedent of burnout or exhaustion (Heuven & Bakker, 2003).

1.2. Mindfulness and self-compassion interventions for wellbeing of officers

Several studies have shown that mindfulness-based training is beneficial both for the cognitive functions and mental well-being. (Raffone, Tagini, & Srinivasan, 2010, Siegel, 2007, 2009). When applied in working environment, mindfulness reduces vulnerability to dysphoric states, such as anxiety and depression (Roeser et al., 2013), ensures mastery of stress and emotional states (Klatt, Buckworth, & Malarkey, 2008), reduces turnover, absenteeism and burnout among workers (Dane & Brummel, 2013). A qualitative review of mindfulness-based interventions for employees revealed that majority of them were designed for the reduction of perceived stress (80.6% of the studies), followed by the second target – general well-being and satisfaction with life (34.3%; Eby et al., 2017). As mindfulness training is more beneficial for employees, who report higher perceived stress (Donald & Atkins, 2016), penitentiary personnel should be a proper target group for such training.

Neural correlates, that may explain beneficial mindfulness effect for stress reduction are: reduced activation of amygdala, responsible for oriental reflex correlated to perceived stress (Taren et al., 2015), as well as increased activation of the left hemisphere as opposed to right hemisphere, responsible for negative emotional experience (Hülshager, 2012). To add more, long-term mindfulness practice improves the performance of attentional networks and of the prefrontal medial

cortex (Haselkamp & Barsalau, 2012, Luders et al., 2012, Hauswald, Ubelacker, Leske, & Weisz, 2015), enhancing cognitive functions.

In the prison setting meditative practices are distinguished as one of the most efficient of stress managing techniques (Kristofersson & Kaas, 2013). Mindfulness based practice among detainees is found to be very effective (see meta-analysis of Auty, Cope, & Liebling, 2017) due to its efficiency among numerous clinical populations behind the walls and due to its impact on auto-regulation skills (Dafoe & Stermac, 2013). This leads to improved behavioural measures, such as decreased drug consumption (Bowen et al., 2006) and recidivism (Suarez et al., 2014). More relevant for this study, self-reported psychological wellbeing of detainees was also improved after mindfulness-based interventions, resulting in less perceived stress and anxiety (Ferszt, Miller, Hickey, Maull, & Crisp, 2015) and less negative affect and mood disturbances (Perelman et al. 2012, Samuelson, Carmody, Kabat-Zinn, & Bratt, 2007).

Important to notice that mindfulness-based programs in penitentiary environment were mostly dealing with convicts, meanwhile few studies were intended for wellbeing of officers. This is striking, having in mind, that officers are immersed in the same highly stressful environment and often share similar culture. However, mindfulness-based interventions proved to be efficient for other law enforcement officers. Christopher and colleagues (2016, 2018) conducted mindfulness-based resilience course for police officers and found significant immediate (but not three-month follow-up) effects on organisational stress, anxiety, sleep disturbance and partly burnout, when compared to waiting list control group. These findings were extended by providing novel evidence on post-traumatic stress symptoms reduction, which persisted until five-month follow-up. Negative affect was also reduced after training (Grupe et al., 2019). Ekman (2015) presented a qualitative analysis of a successfully delivered mindfulness and emotion regulation skills pilot course for juvenile justice officers. Mindful breathing exercises were especially helpful for learning to respond to everyday stress. Finally, mindfulness facets (acting with awareness, nonjudging) were predictive

of anger and stress reduction after an MBRT course for police officers (Bergman, Christopher, & Bowen, 2016).

Finally, two more highly efficient psychological interventions: self-compassion and loving-kindness – a mindset of viewing an attentional object with positive emotional attitude – were suggested. They can reduce negative mood and anxiety symptoms and cultivate caring pro-social familial and professional attitude (Hofmann, Grossman, & Hinton, 2011). A self-compassion intervention in penitentiary setting has proven to be effective in reducing criminal thinking of detainees not only straight after the intervention, but also at the two-month follow-up (Rezapour-Mirsaleh, 2021), as well as to be related to their self-control, social connectedness and self-esteem (Morley et al., 2016).

1.3. Right mindfulness

Mindfulness-based interventions took a more significant position in the mainstream psychology since Kabat-Zinn (1990) has developed the Mindfulness-based stress reduction (MBSR) protocol, which helped to elaborate the terms and theory more comprehensible for western scholarly society, and gave start to mindfulness as a therapeutic practice for clinical populations (Kabat-Zinn, 2003), especially in the treatment of anxiety disorder (Miller, Fletcher, & Kabat-Zinn, 1995). However, modern mindfulness substantially diverges from the canonical Buddhist tradition due to a focus on individual-centered and narrow-focused goals of attention capacity enhancement and stress reduction. In contrast, traditional Buddhist meditation practice aims at wholesome and pro-social, virtuous behavior, leading to life- and world- transforming implications (Purser & Milillo, 2015). Important to notice, that even though *Sila* (Buddhist term for virtues and discipline) is not included in the explicit MBSR protocol, implicitly it is taught, as the course is based on Four Noble Truths (Kabat-Zinn, 2017). Moreover, modern mindfulness programs partly make effect on moral processing in terms of control of impulses, decision making, representation of mental states and

detection of morally relevant stimuli, mediated by enhanced activity in the salience network (Sevinc & Lazar, 2019).

Detachment from moral part of Buddhism teaching (at least in explicit protocol) was necessary in the cultural context at times when MBSR program was created in order to avoid misinterpretation of the mindfulness concept, which was fairly new for western society and it's background of Christian dogmatic morality as well as prejudice towards spirituality as kind of fanaticism (Kabat-Zinn, 2017). However, Buddhist tradition does not take a moralistic, but rather pragmatic stance, when referring to Sila: one behaves and thinks virtuously out of the love for good and not out of fear, shame or guilt (Amaro, 2015). A more adequate term from western tradition would be Synderesis – “an immediate apprehension of the first practical moral principles of the nature” (Green, 1997, p. 173).

Recently this “watering-down” of Buddhism teaching is being criticized, reclaiming the central role for ethics and the Buddha's eight-factored path, which refers to the fourth Fundamental truth of Buddha: the way to the cessation of suffering. The Eightfold path comprises the elements of view, intention, speech, action, livelihood, effort, mindfulness and concentration. It invites to “nurture what is best by cultivating optimal, compassionate, and wise ways of perceiving, being, and understanding” (Shonin, Van Gordon, & Singh, 2015, p. 33). In addition to developing the awareness (*that* attention is paid), Buddhism teaches to cultivate the quality of it (*how* the attention is paid). The way to this is through, so called, the Four Immeasurables: loving kindness, compassion, sympathetic joy and equanimity, as opposed to anti-qualities of hatred, cruelty, jealousy and anxiety (Kraus & Sears, 2008). One should develop an immeasurable, meaning limitlessly loving, attitude towards all beings, including oneself (Stanley, Purser, & Singh, 2018).

