TESTING THE EFFICACY OF S.P.A.C.E:
A MINDFULNESS-BASED STRENGTH INTERVENTION

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Abstract

Positive psychology interventions have gained increasing attention in recent years as promising approaches for enhancing psychological well-being and resilience. The S.P.A.C.E intervention is a mindfulness-based strengths training intervention that integrates various evidence-based techniques to promote resilience and well-being. This pilot study evaluates the efficacy of the S.P.A.C.E intervention among Naval Officer Cadets. Participants' resilience and stress response were measured using the Brief Resilience Scale (BRS) and the Response to Stressful Experience Scale (RSES) before and after the intervention. Results indicate significant improvements in participants' stress responses. Implications for future research and practical applications are discussed.

Keywords: positive psychology, resilience, S.P.A.C.E intervention, mindfulness, stress response

Testing the Efficacy of S.P.A.C.E: A Mindfulness-Based Strength Intervention

Introduction

Positive psychology interventions have gained increasing attention in recent years as promising approaches for enhancing psychological well-being and resilience[1] With the increasing rise in unprecedented mental health challenges, these interventions aim to improve individuals' overall well-being and ability to cope with adversity[2]. One such intervention is the S.P.A.C.E intervention[3], a mindfulness-based strengths training program that integrates various evidence-based techniques to promote resilience and well-being. It aligns with the principles of positive psychology and offers practical strategies for individuals to navigate challenges more effectively.

Viktor E. Frankl's quote, "Between stimulus and response there is a space. In that space is our power to choose our response," captures the essence of human agency. Unlike many non-human animals whose reactions are instinctual, humans possess the capacity to consciously respond. This ability to elongate the space between stimulus and response defines our humanity, allowing us to make thoughtful choices and cultivate better outcomes.

According to the science of stress appraisal, reactions to stimuli are often instinctive and impulsive, driven by emotions and our brain's fight-or-flight response. In contrast, responses involve a more thoughtful process that entails cognitive appraisal and problem-solving[4] . While impulsive reactions ensured survival in our evolutionary history, modern threats require rational responses engaging the prefrontal cortex to regulate our thoughts and actions [5].

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[1] Seligman, M. E., & Csikszentmihalyi, M. (2000). *Positive psychology: An introduction* (Vol. 55, No. 1, p. 5). American Psychological Association.

[2] Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of clinical psychology*, *65*(5), 467-487.

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[4] Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer Publishing Company.

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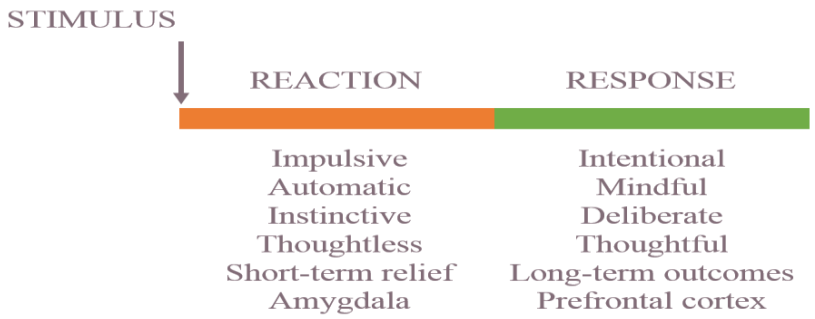

Figure 1: The Stimulus-Response Spectrum[6]

The S.P.A.C.E acronym, developed by Chérif and Wood[7] , offers a practical intervention comprising five steps to transform our stimulus-reaction cycle. This model draws from the principles of mindfulness[8] , tactical breathing[9] , awareness of the cognitive triangle[10] , psychological flexibility[11], character strengths[12], and positive affirmations[13] . The S.P.A.C.E approach therefore fosters resilience and well-being through the application of these phenomenal theories.

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[6] Lieberman, M. D., Eisenberger, N. I., Crockett, M. J., Tom, S. M., Pfeifer, J. H., & Way, B. M. (2007). Putting feelings into words: Affect labeling disrupts amygdala activity in response to affective stimuli. *Psychological Science, 18*(5), 421-428.

[7] Chérif, L., & Wood, V. (2022). Becoming Antifragile by Creating S.P.A.C.E. *Canadian Military Journal*, *22*(4), 59.

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[9] Röttger, S., Theobald, D., Abendroth, J., & Jacobsen, T. (2021). The immediate and medium-term effects of tactical breathing on physiological stress responses in German special police forces. *International Journal of Environmental Research and Public Health, 18*(8), 3960.

[10] Beck, J. S. (2011). *Cognitive behavior therapy: Basics and beyond* (2nd ed.). Guilford Press.

[11] Hayes, S. C., Luoma, J. B., Bond, F. W., Masuda, A., & Lillis, J. (2006). Acceptance and commitment therapy: Model, processes and outcomes. *Behaviour Research and Therapy, 44*(1), 1-25.

[12] Peterson, C., & Seligman, M. E. P. (2004). *Character strengths and virtues: A handbook and classification*. Oxford University Press.