1.5. Goals of the study

Literature analysis evidenced the necessity to search for effective interventions for affect and anxiety challenges, faced by penitentiary personnel. A deeply rooted stressful work climate causes multilayer, long-lasting negative consequences on their wellbeing. With the goal to aid this problem an integrated mindfulness, ethics and compassion training program was designed and implemented. In order to measure its efficacy on the well-being improvement, four markers were chosen: general health, satisfaction with life, affect (both positive and negative) and anxiety. Additionally, this exploratory study aims at better understanding the mechanism of the impact of the course, innovative both in terms of target group and in terms of contents. Therefore the mediating role of mindfulness and self-compassion constructs was explored.

All hypotheses are represented in Figure 1. Firstly, main hypotheses of change in well-being (H_1 group) were formulated: it was expected that after the intervention general health risk (H_{1a}), dissatisfaction with life (H_{1b}), anxiety (H_{1c}) and negative affect (H_{1d}) would decrease, meanwhile positive affect (H_{1e}) would increase. Moreover, the main target competences, mindfulness (H_{1FFMQ}) and self-compassion (H_{1SCS}) would increase, indicating the efficiency of the training program. Secondly, mediation hypotheses were formulated to explain the change in well-being of the participants of the course as a result of the change in dispositional measures of mindfulness and self-compassion, and not accidentally. It was expected that after-course change in mindfulness would mediate the change in general health risk (H_{2a}), dissatisfaction with life (H_{2b}), anxiety (H_{2c}) negative affect (H_{2d}) and positive affect (H_{2e}). Similarly, the change in self-compassion would mediate the change in above-mentioned measures (H_3 group).

Figure 1. Mediation hypotheses. An after-intervention change in Mindfulness and in Self-compassion would mediate (in separate mediation analyses) an after-intervention change in general health risk (H_{2a} , H_{3a}), dissatisfaction with life (H_{2b} , H_{3b}), anxiety (H_{2c} , H_{3c}) negative affect (H_{2d} , H_{3d}) and positive affect (H_{2e} , H_{3e}).

2. Method

2.1. Participants.

The course was addressed to (a) the executive personnel of penitentiary institutes of Lazio, Abruzzo and Molise regions, and (b) the officials of social service of the Juvenile Justice Department of Rome, Italy. In total sixty-five participants took part at this study (mean age = 50.78 years, $SD = 6.96$; mean years of service completed = 23.45 years, $SD = 8.60$), of which 41 males (mean age = 51.02, $SD = 7.04$) and 22 females (mean age = 50.50, $SD = 6.05$) while 3 did not indicate their gender. Written informed consent was obtained from all participants prior to the data collection. The experimental protocol was approved by Sapienza University of Rome ethics committee and was in accordance with the standards of the Declaration of Helsinki.

2.2. Intervention

Teachings were given by Venerable Dario Girolami, a Buddhist Zen monk, founder and head of the Rome Zen centre “L’Arco” and Sussanna Sardilli, psychologist and senior instructor in mindfulness. The training program was performed in two cycles, each constituting eight four-hour seminar days. Apart from the activities performed during the seminars, participants were proposed to continue individual practice in everyday routine. Contents of the Right Mindfulness course was based on integration between mindfulness meditation practice and crucial aspects of the Eightfold Path, mainly the ones connected to the Wise Understanding of mental afflictions, as well as Ethics (including working environment) and the practice Four Sublime states: Loving Kindness, Compassion, Sympathetic Joy, Equanimity.

2.3. Measures

In this study we administered six questionnaires two times: before the first meeting of the training course (i.e., pre-training), and eight weeks later after the last meeting of the course (i.e., post-training). The following questionnaires were included in our battery:

General Health Questionnaire (GHQ-12; Goldberg & Williams, 1988; Italian version validated by Piccinelli et al., 1993) is a method to quantify the risk of developing psychiatric disorders. This instrument targets two factors, i.e. the inability to carry out normal functions and the appearance of distress, to assess well-being in a person. Participants have to evaluate a recent presence of each of the twelve aspects of mental distress in a likert-type scale ranging from 0 to 3 (“less than usual”, “no more than usual”, “more than usual”, “much more than usual”). The outcome is a total score from 12 to 48, with a higher score representing ‘worse degree’ of general health.

Satisfaction with Life Scale (SLS; Diener, Emmons, Larsen, Griffin, 1985; Italian version validated by Di Fabio and Busoni, 2009) measure cognitive judgments of one’s satisfaction with own life. Five items are rated on a likert-type scale ranging from 1 (strongly disagree) to 7 (strongly

agree). The scores were converted to keep in a line with other scales, used in this study: the higher point represents higher dissatisfaction (from 5 to 35 points).

Trait Anxiety Inventory is the second part of the State-Trait anxiety inventory, version Y (STAI-Y2; Spielberger, Pedrabissi, Santinello, 1989) with 20 likert-scale type items, rated from 1 (almost never) to 4 (almost always), which measure trait anxiety or anxiety level as a stable and persistent personal characteristic. Spielberger (1983) made a distinction between the anxiety as a reaction to a certain stressful situation, so called “state of anxiety”, and the anxiety as a relatively stable personal characteristic or predisposition to perceive stressful situations or stimuli as a threat, so called “trait of anxiety”. Individuals with the trait of anxiety, more than the rest of the population, tend to experience a state of anxiety in various situations of everyday life.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, Tenegen, 1988; Italian version validated by Terracino, McCrae, Costa, 2003) comprises two mood scales: The Positive Affect subscale measures how much one perceives himself as enthusiastic, energetic, active and determined; The Negative Affect subscale measures how much one feels as a fearful, angry, nervous person. Twenty items are rated on a likert-scale ranging from 1 (never or very rarely true) to 5 (very often or always true).

The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006; Italian version validated by Giovannini et al., 2014) is based on five independently developed mindfulness questionnaires that are bound together in a factor analytic study. Thirty nine items are rated on a likert-scale ranging from 1 (never or very rarely true) to 5 (very often or always true). The five facets are: *Observe*, which refers to attending or noticing internal and external experiences (e.g., sounds, emotions, thoughts, bodily sensations, smells); *Describe*, includes verbalising those experiences; *Act with awareness*, which refers to focusing on one’s activities at the moment instead of acting mechanically; *Non-judge of inner experience*, means taking a non-judgemental stance towards one’s

feelings and thoughts; *Non-react to inner experience*, refers to the ability to detach from thoughts and emotions, allowing them to come and go without getting involved or carried away by them.