[13] Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. (2009). Happiness unpacked: Positive emotions increase life satisfaction by building resilience. *Emotion, 9*(3), 361-368.

Components of S.P.A.C.E:

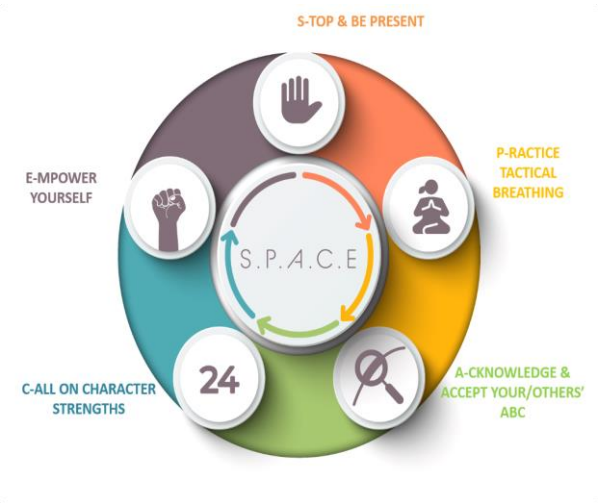

Figure 2: S.P.A.C.E: A Minduflness-Based Strength Intervention

1) Stop and Be Present: Pause and recognize the challenge at hand or the activating event. Mindfully permit yourself to accept this moment as it is, creating mental distance between yourself and the challenge by focusing solely on the present moment. Thich Nhat Hanh's quote, "The present moment is the only moment available to us," emphasizes the importance of living authentically in the now.

In our fast-paced lives, it is easy to get entangled in past regrets or future worries. The present moment is all we have and represents the only timeframe where we possess agency. For someone grappling with depression, the present moment can offer a chance to feel a bit lighter, breaking free from heavy feelings. For someone dealing with anxiety, the present moment becomes a sanctuary from the storms of anxious thoughts. By grounding oneself in the now, individuals can step away from future worries and disrupt the cycle of incessant fretting.

Mindfulness involves two key components: awareness and acceptance. Awareness is the ability to focus on the present moment, while acceptance involves an open, non-judgmental attitude toward one's experiences[14]. Cultivating these qualities leads to greater psychological flexibility[10] and a deeper understanding of thoughts, emotions, and behaviours.

2) Practice Tactical Breathing: breathing techniques and patterns have been advocated as a natural tool for stress management, relaxation and regulating the psychophysiological state[15].Tactical breathing, also known as combat breathing or box breathing, involves a structured breathing pattern to manage stress, alleviate anxiety, and enhance focus. This

[14] Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., ... & Devins, G. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice, 11*(3), 230-241.

[15] Novotny, S., & Kravitz, L. (2007). The science of breathing. *IDEA Fitness Journal*, *4*(2), 36-43.

technique transitions the body from an active sympathetic state to a balanced parasympathetic state.

Tactical breathing is a simple, structured breathing technique used by elite military units like the Navy SEALs, law enforcement officers, athletes, and individuals facing intense stressors. It empowers them to navigate stressful scenarios with composure. In moments of perceived threat, the amygdala, a key fear and threat detection center in the brain, activates, resulting in physiological changes like increased heart rate, rapid breathing, and heightened alertness. Tactical breathing intervenes by activating the calming parasympathetic nervous system (PNS), and therefore reducing the stress response and promoting relaxation.

The ancient yogic practice of pranayama, which means "extension of the life force" in Sanskrit, has been a powerful method for stress reduction and holistic healing for centuries. Research on Mindfulness-based interventions such as Mindfulness-Based Cognitive Therapy (MBCT) incorporates breath awareness, integrating this ancient wisdom into contemporary therapeutic approaches. Controlled breathing mitigates stress, enables effective emotional management, and maintains composure and focus in high-stress scenarios[8] .

The pranayama breathing practice considers breathing as the intermediary between the mind and the body[16]. The impact of tactical breathing on the nervous system is profound, interconnected and can be explained as follows:

- **Activation of the Parasympathetic Nervous System (PNS)**: Slow, deep breaths stimulate the PNS, leading to a decrease in heart rate, slower breathing, improved digestion, and an overall sense of calm[17].
- **Regulation of the Sympathetic Nervous System (SNS)**: Tactical breathing helps counteract the SNS's effects, bringing the body back to equilibrium.
- **Reduction of Stress Hormones**: Tactical breathing reduces the release of stress hormones like cortisol and adrenaline.
- **Improved Heart Rate Variability (HRV)**: Higher HRV, associated with better stress resilience, can be enhanced through tactical breathing.

Tactical breathing can be performed using these four basic steps:

- Inhale deeply through your nose for a count of four or for four seconds.
- Hold your breath for a count of four.

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[16] Jerath, R., Edry, J. W., Barnes, V. A., & Jerath, V. (2006). Physiology of long pranayamic breathing: Neural respiratory elements may provide a mechanism that explains how slow deep breathing shifts the autonomic nervous system. *Medical Hypotheses, 67*(3), 566-571.