Self-Compassion Scale (SCS; Neff, 2003; Italian version validated by Veneziani, Fuochi, Voci, 2017) was created to specifically capture this way of being kind and understanding towards oneself in moments of turmoil. It contains the capacity to observe, describe and manage ones thoughts and emotions by both being conscious about them and not accepting them without being judgemental. It is different from self-esteem, which contains the component of evaluation. The test consists of twenty six likert typer items, scored from 1 (almost never) to 5 (almost always) and devided into six inter-correlated subscales: *Self-kindness*, treat oneself with tenderness and comprehension in front of suffering; *Self-judgement*, disapproving the judgment about one's inadequacies or flaws; *Common humanity*, trying to see one's failures as a part of common human condition; *Isolation*, seeing one's own failures as isolated from common-humanity; *Mindfulness*, trying to take a balanced stance in the situation of the failure; *Over-identification*, is the tendency to obsess over and fixate on everything that is wrong when feeling down.

2.4. Data analysis

Statistical analysis of data was performed in three stages. First of all, in order to compare participants' average state before and after the training, a multivariate ANOVA with all the 16 subscales (GHQ, SLS, STAI-Y, PA, NA, 5 FFMQ sub-scales, and 6 SCS sub-scales) as dependent variables and the measurement time (pre-post) as fixed variable was run. Secondly, in order to determine, which measures have significantly changed after the training course, separate repeated measures ANOVA's for each of the 16 subscales as dependent variable and pre-post as fixed variable, were performed. Finally, in order to see if the improvement in well-being of participants was related to course and did not happen accidentally, we performed a mediation analysis in two-condition within-participant design, proposed by Montoya and Hayes (2017), for each measure

(GHQ, SLS, STAI-Y, PA, NA,) as a dependent variable Y, choosing FFMQ and SCS total scores as mediators (M) in two different time points: pre- and post- (X). Due to the high multicollinearity between FFMQ and SCS scores separate mediations with each of these measures were performed, instead of parallel mediation. Analysis was performed with SPSS© and MEMORE© - a macro for estimating mediation and moderation models in two-condition repeated measures designs. Confidence intervals for the indirect effects are from the percentile bootstrap method from 5,000 bootstrap samples. The mediation effect is considered significant if the 95% CI does not contain 0.

3. Results

3.1. Comparison of the results before and after the course

MANOVA analysis with 16 subscales (GHQ, SLS, STAI-Y, PA, NA, 5 FFMQ sub-scales and 6 SCS sub-scales) as dependent variables and the measurement time (pre-post) as fixed variable indicated that the difference between canonical functions was significant, Wilks' Lambda = .524, $F(19, 120) = 3.334$, $p < .01$. So general effect of the training program was present. Table 1 reported pre- and post- course results for each subscale.

Table 1

Mean and SD of each subscale score before (pre) and after (post) training.

Scale	Pre-Mean	Pre-SD	Post-Mean	Post-SD
General Health Questionnaire	31.78	6.14	37.66	5.08
Satisfaction with Life Scale	18.43	5.89	16.02	5.42
State-Trait Anxiety Inventory Y-2	41.34	10.45	38.43	9.27
Positive Affect (PANAS)	35.15	6.16	36.51	5.10
Negative Affect (PANAS)	23.49	6.74	21.25	6.73
FFMQ Tot	26.16	3.29	27.33	3.53
Observe (FFMQ)	26.02	5.37	28.17	6.17
Describe (FFMQ)	27.74	6.12	28.95	5.85
Act with Awareness (FFMQ)	28.37	5.90	28.91	6.12

Non Judgment (FFMQ)	28.62	5.94	28.72	5.64
Non React (FFMQ)	20.05	3.99	21.80	4.12
SCS Tot	3.28	0.55	3.50	0.58
Self Kindness (SCS)	3.03	0.88	3.43	0.71
Self Judgement (SCS)	2.59	0.88	2.42	0.90
Common Humanity (SCS)	3.14	0.81	3.20	8.36
Isolation (SCS)	2.37	0.87	2.17	0.88
Mindfulness (SCS)	3.34	0.68	3.55	0.62
Over Identification (SCS)	2.85	0.85	2.61	0.92

The *General Health Questionnaire* revealed a significant increase of general health risk in individuals, with $F(1, 64) = 56.63$, $p < .001$, $MSE = 19.82$, $\eta^2_p = .47$. In other words participants reported problems, related to general health, have increased which may lead to heightened risk for mental disorders.

Dissatisfaction with Life score has decreased $F(1, 64) = 13.47$, $p < .001$, $MSE = 14.08$, $\eta^2_p = .17$. Participants increased their reported satisfaction with life and acceptance of it as it is.

Trait of anxiety, measured by S.T.A.I. Y-2, significantly decreased, $F(1, 64) = 13.60$, $p < .001$, $MSE = 20.20$, $\eta^2_p = .18$: the intervention was therefore effective in lowering the stress level, which previously was above the predictive threshold value of anxious symptomatology, scored 40 (Spielberg 1964). On the last day of the course, the average score was 38.43, replacing the initial 41.34 score.

The *Positive Affect* sub-scale of the PANAS (Positive and Negative Affect Schedule) after the course increased significantly, $F(1, 64) = 5.17$, $p = .03$, $MSE = 11.52$, $\eta^2_p = .08$. This result highlights an increase in the positive emotional states of the participants, such as joy and concentration. The *Negative Affect* subscale was reduced following the course with $F(1, 64) = 14.16$, $p < .001$, $MSE = 11.58$, $\eta^2_p = .18$. Therefore, the states of negative affectivity, related to

neuroticism, turn out to be significantly lower than the end of the course compared to the first day: the participants reported feeling less fearful, de-concentrated and hostile after the training.

The *total score of the Five Facet Mindfulness Questionnaire* significantly increased at the end of the course with $F(1, 64) = 12.55, p < .001, MSE = 3.54, \eta^2_p = .16$, suggesting that the teachings related to mindfulness meditation have proved effective for the participants. The change in *Observe* sub-scale scores of this questionnaire highlights a significant increase in attention and observation of one's thoughts, feelings, perceptions and emotions, with $F(1, 64) = 13.47, p < .001, MSE = 11.19, \eta^2_p = .17$, meanwhile the increase in *Describe* sub-scale scores is for an increased capacity to put those experiences into words, with $F(1, 64) = 4.58, p = .04, MSE = 10.48, \eta^2_p = .07$. The score for the *Non-React* subscale of the Five Facet Mindfulness Questionnaire pre and post training was different, $F(1, 64) = 14.54, p < .001, MSE = 7.49, \eta^2_p = .19$, revealing a greater tendency not to react and not to reject the inner experience.

The difference between the *total score of the Self-compassion scale* before and after the course was significant, with $F(1, 64) = 14.82, p < .001, MSE = 0.11, \eta^2_p = .18$, showing that general self-compassion has increased from a mean score 3.28 to a mean of 3.50. *Self Kindness* sub-scale scores also increased significantly, $F(1, 64) = 16.91, p < .001, MSE = 0.31, \eta^2_p = .21$, revealing greater tenderness and understanding of the participants towards themselves in the face of suffering. To add more, *SCS Self Judgment* score decreased with a tendency to significant difference between pre- and post- scores, $F(1, 64) = 3.98, p = .05, MSE = 0.25, \eta^2_p = .06$. There was also a decrease in the *SCS Isolation* subscale scores, $F(1, 64) = 5.78, p = .02, MSE = 0.23, \eta^2_p = .08$, which means that participants at the end of the course saw their failures more as a part of the human condition, compared to the first training course. The awareness of being united by the same destiny is at the base of compassion and not feeling alone. Lastly, the score of the *Over Identification* subscale also decreased, with $F(1, 64) = 6.87, p = .01, MSE = 0.29, \eta^2_p = .10$, indicating a minor identification in painful thoughts and emotions, and a lower attribution of blame associated with them. A

significantly increased *SCS Mindfulness* sub-scale score confirms that, $F(1, 64) = 6.79, p = .01, MSE = 0.21, \eta^2_p = .10$: participants of the course have learned to take a stance of equanimity in front of their experiences.

On the other hand, difference between –pre and –post of the following three subscales were not significant: FFMQ Act with awareness, $F(1, 64) = 0.80, p = .37, MSE = 11.75, \eta^2_p = .01$; FFMQ Not Judgment, $F(1, 64) = 0.04, p = .85, MSE = 10.44, \eta^2_p = .001$; SCS Common Humanity, $F(1, 64) = 0.49, p = .49, MSE = 0.28, \eta^2_p = .008$.

3.2. Mediation analysis

Separate mediation analysis for each dependent variable, anxiety trait (STAI score), positive affect (PA score from PANAS), negative affect (NA score of PANAS), general health risk (GHQ score) and satisfaction with life (SWLS score), with intervention (post-pre) as a repeated measures condition and mindfulness (FFMQ score) and self-compassion (SCS score) as mediators. Figure 2 and table 2 reported the mediation model and the path results of significant mediation analysis.

Figure 2. Model of dependent variable change mediated by mindfulness. Dependent variable is predicted by intervention (path $\hat{c}$). When it is mediated by mindfulness, intervention no longer predicts anxiety (path $\hat{c}'$). Instead, pre-post change in mindfulness significantly predicts change in anxiety (paths $\hat{a}$, $\hat{b}$).

Table 2

Statistics of the mediation models.

Mediator	Dependent variable	Path $\hat{a}$	Path $\hat{b}$	Path $\hat{c}$	Path $\hat{c}'$
Mindfulness	Anxiety trait		-1.21***	-2.91***	-1.49
	Positive affect		0.60*	1.35***	0.65
	Negative affect	1.17**	-0.42	-2.25***	-1.75*
	Satisfaction with life		-0.38	-2.42***	-1.97**
	General health risk		0.73*	5.88***	5.02***
Self-compassion	Anxiety trait		-9.04***	-2.91***	-0.93
	Positive affect		3.10*	1.35***	0.68
	Negative affect	0.22***	-2.75*	-2.25***	-1.65*
	Satisfaction with life		-2.99*	-2.42***	-1.76*
	General health risk		4.33*	5.88***	4.93***

Slope is significant, when: * $p < .05$, ** $p < .01$, *** $p < .001$ **3.2.1. Five facet mindfulness as a mediator**

Mediation model analysis with *anxiety trait* as a dependent variable, intervention as a repeated measures condition and mindfulness as a mediator was confirmed. Under the influence of mindfulness, intervention no longer predicted anxiety, $\hat{c}' = -1.49$, $t(62) = -1.97$, $p = .05$, 95% CI [-3.00, 0.02]. Both intervention and mindfulness together predicted anxiety, with $R^2 = .26$, $F(2, 62) = 10.75$, $p < .001$, $MSE = 30.96$. Post – pre change in mindfulness significantly predicted post – pre change in anxiety, with $\beta = -1.21$, $t(62) = -4.62$, $p < .001$, 95% CI [-1.74, -0.69] (path $\hat{b}$), so participants, who gained more mindfulness, lost more anxiety after the course. The estimated indirect effect of intervention on anxiety through mindfulness was $\hat{a}\hat{b} = (1.17)(-1.21) = -1.42$, 95% CI [-2.65, -0.57].

Mediation model analysis with trait of *positive affect* as a dependent variable, intervention as a repeated measures condition and mindfulness as a mediator was confirmed. Under the influence of this mediator, intervention no longer significantly predicted positive affect, $\hat{c}' = 0.65$, $t(62) = 1.04$, $p = .30$, 95% CI [-0.59, 1.89]. Both intervention and mindfulness together predict positive affect, with $R^2 = .12$, $F(2, 62) = 4.10$, $p = .02$, $MSE = 21.01$. Post-pre change in mindfulness significantly predicted post-pre change in positive affect, with $\beta = 0.60$, $t(62) = 2.78$, $p = .01$, 95% CI [0.17, 1.03]. The estimated indirect effect of intervention on positive affect through mindfulness was $\hat{a}\hat{b} = (1.17)(0.60) = 0.70$, 95% CI [0.14, 1.55].

Mediation model analysis with trait of *negative affect* as a dependent variable, intervention as a repeated measures condition and mindfulness as a mediator was not confirmed, $R^2 = .06$, $F(2, 62) = 1.92$, $p = .16$, $MSE = 22.51$.

Mediation model analysis with *satisfaction with life* as a dependent variable, intervention as a repeated measures condition and mindfulness as a mediator was not confirmed, $R^2 = .04$, $F(2, 62) = 1.20$, $p = .31$, $MSE = 27.98$.