[17] Farb, N. A., Segal, Z. V., & Anderson, A. K. (2015). Attentional modulation of primary interoceptive and exteroceptive cortices. *Cerebral Cortex, 23*(1), 114-126.

- Exhale slowly through your mouth for a count of four.

Hold your breath for a count of four. Repeat this cycle as necessary until you feel more relaxed and focused. Engaging in this controlled and rhythmic breathing pattern is a mindfulness practice that diminishes stress and anxiety[18].

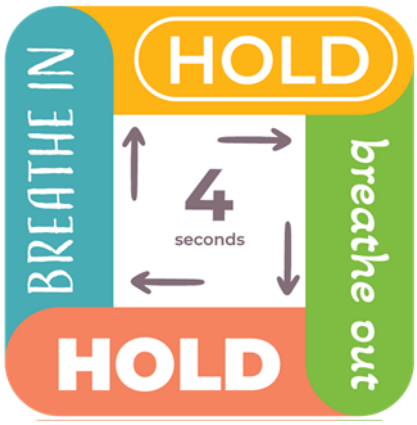

Figure 3: Tactical Breathing Cycle[3]

3) Acknowledge and Accept Affects, Behaviour, and Cognition (ABC): Practicing self-awareness involves recognizing the emotions, actions, and thoughts of oneself and others, bringing clarity and offering an opportunity for adaptation and revision. The ABC model aligns with the core components of self-awareness and forms the basis of Cognitive Behavioural Therapy[19] . This framework, also referred to as the Cognitive Triangle model, involves:

- **Affects**: Recognizing and naming emotions and affects. A typical question to ask yourself when trying to understand your affects would focus on: what am I feeling? Where am I feeling this? Do I know this feeling, and can I name it?
- **Behaviour**: Scrutinizing actions and behaviour. Typical questions to ask would include: how am I reacting? how is what I am feeling influencing what I am doing? Or What intend to do?
- **Cognition**: Understanding thoughts and cognitions. Be conscious of your thoughts, are you having positive or negative thoughts? How valid are your thoughts at that specific moment?

[18] Bouchard, S., Bernier, F., Boivin, É., Morin, B., & Robillard, G. (2012). Using biofeedback while immersed in a stressful videogame increases the efectiveness of stress management skills in soldiers. PLoS ONE, 7(4), e36169.
[19] Beck, A. T. (1960). Cognitive therapy: Nature and relation to behavior therapy. *Behavior Therapy, 1*(2), 184-200.

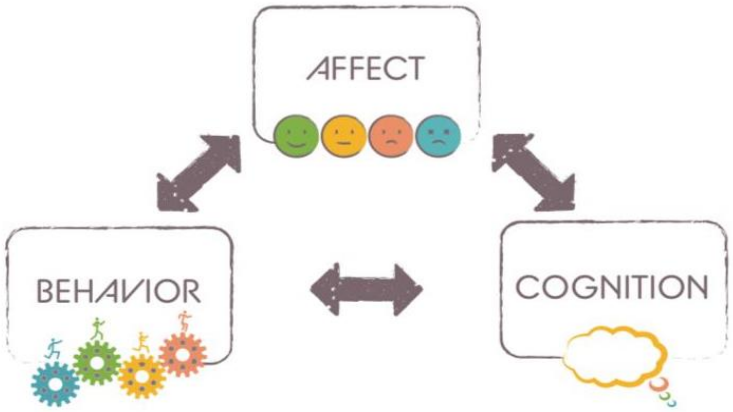

Figure 4: The ABC Triangle: Interplay of Affect, Behaviour, and Cognition[3]

Affect: Emotions are fundamental messages that define our humanity. Despite societal conditioning to suppress emotions, acknowledging and permitting ourselves to feel is crucial for emotional intelligence and personal growth. Emotional intelligence involves recognizing, labeling, and understanding emotions within oneself and others, regulating behaviour, and nurturing relationships[20] .

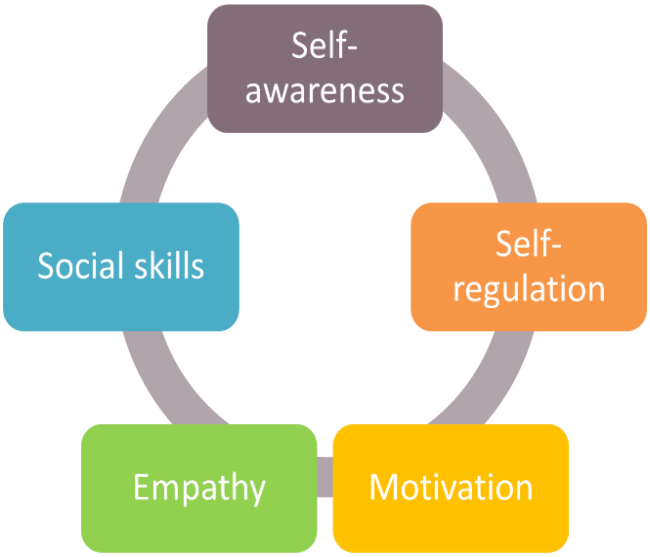

Figure 5: Emotional Intelligence Model[20]

The emotional intelligence model consists of five related yet distinct components, ranging from self-awareness to social skills. Self-awareness: the foundation of emotional intelligence, involves waking up to witness the details of your life with clarity. It is a habit that falls along a continuum

[20] Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. Bantam Books.

and requires ongoing practice. Emotional granularity, the ability to discern subtle differences between emotional states, enhances self-awareness and self-regulation[21] .