Mediation model analysis with trait of *general health risk* as a dependent variable, intervention (post-pre) as a repeated measures condition and mindfulness as a mediator was confirmed. Both intervention and mindfulness together predict general health risk, with $R^2 = .10$, $F(2, 62) = 3.30$, $p = .02$, $MSE = 36.99$. Post – pre change in mindfulness significantly predicted post – pre change in general health risk, with $\beta = 0.73$, $t(62) = 2.54$, $p = .01$, 95% CI [0.16, 1.30]. Under the influence of this mediator, intervention still significantly predicted general health, $\hat{c}' = 5.02$, $t(62) = 6.09$, $p < .001$, 95% CI [3.37, 6.68], therefore mindfulness is only a partial mediator of relation between intervention and general health. The estimated indirect effect of intervention on general health through mindfulness was $\hat{a}\hat{b} = (1.17)(0.73) = 0.85$, 95% CI [0.28, 1.62].

3.2.2. Self-compassion as a mediator

Mediation model analysis with *anxiety trait* as a dependent variable, intervention as a repeated measures condition and self-compassion as a mediator was confirmed. Under the influence of self-compassion intervention no longer predicted anxiety, $\hat{c}' = -0.93$, $t(62) = -1.41$, $p = .16$, 95% CI [-2.25, 0.39]. Both intervention and self-compassion together predicted anxiety, with $R^2 = .45$, $F(2, 62) = 25.41$, $p < .001$, $MSE = 22.92$. Post – pre change in self compassion significantly predicted post – pre change in anxiety, with $\beta = -9.04$, $t(62) = -6.89$, $p < .001$, 95% CI [-11.66, -6.42] (path $\hat{b}$), so participants, who gained more self-compassion, lost more anxiety after the course. The estimated indirect effect of intervention on anxiety through mindfulness was $\hat{a}\hat{b} = (0.22)(-9.04) = -1.98$, 95% CI [-3.60, -0.70].

Mediation model analysis with *positive affect* as a dependent variable, intervention as a repeated measures condition and self-compassion as a mediator showed a tendency to be significant. Under the influence of this mediator intervention no longer significantly predicted positive affect, $\hat{c}' = 0.68$, $t(62) = 1.10$, $p = .30$, 95% CI [-0.61, 1.96]. Both measurement time and self-compassion together almost significantly predict positive affect, with $R^2 = .09$, $F(2, 62) = 2.97$, $p = .06$, $MSE = 21.71$. Post – pre change in self-compassion significantly predicted post – pre change in positive affect, with $\beta = 3.10$, $t(62) = 2.43$, $p = .02$, 95% CI [0.54, 5.65]. The estimated indirect effect of intervention on positive affect through self-compassion was $\hat{a}\hat{b} = (0.22)(3.10) = 0.68$, 95% CI [0.10, 1.49].

Mediation model analysis with *negative affect* as a dependent variable, intervention as a repeated measures condition and self-compassion as a mediator was not confirmed, $R^2 = .08$, $F(2, 62) = 2.64$, $p = .08$, $MSE = 22$.

Mediation model analysis with *satisfaction with life* as a dependent variable, intervention as a repeated measures condition and self-compassion as a mediator was not confirmed, $R^2 = .07$, $F(2, 62) = 2.46$, $p = .09$, $MSE = 26.93$.

Mediation model analysis with trait of *general health risk* as a dependent variable, intervention as a repeated measures condition and self-compassion as a mediator was confirmed. Both intervention and self-compassion together predict general health problems, with $R^2 = .10$, $F(2, 62) = 3.40$, $p = .04$, $MSE = 36.87$. Post-pre change in self-compassion significantly predicted post-pre change in GHQ, with $\beta = 4.33$, $t(62) = 2.60$, $p = .01$, 95% CI [1.00, 7.65]. Under the influence of this mediator, intervention still significantly predicted general health, $\hat{c}' = 4.93$, $t(62) = 5.90$, $p < .001$, 95% CI [3.25, 6.60]. Therefore, self-compassion is only a partial mediator of relation between intervention and general health. The estimated indirect effect of intervention on general health through self-compassion was $\hat{a}\hat{b} = (0.22)(4.33) = 0.95$, 95% CI [0.21, 1.89].

4. Discussion

Goal of this study was twofold. First of all, we applied mindfulness course to a relatively new target group, penitentiary officers, and measured its effectiveness in changing dispositions, mindfulness (H_{IFFMQ}) and self-compassion (H_{ISCS}), as well as psychological wellbeing scores (H_{Ia-e}): general health risk, dissatisfaction with life, anxiety and affect. Secondly, in order to explore the mechanisms, accounting for mindfulness-based intervention benefits, and to confirm that positive change in psychological wellbeing was influenced by the improvement in mindfulness and self-compassion, we ran two mediation analyses with wellbeing scores, general health risk, dissatisfaction with life, anxiety, positive and negative affect, as dependent variables.

Both main indicators of a successful intervention, mindfulness and self-compassion, increased significantly. As FFMQ score increased, participants became less reactive, increased their capacity to observe their inner sensations and describe them. With the increasing SCS score participants developed significantly more self-kindness and mindfulness, as well as decreased their self-judgmental attitudes, isolation in suffering and over-identification with the personal thoughts. However, two sub-scales of mindfulness did not change significantly: act with awareness and non-

judgment. Same finding was reported after the mindfulness-based intervention for law enforcement officers study (Christopher et al., 2018), which suggests that non-judgement and acting with awareness are less liable for law enforcement officers. Same counts for the capacity to perceive common humanity, as this subscale of SCS did not change significantly after the current intervention. These skills could require more training sessions. In the study of Bergman, Christopher and Bowen (2016) facets of non-judgment and acting with awareness were predictive of stress and anger management in police officers, although important to notice, that observe and describe facets were not measured. Judgement facet is related to general distress and depression, meanwhile observing facet is related more to the anxious arousal (Desrosiers, Klemanski, Nolen-Hoeksema, 2013).

Almost all H_1 group hypotheses were confirmed: participants of right mindfulness training became significantly less anxious, more satisfied with their life, that is, accepted their life as it is, increased positive affect and decreased negative one. Mindfulness-based interventions already previously have proven to reduce anxiety (Ferszt et al., 2015) and negative affect (Perelman et al., 2021) of incarcerated populations and of police officers (Grupe et al., 2019), as well as the general satisfaction with life of human service professionals (Poulin et al., 2008). An unexpected result was that participants reported a decreased health after the right mindfulness course, that is increased their risk for mental disorder. This can be explained as dis-illusionary effect. In the beginning of mindfulness and self-compassion skill acquisition one has to become aware of his wellbeing, bring into consciousness what might be usually too painful. Only afterwards a true healing and acceptance process starts.

As for the mediation analysis results, H_2 and H_3 group hypothesis were partially confirmed. It was expected that change in psychological well-being after the course, measured by general health risk (H_{2a}), satisfaction with life (H_{2b}), anxiety (H_{2c}) negative affect (H_{2d}) and positive affect (H_{2e}), would be mediated by the change in dispositions, mindfulness and/or self-compassion. However,

only anxiety, positive affect and, partially, general health mediation models were significant. These dependent variable after the Right mindfulness course were modulated both by five-facet mindfulness and by self-compassion. Participants, who improved more in these dispositions, also managed better to decrease their anxiety and increase their positive affect as well as partially became more aware of their health risk.

This is in line with previous empirical findings, applying mediation or moderation models. A systematic review of such studies provided numerous evidence (although with moderate effect sizes) of mindfulness being an underlying mechanism of mental wellbeing change after mindfulness-based interventions. Self-compassion underlying role in such interventions is also supported by some evidence, but with weaker effect sizes. (Gu, Strauss, Bond, & Cavanagh, 2015). A longitudinal study by Bergen-Cico and Cheon (2013) found a significant mediating role of mindfulness, and, with a less robust effect, of self-compassion on a reduced post-intervention anxiety trait. A study with a sample from highly-stressed environment, oncology nurses, confirmed the mediating role of both mindfulness and self-compassion in an intervention effect on anxiety and stress symptoms, as well as satisfaction with life (Duarte & Pinto-Gouveia, 2017). Finally, baseline self-compassion in mindfulness intervention was predictive of the change in perceived stress, not only directly, but also indirectly: through the mindful awareness capacity. However, the change in self-compassion did not significantly mediate anxiety or anger expression (Sevel et al., 2019). Worth noticing that mindfulness-based interventions slightly vary in their contents. The one used in this study accentuated right mindfulness and compassion. Therefore the later one was as important underlying mechanism of psychological wellbeing improvement as mindfulness.

4.1. Limitations and future directions

Given the difficulty and appropriateness conducting a randomized controlled trial in prison settings (even more difficult with personnel than detainees), this study lacks control of extraneous

variables. Although, this is an important methodological rigour, a systematic review of mindfulness studies in prison settings revealed that only 17 out of 115 studies incorporate control group (Auty, Cope, & Liebling, 2017); only 2/3 of the mindfulness-intervention studies include control group (Eby et al., 2019). Moreover, to solve this limitation of the study, we have performed mediation analysis. It was confirmed that after the intervention the change in anxiety, in positive affect and partially in general wellbeing scores was mediated both by change in mindfulness and by change in self-compassion. Therefore, despite the lack of control group, improvement in various dimensions after this mindfulness intervention did not occur due to external factors, but was mediated by the main manipulation.

Secondly, only self-report measures were used in the study. Although previous studies in the mindfulness field prove good validity of the employed tools, it would be beneficial, if future works would include physiological or behavioural data, as self-reports may be subject to social desirability. Alternatively, an additional measure of social desirability would be a useful solution.

Finally, the effects of right mindfulness intervention for operational prison officers and the penitentiary administrative personnel could not be compared, as many officers did not indicate their type of employment. However, it would be a beneficial follow up of this study. Administrative employees are less exposed to direct stressors, but Tewksbury and Higgins (2006) argue that they are subject to the same risk for stress due to shared internal culture.

References

- Amaro, A. (2015). A holistic mindfulness. *Mindfulness*, 6(1), 63-73.
- Armstrong, G. S., Atkin-Plunk, C. A., & Wells, J. (2015). The relationship between work–family conflict, correctional officer job stress, and job satisfaction. *Criminal justice and behavior*, 42(10), 1066-1082.

- Auty, K. M., Cope, A., & Liebling, A. (2017). A systematic review and meta-analysis of yoga and mindfulness meditation in prison: Effects on psychological well-being and behavioural functioning. *International Journal of Offender Therapy and Comparative Criminology*, 61(6), 689-710.
- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using selfreport assessment methods to explore facets of mindfulness. *Assessment*, 13, 27- 45.
- Baudino M. (2014) La polizia penitenziaria tra sovraffollamento carcerario e burnout: il dibattito interno, *Rivista di Criminologia, Vittimologia e Sicurezza*, 8(2), 104-118.
- Bergen-Cico, D., & Cheon, S. (2014). The mediating effects of mindfulness and self-compassion on trait anxiety. *Mindfulness*, 5(5), 505-519.
- Bergman, A. L., Christopher, M. S., & Bowen, S. (2016). Changes in facets of mindfulness predict stress and anger outcomes for police officers. *Mindfulness*, 7(4), 851-858.
- Bezerra, C. D. M., Assis, S. G. D., & Constantino, P. (2016). Psychological distress and work stress in correctional officers: a literature review. *Ciencia & saude coletiva*, 21(7), 2135-2146.
- Boudoukha, A. H., Altintas, E., Rusinek, S., Fantini-Hauwel, C., & Hautekeete, M. (2013). Inmates-to-staff assaults, PTSD and burnout: Profiles of risk and vulnerability. *Journal of interpersonal violence*, 28(11), 2332-2350.
- Bowen, S., Witkiewitz, K., Dillworth, T. M., Chawla, N., Simpson, T. L., Ostafin, B. D., ... & Marlatt, G. A. (2006). Mindfulness Meditation and Substance Use in an Incarcerated Population, *Psychology of Addictive Behaviors*, 20(3), 343.
- Campos, J. A. D. B., Schneider, V., Bonafé, F. S. S., Oliveira, R. V., & Maroco, J. (2016). Burnout Syndrome and alcohol consumption in prison employees. *Revista Brasileira de Epidemiologia*, 19, 205-216.
- Castle, T. L., & Martin, J. S. (2006). Occupational hazard: Predictors of stress among jail correctional officers. *American Journal of Criminal Justice*, 31(1), 65-80.

Christopher MS, Goerling RJ, Rogers BS, Hunsinger M, Baron G, Bergman AL, Zava DT (2016)

A pilot study evaluating the effectiveness of a mindfulness-based intervention on cortisol awakening response and health outcomes among law enforcement officers. *J Police Crim Psychol* 31(1):15–28.

Christopher, M. S., Hunsinger, M., Goerling, L. R. J., Bowen, S., Rogers, B. S., Gross, C. R., ... &

Pruessner, J. C. (2018). Mindfulness-based resilience training to reduce health risk, stress reactivity, and aggression among law enforcement officers: A feasibility and preliminary efficacy trial. *Psychiatry research*, 264, 104-115.