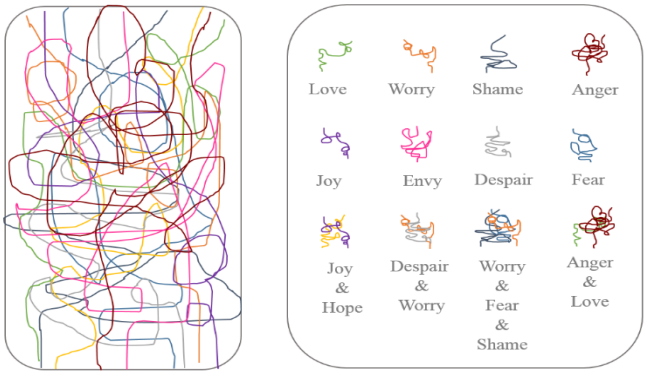

Figure 6: The Emotional Maze: Mapping the Complexity of Human Feelings

Self-Regulation: Once we are aware of our emotions, we can begin to manage them effectively, so they do not escalate and cause further distress. As observed in Figure 5, the preceding component enables an awareness and identification of emotions and therefore allows effective regulation Self-regulation is the ability to manage one's emotions, behaviour, and thoughts in pursuit of long-term goals. It involves being disciplined and exercising control over one's actions and reactions. Effective self-regulation can prevent impulsive responses and help maintain composure in challenging situations.

Motivation: Intrinsic motivation, driven by internal desires such as personal growth and mastery, plays a crucial role in emotional intelligence. Intrinsic motivation compels individuals to participate in activities for the pure joy or satisfaction derived, rather than external rewards. By focusing on intrinsic motivation, individuals can maintain a sense of purpose and resilience, even in the face of adversity[22].

Empathy: Empathy involves understanding and sharing the feelings of others. It enables us to step into someone else's shoes and respond with compassion. Empathy is a powerful force that connects us to the human experience and fosters deeper connections and understanding[23].

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[21] Barrett, L. F. (2004). Feelings or words? Understanding the content in self-report ratings of experienced emotion. *Journal of Personality and Social Psychology, 87*(2), 266-281.

[22] Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist, 55*(1), 68-78.

[23] Brown, B. (2012). *Daring greatly: How the courage to be vulnerable transforms the way we live, love, parent, and lead*. Gotham Books.

Practicing empathy involves perspective-taking, being non-judgmental, recognizing others' feelings, and communicating understanding back to them.

Social Skills: Social skills encompass a range of abilities that facilitate effective communication and interaction with others. These include active listening, verbal and non-verbal communication, conflict resolution, and leadership. Social skills help build meaningful connections, cultivate trust, and promote positive interactions. While some may find social skills come naturally, others can enhance them through practice and conscious effort.

Behaviour: Many of our actions are driven by habits, which operate on autopilot. Habits are formed and maintained through a three-step process known as the habit loop:

Cue: The trigger that initiates the habit.

Routine: The behaviour that follows the cue.

Reward: The positive outcome that reinforces the habit.

Figure 7: The Habit Loop[24]

Being mindful of habit cues and rewards can help make intentional choices about which habits to maintain or change. Identifying and addressing negative habits is crucial for personal growth and resilience[25].

Cognition: Cognitive distortions are biased or distorted thinking patterns that can perpetuate negative thoughts and beliefs. Automatic Negative Thoughts (ANTs) are spontaneous, unbidden

[24] Duhigg, C. (2012). *The power of habit: Why we do what we do in life and business*. Random House.

[25] McKey, Z. (2023). *Daily Habit Makeover*. Jaico Publishing House.

thoughts that are predominantly negative and often irrational. They can significantly impact emotions, behaviours, and perceptions. Common cognitive distortions include:

All-or-Nothing Thinking: Viewing situations in black-and-white terms.

Overgeneralization: Drawing broad conclusions from a single event.

Catastrophizing: Expecting the worst possible outcome.

Personalization: Blaming oneself for events outside one's control.

Defusion is a technique within the Psychological Flexibility model and Acceptance and Commitment Therapy (ACT) that fosters detachment from negative emotions and thoughts. By using language to create psychological distance (e.g., "I am experiencing anger" instead of "I am angry") and observing emotions and thoughts with curiosity and non-judgmentally, individuals can reduce the impact of negative emotions and thoughts. To counter cognitive distortions and ANTs, individuals can practice cognitive restructuring, which involves reframing negative thoughts[26].