Colwell, L. H., Lyons, P. M., Bruce, A. J., Garner, R. L., & Miller, R. S. (2011). Police officers'

cognitive appraisals for traumatic events: Implications for treatment and training. *Applied Psychology in Criminal Justice*, 7(2), 106-132.

Dafoe, T., & Stermac, L. (2013). Mindfulness meditation as an adjunct approach to treatment

within the correctional system. *Journal of Offender Rehabilitation*, 52(3), 198-216.

Dane, E., Brummel, B. (2013). Examining workplace mindfulness and its relations to job

performance and turnover intention. *Human Relations*, 67(1): 105-128.

de Bruin, E. I., Topper, M., Muskens, J. G., Bögels, S. M., & Kamphuis, J. H. (2012).

Psychometric properties of the Five Facets Mindfulness Questionnaire (FFMQ) in a meditating and a non-meditating sample. *Assessment*, 19(2), 187-197.

Desrosiers, A., Klemanski, D. H., & Nolen-Hoeksema, S. (2013). Mapping mindfulness facets

onto dimensions of anxiety and depression. *Behavior therapy*, 44(3), 373-384.

Di Fabio, A., & Busoni, L. (2009). Proprietà psicometriche della versione italiana della

Satisfaction With Life Scale (SWLS) con studenti universitari. *Counseling: Giornale Italiano di Ricerca e Applicazioni*.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale.

Journal of Personality masAssessment, 49(1), 71-75.

- Donald, J. N., & Atkins, P.W. B. (2016). Mindfulness and coping with stress: Do levels of perceived stress matter? *Mindfulness*, 7, 1423–1436.
- Dowden, C., & Tellier, C. (2004). Predicting work-related stress in correctional officers: A meta-analysis. *Journal of Criminal Justice*, 32(1), 31-47.
- Duarte, J., & Pinto-Gouveia, J. (2017). Mindfulness, self-compassion and psychological inflexibility mediate the effects of a mindfulness-based intervention in a sample of oncology nurses. *Journal of Contextual Behavioral Science*, 6(2), 125-133.
- Eby, L. T., Allen, T. D., Conley, K. M., Williamson, R. L., Henderson, T. G., & Mancini, V. S. (2019). Mindfulness-based training interventions for employees: A qualitative review of the literature. *Human Resource Management Review*, 29(2), 156-178.
- Ekman, E. (2015). Development, delivery, and evaluation of a pilot stress reduction, emotion regulation, and mindfulness training for juvenile justice officers. *OJJDP Journal of Juvenile Justice*, 4(2), 72-91.
- Ferszt, G. G., Miller, R. J., Hickey, J. E., Maull, F., & Crisp, K. (2015). The impact of a mindfulness based program on perceived stress, anxiety, depression and sleep of incarcerated women. *International journal of environmental research and public health*, 12(9), 11594-11607.
- Garland, B. (2004). The impact of administrative support on prison treatment staff burnout: An exploratory study. *The Prison Journal*, 84(4), 452-471.
- Ghaddar, A., Mateo, I., Sanchez, P. (2008). Occupational stress and mental health among correctional officers: a cross-sectional study. *Journal of Occupational Health*, 50(1), 92-98.
- Giovannini, C., Giromini, L., Bonalume, L., Tagini, A., Lang, M., & Amadei, G. (2014). The Italian five facet mindfulness questionnaire: a contribution to its validity and reliability. *Journal of Psychopathology and Behavioral Assessment*, 36(3), 415-423.
- Goldberg, D., & Williams, P. (1988). A user's guide to the General Health Questionnaire. Windsor, UK: NFER-Nelson.

- Greene, R. A. (1997). Instinct of nature: Natural law, synderesis, and the moral sense. *Journal of the History of Ideas*, 58(2), 173-198.
- Grupe, D. W., McGehee, C., Smith, C., Francis, A. D., Mumford, J. A., & Davidson, R. J. (2019). Mindfulness training reduces PTSD symptoms and improves stress-related health outcomes in police officers. *Journal of Police and Criminal Psychology*, 1-14.
- Gu, J., Strauss, C., Bond, R., & Cavanagh, K. (2015). How do mindfulness-based cognitive therapy and mindfulness-based stress reduction improve mental health and wellbeing? A systematic review and meta-analysis of mediation studies. *Clinical psychology review*, 37, 1-12.
- Haselkamp, W., Barsalau, L. W. (2012). Effects of meditation experience on functional connectivity of distributed brain networks. *Frontiers in Human Neuroscience*, 6, 38.
- Hauswald, A., Ubelacker, T., Leske, S., Weisz, N. (2015). What it means to be zen: Marked modulations of local and interareal synchronization during open monitoring meditation. *Neuroimage*, 108, 265-273.
- Heuven, E., & Bakker, A. (2003). Emotional dissonance and burnout among cabin attendants. *European Journal of Work and Organizational Psychology*, 12(1), 81-100.
- Hofmann, S. G., Grossman, P., & Hinton, D. E. (2011). Loving-kindness and compassion meditation: Potential for psychological interventions. *Clinical psychology review*, 31(7), 1126-1132.
- Hülshager, U. R., Alberts, H. J., Feinholdt, A., & Lang, J. W. (2013). Benefits of mindfulness at work: the role of mindfulness in emotion regulation, emotional exhaustion, and job satisfaction. *Journal of applied psychology*, 98(2), 310.
- Kabat-Zinn, J. (1990). Full catastrophe living: The program of the stress reduction clinic at the University of Massachusetts Medical Center.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present and future. *Clinical Psychology: Science and Practice*, 10(2), 144–156

- Kabat-Zinn, J. (2017). Too early to tell: the potential impact and challenges—ethical and otherwise—inherent in the mainstreaming of dharma in an increasingly dystopian world. *Mindfulness*, 8(5), 1125-1135.
- Klatt M. D., Buckworth J. & Malarkey W. B. (2008). Effects of low-dose mindfulness-based stress reduction (MBSR-Id) on working adults, *Health Education & Behavior*, 36(3), 601-614.
- Konda, S., Reichard, A. A., & Tiesman, H. M. (2012). Occupational injuries among US correctional officers, 1999-2008. *Journal of safety research*, 43(3), 181-186.
- Kraus, S., & Sears, S. (2009). Measuring the immeasurables: Development and initial validation of the Self-Other Four Immeasurables (SOFI) scale based on Buddhist teachings on loving kindness, compassion, joy, and equanimity. *Social Indicators Research*, 92(1), 169-181.
- Kristofersson, G. K., & Kaas, M. J. (2013). Stress management techniques in the prison setting. *Journal of forensic nursing*, 9(2), 111-119.
- Lambert, E. G. (2001). To stay or quit: A review of the literature on correctional staff turnover. *American Journal of Criminal Justice*, 26(1), 61-76.
- Luders, E., Kurth, F., Mayer, E. A., Toga, A. W., Narr, K. L., & Gaser, C. (2012). The unique brain anatomy of meditation practitioners: alterations in cortical gyrification. *Frontiers in human neuroscience*, 6, 34.
- Miller, J. J., Fletcher, K., & Kabat-Zinn, J. (1995). Three-year follow-up and clinical implications of a mindfulness meditation-based stress reduction intervention in the treatment of anxiety disorders. *General hospital psychiatry*, 17(3), 192-200.
- Montoya, A. K., & Hayes, A. F. (2017). Two-condition within-participant statistical mediation analysis: A path-analytic framework. *Psychological Methods*, 22(1), 6.
- Morley, R. M., Terranova, V. A., Cunningham, S. N., & Kraft, G. (2016). Self-compassion and predictors of criminality. *Journal of Aggression, Maltreatment & Trauma*, 25(5), 503-517.