4) Call on Your Character Strengths: Identify and leverage your character strengths to navigate situations effectively. The six virtues and 24-character strengths discovered by Peterson and Seligman[11] provides a comprehensive framework for personal growth and resilience.

- **Wisdom**: Creativity, curiosity, judgment, love of learning, and perspective.
- **Courage**: Bravery, perseverance, honesty, and zest.
- **Humanity**: Love, kindness, and social intelligence.
- **Justice**: Teamwork, fairness, and leadership.
- **Temperance**: Forgiveness, humility, prudence, and self-regulation.
- **Transcendence**: Appreciation of beauty and excellence, gratitude, hope, humor, and spirituality.

Each of these strengths can be called upon in specific situations. For example, using[26] mapping of 87 human emotions and experiences, we suggest the following mapping to connect the character strengths with the specific emotions effectively:

Stress, Overwhelm, Anxiety, Worry, Avoidance, Excitement,	**Bravery**: Facing fears, not shrinking from threats or challenges.	**Perseverance**: Overcoming obstacles, persistence.

[26] Otto, M. W. (2019). Cognitive restructuring. In K. S. Dobson (Ed.), Handbook of cognitive-behavioral therapies (4th ed., pp. 111-136). The Guilford Press.

Dread, Fear, Vulnerability	**Curiosity**: Openness to experience, exploring new possibilities.	**Self-Regulation**: Managing impulses and emotions.
	Hope: Optimism, positive future-mindedness.	
Anguish, Hopelessness, Despair, Sadness, Grief	**Hope**: Optimism, expecting the best and working to achieve it.	**Gratitude**: Thankfulness, expressing thanks.
	Love: Valuing close relationships, warmth.	**Perspective**: Wisdom, providing wise counsel.
	Kindness: Generosity, compassion.	
Joy, Happiness, Calm, Contentment, Gratitude, Foreboding Joy, Relief, Tranquility	**Zest**: Vitality, enthusiasm for life.	**Love**: Genuine warmth, close relations.
	Humor: Playfulness, bringing smiles to others.	**Gratitude**: Feeling blessed.
	Perspective: Wisdom, providing wise counsel.	
Boredom, Disappointment, Expectations, Regret, Discouragement, Resignation, Frustration	**Perseverance**: Finishing what one starts.	**Hope**: Expecting the best and working to achieve it.
	Curiosity: Seeking novelty and exploration.	**Judgment**: Critical thinking, thinking through all sides.
	Creativity: Seeing and doing things in different ways.	
Shame, Self-Compassion, Perfectionism, Guilt, Humiliation, Embarrassment	**Humility**: Modesty, letting accomplishments speak for themselves.	**Forgiveness**: Mercy, accepting others' shortcomings
	Honesty: Authenticity, being true to oneself.	**Kindness**: Generosity, compassion.
	Self-Regulation: Managing impulses and emotions.	
Pride, Hubris, Humility	**Humility**: Modesty, letting accomplishments speak for themselves.	**Perspective**: Wisdom, providing wise counsel.
	Gratitude: Thankfulness, expressing thanks.	**Honesty**: Sincerity without pretense.
	Self-Regulation: Managing impulses and emotions.	
Comparison, Admiration, Reverence, Envy, Jealousy, Resentment, Schadenfreude, Freudenfreude	**Gratitude**: Admiration for skill and moral greatness.	**Humility**: Avoiding arrogance.
	Social Intelligence: Awareness of motives and feelings.	**Perspective**: Wisdom, taking the big picture view.
	Kindness: Generosity, care.	

Compassion, Pity, Empathy, Sympathy, Boundaries, Comparative Suffering	**Kindness**: Generosity, care, compassion.	**Love**: Valuing close relations, genuine warmth.
	Social Intelligence: Knowing what makes others tick.	**Forgiveness**: Mercy, accepting others' shortcomings.
	Perspective: Wisdom, providing wise counsel	
Anger, Contempt, Disgust, Dehumanization, Hate, Self-Righteousness	**Forgiveness**: Letting go of hurt.	**Self-Regulation**: Managing impulses and emotions.
	Fairness: Adhering to principles of justice.	**Humility**: Modesty, avoiding arrogance.
	Bravery: Speaking up for what's right.	
Awe, Wonder, Confusion, Curiosity, Interest, Surprise	**Curiosity**: Exploration, openness to experience.	**Love of Learning**: Mastering new skills and topics.
	Appreciation of Beauty and Excellence: Awe and wonder for beauty.	**Creativity**: Seeing and doing things in different ways.
	Perspective: Wisdom, providing wise counsel.	
Belonging, Fitting In, Connection, Disconnection, Insecurity, Invisibility, Loneliness	**Love**: Valuing close relationships, warmth.	**Social Intelligence**: Awareness of feelings of oneself and others
	Kindness: Generosity, care.	**Gratitude**: Thankfulness, expressing thanks.
	Teamwork: Contributing to a group effort, loyalty.	
Amusement, Bittersweetness, Nostalgia, Cognitive Dissonance, Paradox, Irony, Sarcasm	**Humor**: Playfulness, bringing smiles to others.	**Perspective**: Wisdom, taking the big picture view.
	Curiosity: Interest and exploration.	**Creativity**: Seeing and doing things in different ways.
	Zest: Vitality, enthusiasm for life.	
Love, Lovelessness, Heartbreak, Trust, Self-Trust, Betrayal, Defensiveness, Flooding, Hurt	**Love**: Both loving and being loved.	**Honesty**: Being true to oneself, integrity.
	Forgiveness: Accepting others' shortcomings.	**Hope**: Optimism, expecting the best.
	Bravery: Facing emotional challenges.	

5) Empower Yourself: focus on what you can control and take proactive steps to manage stressors. Instead of dwelling on limitations, optimize the situation by concentrating on actionable steps. Fostering a sense of control, confidence, and optimism is crucial in effectively managing stressors and enhancing resilience[27].

Aligning with Nelson Mandela's words, "May your choices reflect your hopes, not your fears," the intentional practice of creating S.P.A.C.E. empowers individuals to make choices that align with their values and reflect their strengths, even in the face of obstacles. By creating S.P.A.C.E., you allow for a brief interlude that offers an opportunity to respond thoughtfully rather than react impulsively. This intentional pause fosters empathy, understanding, and better decision-making.

The S.P.A.C.E. intervention can be accessed in any place or situation, directing attention clearly and systematically to interrupt negative affect, behaviour, and cognitions and their pre-programmed responses. This study evaluates the efficacy of the S.P.A.C.E intervention among Naval Officer Cadets, aiming to enhance their psychological resilience and stress management skills.

Method

Participants

The study consisted of a total of 82 Naval Officer Cadets (56 first year and 26 third year) from the Portuguese Naval Academy. Participants were mostly male (86.6%) and female (13.4%), aged between 18 and 33 years.

Procedure

The study consisted of three phases the pretest phase, the intervention training phase, and the post-test phase. During the pretest phase, participants were briefed about the purpose of the study and were forwarded a letter of information and a consent form where they agreed to freely consent to participate in this research. Participants were then asked to complete two questionnaires: one about themselves, how they are feeling, and how they think about every situation, containing 6 questions related to Officer Cadets' resilience and a second questionnaire related to the response to the stressful experience scale (RSES) with 22 questions.

Phase two began on completion of the questionnaires, participants attended a 90-minute resilience training session where the S.P.A.C.E concept was explained and practiced.

While the students were obligated to attend the sessions as part of their military training, all ethical considerations were observed. Participants were informed they were free to decline to answer any questions on the surveys and face no penalties or repercussions (military nor academic) for not participating in any aspects of the study.

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[27] Schwarzer, R., & Warner, L. M. (2012). Perceived self-efficacy and its relationship to resilience. In *Resilience in children, adolescents, and adults: Translating research into practice* (pp. 139-150). New York, NY: Springer New York.

In Phase Three, participants were reassessed using the same surveys as those completed in Phase One.

Measures

Resilience

Resilience was assessed using the Brief Resilience Scale (BRS)[28]. The BRS consists of six items (e.g., "I tend to bounce back quickly after hard times" and "It does not take me long to recover from a stressful event"). Each item was rated on a five-point scale ranging from 1 = 'strongly disagree' to 5 = 'strongly agree. This survey has been recorded to have a good reliability coefficient of 0.893.

Response to stress

The Response to Stressful Experience Scale (RSES)[29] was used to assess the participants' response to stress through the various dimensions of this instrument. This 22-item instrument proposed five factors of resilience: meaning-making and restoration; active coping; cognitive flexibility; spirituality; and self-efficacy. Each item was rated using a 5-point Likert scale ranging from exactly like me (4) to not at all like me (0). Recorded an excellent Cronbach alpha range of 0.949.

Data analysis

All statistical analysis was computed using R and Rstudio. The tidyverse package in R was used to clean the data, and the Rstatix package was used to validate model assumptions and to conduct the repeated measures anova on the average BRS and RSES scores (averaged across subjects).

Results

Prior to conducting our main analyses, we assessed correlations among BRS and RSES scores for all three assessments, respectively. T0 BRS scores were strongly correlated with T1 [$r(80) = 0.70$, $p < 0.001$] and T2 scores [$r(80) = 0.67$, $p < 0.001$], and T1 scores were strongly correlated with T2 scores [$r(80) = 0.84$, $p < 0.001$]. Moreover, T0 RSES scores were strongly correlated with T1 [$r(80) = 0.79$, $p < 0.001$] and T2 scores [$r(80) = 0.72$, $p < 0.001$], and T1 scores were strongly correlated with T3 scores [$r(80) = 0.86$, $p < 0.001$].