- Neff, K. D. (2003). Development and validation of a scale to measure self-compassion. *Self and Identity*, 2(3), 223-250.
- Perelman, A. M., Miller, S. L., Clements, C. B., Rodriguez, A., Allen, K., & Cavanaugh, R. (2012). Meditation in a deep south prison: A longitudinal study of the effects of Vipassana. *Journal of Offender Rehabilitation*, 51(3), 176-198.
- Piccinelli, M., Bisoffi, G., Bon, M. G., Cunico, L., & Tansella, M. (1993). Validity and test-retest reliability of the Italian version of the 12-item General Health Questionnaire in general practice: a comparison between three scoring methods. *Comprehensive psychiatry*, 34(3), 198-205.
- Prati, G., & Boldrin, S. (2011). Fattori di stress e benessere organizzativo negli operatori di polizia penitenziaria. *G Ital Med Lav Erg*, 33(3).
- Purser, R. E., & Milillo, J. (2015). Mindfulness revisited: A Buddhist-based conceptualization. *Journal of Management Inquiry*, 24(1), 3-24.
- Raffone, A., Tagini, A., & Srinivasan, N. (2010). Mindfulness and the cognitive neuroscience of attention and awareness. *Zygon®*, 45(3), 627-646.
- Rezapour-Mirsaleh, Y., Shafizadeh, R., Shomali, M., & Sedaghat, R. (2021). Effectiveness of Self-Compassion Intervention on Criminal Thinking in Male Prisoners. *International journal of offender therapy and comparative criminology*, 0306624X20936192.
- Roeser, R. W., Schonert-Reichl, K. A., Jha, A., Cullen, M., Wallace, L., Wilensky, R., Oberle, E., Thomson, K., Taylor, C., & Harrison, J. (2013). Mindfulness training and reductions in teacher stress and burnout: Results from two randomized, waitlist-control field trials. *Journal of Educational Psychology*, 105(3), 787–804.
- Samuelson, M., Carmody, J., Kabat-Zinn, J., & Bratt, M. A. (2007). Mindfulness-based stress reduction in Massachusetts correctional facilities. *The Prison Journal*, 87(2), 254-268.

- Sbraccia, A., & Vianello, F. (2010). Tensioni e transizioni: uno sguardo sul sistema penitenziario del Veneto. *Associazione Antigone (a cura di) Settimo rapporto sulle condizioni di detenzione in Italia*.
- Sevel, L. S., Finn, M. T., Smith, R. M., Ryden, A. M., & McKernan, L. C. (2020). Self-compassion in mindfulness-based stress reduction: An examination of prediction and mediation of intervention effects. *Stress and Health*, 36(1), 88-96.
- Sevinc, G., & Lazar, S. W. (2019). How does mindfulness training improve moral cognition: a theoretical and experimental framework for the study of embodied ethics. *Current opinion in psychology*, 28, 268-272.
- Shonin, E., Van Gordon, W., & Singh, N. N. (Eds.). (2015). *Buddhist foundations of mindfulness*. Springer.
- Siegel, D. J. (2007). *The mindful brain: Reflection and attunement in the cultivation of well-being*. Norton: New York.
- Siegel, D. J. (2009). Mindful awareness, mindsight, and neural integration. *The Humanistic Psychologist*, 37(2), 137–158.
- Spielberger C.D., Pedrabissi, L., Santinello, M. (1989). Inventario per l'ansia di stato e di tratto: nuova versione italiana dello S.T.A.I., forma Y: manuale. Firenze: Organizzazioni Speciali.
- Spielberger, C. D., & Gorsuch, R. L. (1983). *State-trait anxiety inventory for adults: Manual and sample: Manual, instrument and scoring guide*. Consulting Psychologists Press.
- Stanley, S., Purser, R. E., & Singh, N. N. (2018). Ethical foundations of mindfulness. In *Handbook of Ethical Foundations of Mindfulness* (pp. 1-29). Springer, Cham.
- Suarez, A., Lee, D. Y., Rowe, C., Gomez, A. A., Murowchick, E., & Linn, P. L. (2014). Freedom project: Nonviolent communication and mindfulness training in prison. *Sage Open*, 4(1), 2158244013516154.

- Taren, A. A., Gianaros, P. J., Greco, C. M., Lindsay, E. K., Fairgrieve, A., Brown, K. W., ... & Bursley, J. K. (2015). Mindfulness meditation training alters stress-related amygdala resting state functional connectivity: a randomized controlled trial. *Social cognitive and affective neuroscience*, 10(12), 1758-1768.
- Terraciano A., McCrae R. R. & Costa P. T. (2003). Factorial and construct validity of the Italian Positive and Negative Affect Schedule (PANAS). *European Journal of Psychological Assessment*, 19 (2), 131-141.
- Tewksbury, R., & Higgins, G. E. (2006). Prison staff and work stress: The role of organizational and emotional influences. *American Journal of criminal justice*, 30(2), 247-266.
- Useche, S. A., Montoro, L. V., Ruiz, J. I., Vanegas, C., Sanmartin, J., & Alfaro, E. (2019). Workplace burnout and health issues among Colombian correctional officers. *PloS one*, 14(2).
- Veneziani, C. A., Fuochi, G., & Voci, A. (2017). Self-compassion as a healthy attitude toward the self: Factorial and construct validity in an Italian sample. *Personality and Individual Differences*, 119, 60-68.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal of personality and social psychology*, 54(6), 1063.
- Workman-Stark, A. L. (2017). Understanding police culture. *Inclusive Policing from the Inside Out* (pp. 19–35). Springer: Cham.