To test the effectiveness of our S.P.A.C.E. intervention (whether a group of individuals attending a S.P.A.C.E. workshop would report improved BRS and RSES scores respectively over time), we conducted two repeated measures analyses of variance: one on BRS scores as our outcome variable and the other on RSES scores as our outcome variable.

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[28] Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P and Bernard J (2008) The brief resilience scale: assessing the ability to bounce back. International Journal of Behavioral Medicine 15, 194–200.

[29] Johnson, D. C., Polusny, M. A., Erbes, C. R., King, D., King, L.,Litz, B. T., Schnurr, P. P., Friedman, M., Pietrzak, R. H., &Southwick, S. M. (2011). Development and initial validationof the response to stressful experiences scale. MilitaryMedicine, 176(2), 161–169

After identifying outliers (9 in the BRS study, 2 in the RSES study), they were excluded from the analysis. For the remaining participants, there appeared to be no statistically significant difference in the BRS scores found across time [F(2, 150) = 1.165, p =0.315, eta^2 = 0.004] , however, there was a statistically significant difference across time in RSES scores [F(2, 158) p < 0.01, η^2 = 0.013]. The assumption of sphericity was not supported by Mauchly's Test, but a Greenhouse-Geisser correction was applied to account for the violations of the assumption. More specifically, post-hoc repeated measures t-tests with Bonferroni corrections the results revealed a main effect in response to stress indicating an overall increased coping and well-being in RSES scores between T0 (M = 3.80, SD = 0.42) and T2 (M = 3.92, SD = 0.46).

Table 1. Descriptive statistics for stress response as a function of time.

Time	M	SD	n
T0	3.80	0.42	80
T1	3.87	0.44	80
T2	3.92	0.46	80

Note. M and SD represent mean and standard deviation, respectively.

Table 2. Descriptive statistics for resilience as a function of time.

Time	M	SD	n
T0	3.89	0.44	76
T1	3.81	0.51	76
T2	3.85	0.51	76

Note. M and SD represent mean and standard deviation, respectively.

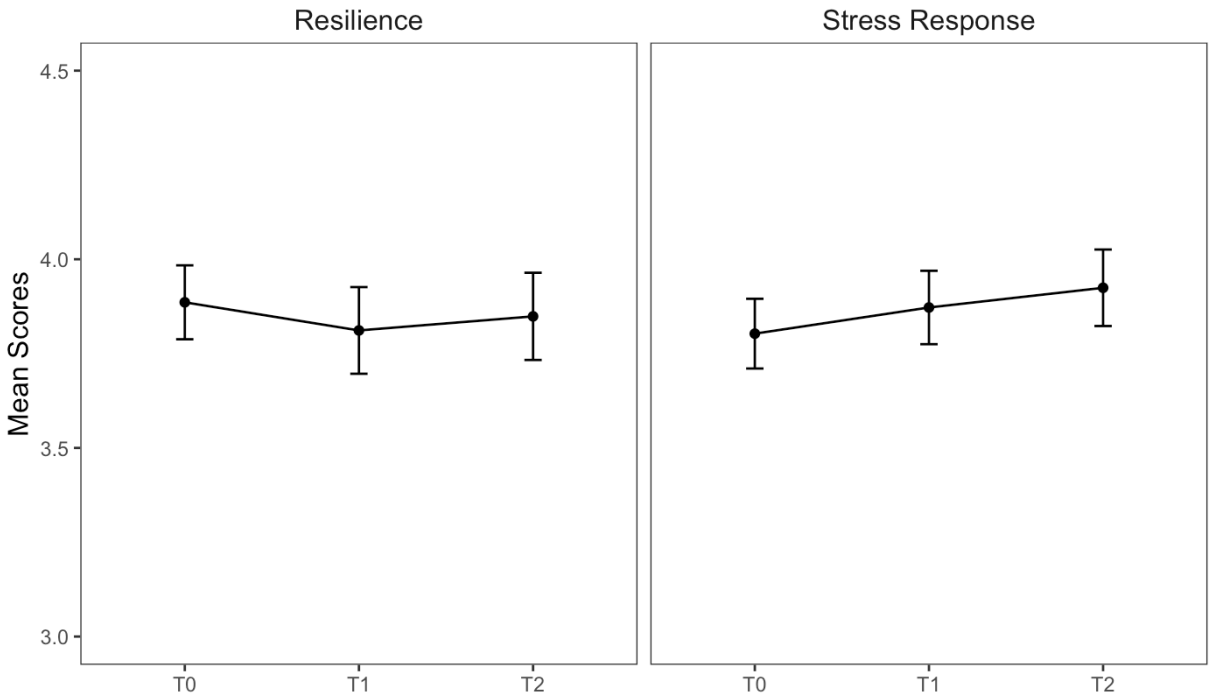

Figure 8. Mean resilience and stress response as a function of time.

Discussion:

This pilot study, involving a group of 82 Naval/Officer Cadets from the Portuguese Naval Academy, provided valuable insights into the intervention's impact. Participants underwent a uniform intervention format, including a 90-minute workshop on the S.P.A.C.E concept. Feedback from participants and facilitators, as well as data on resilience and well-being, were collected to evaluate the clarity of the intervention content, the appropriateness of the workshop activities, and the effectiveness of the intervention on resilience and stress.

The S.P.A.C.E intervention demonstrated significant improvements in participants' stress responses, indicating its potential efficacy in enhancing psychological well-being and resilience. This improvement is consistent with the existing literature on the individual components of the S.P.A.C.E intervention, such as mindfulness, cognitive triangle, emotional intelligence, psychological flexibility, and character strengths, which have already been shown to positively impact resilience, well-being, and stress management.

Mindfulness: The mindfulness component of S.P.A.C.E, which involves being present and accepting the moment as it is, has been widely recognized for its benefits in reducing stress and enhancing well-being. Mindfulness practices help individuals develop greater awareness and acceptance of their thoughts and emotions, leading to improved psychological flexibility and resilience [30]. Research has shown that mindfulness-based interventions can effectively reduce

[30] Creswell, J. D., Pacilio, L. E., Lindsay, E. K., & Brown, K. W. (2016). Brief mindfulness meditation training alters psychological and neuroendocrine responses to social evaluative stress.

symptoms of anxiety, depression, and stress, while also promoting emotional regulation and overall well-being[13] .

Cognitive Triangle: The cognitive triangle model, which addresses the interplay between thoughts, emotions, and behaviours, is a foundational element of Cognitive Behavioural Therapy (CBT). This model helps individuals identify and challenge negative thought patterns, leading to more adaptive emotional and behavioural responses[31] . Studies have demonstrated the effectiveness of CBT in treating a wide range of psychological issues, including stress and anxiety, by promoting cognitive restructuring and healthier coping mechanisms[19] .

Emotional Intelligence: Emotional intelligence (EI) involves recognizing, understanding, and managing our own emotions, as well as recognizing, understanding, and influencing the emotions of others[21] . The S.P.A.C.E intervention incorporates components that enhance EI, such as self-regulation, empathy, and social skills. Higher emotional intelligence is associated with better stress management, improved mental health, and greater resilience[21] . By developing EI through practices like mindfulness, cognitive awareness, and leveraging character strengths, individuals can enhance their capacity to handle stress and maintain well-being.

Psychological Flexibility: Psychological flexibility, emphasized in Acceptance and Commitment Therapy (ACT), involves the ability to stay present and engaged in meaningful activities despite experiencing difficult thoughts and emotions[10]. This approach encourages individuals to accept their internal experiences rather than avoiding them, fostering resilience and enhancing overall well-being. Research has shown that higher levels of psychological flexibility are associated with lower levels of stress and greater psychological health[10].

Character Strengths: The focus on character strengths in the S.P.A.C.E intervention aligns with positive psychology principles, which highlight the importance of leveraging individual strengths to promote well-being and resilience[11]. Identifying and using personal strengths can help individuals navigate challenges more effectively and contribute to greater life satisfaction and psychological health. Studies have shown that interventions promoting the use of character strengths lead to significant improvements in well-being and reductions in stress[12] .

Future Research Directions

To further investigate the effectiveness of the S.P.A.C.E intervention, a randomized controlled trial (RCT) is proposed. Participants will be randomly assigned to either the intervention group (S.P.A.C.E workshop) or a control group (Communication Skills workshop). This approach will ensure an unbiased comparison between the effectiveness of the S.P.A.C.E workshop and the control condition. The RCT will employ a rigorous methodology, assessing outcomes at multiple time points to provide valuable insights into the intervention's efficacy. By incorporating comprehensive feedback and refining the intervention based on pilot study findings, this future

[31] Ekman, P. (1999). Basic emotions. In T. Dalgleish & M. Power (Eds.), *Handbook of cognition and emotion* (pp. 45-60). Wiley.

research aims to validate and expand the practical applications of the S.P.A.C.E intervention across different populations.

Furthermore, minor revisions were made to enhance the intervention's clarity and effectiveness. These revisions include the augmentation of details concerning concepts and models such as emotional intelligence[21] and psychological flexibility[10] . Additional practical exercises will be included for each step of the S.P.A.C.E intervention during the workshop. This augmentation aims to provide participants with a deeper understanding of these concepts and more opportunities to practice and integrate the techniques into their daily lives.

A comprehensive booklet was created to support participants' engagement with the intervention. This booklet contains detailed summaries of each component of the intervention, including mindfulness, tactical breathing, awareness of the cognitive triangle, emotional intelligence, psychological flexibility, the application of character strengths, and positive affirmations. The booklet also includes prompts to guide participants' journaling throughout the week-long post-workshop period, facilitating the integration of S.P.A.C.E strategies into their everyday routines.

Participants will be encouraged to journal about their use of S.P.A.C.E. regularly during the following week. Feedback will be provided to participants based on their journal entries to reinforce their understanding and application of the intervention. This feedback will be delivered through written comments alongside their journal entries, offering personalized guidance and support.