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Exploring the Role of Self-Compassion in Promoting Resilience and Well-Being Among

Rescue Workers

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Abstract 16

One or two sentences providing a basic introduction to the field, comprehensible to a 17

scientist in any discipline. 18

Two to three sentences of more detailed background, comprehensible to scientists 19

in related disciplines.

One sentence clearly stating the **general problem** being addressed by this particular 21

study. 22

One sentence summarizing the main result (with the words "here we show" or their 23

equivalent).

Two or three sentences explaining what the main result reveals in direct comparison 25

to what was thought to be the case previously, or how the main result adds to previous

knowledge.

One or two sentences to put the results into a more **general context**. 28

Two or three sentences to provide a **broader perspective**, readily comprehensible to 29

a scientist in any discipline. 30

Keywords: keywords 31

Word count: X 32

Exploring the Role of Self-Compassion in Promoting Resilience and Well-Being Among
Rescue Workers

Rescue workers (RWs) and healthcare workers frequently encounter the distress of others, which can lead to "compassion fatigue" (Joinson, 1992), burn-out (Chatzea, Sifaki-Pistolla, Vlachaki, Melidoniotis, & Pistolla, 2018), and Post-Traumatic Stress Disorder [PTSD; Tahernejad et al. (2023)]. Therefore, it is important to understand and promote internal and external factors that support their resilience (Mao, Hu, & Loke, 2022).

In recent years, the concept of "self" has become essential in understanding individual differences in coping with stress (Beck, 2016). Self-compassion, which involves specific ways of relating to oneself, has been shown to have a positive impact on mental health (MacBeth & Gumley, 2012). A compassionate mindset towards oneself may also protect against psychopathology, such as PTSD (Wilson, Mackintosh, Power, & Chan, 2019; Wong & Yeung, 2017).

Self-compassion is typically measured using the Self-Compassion Scale (SCS). The SCS
measures six dimensions of self-compassion, three of which evaluate the active components of
self-compassion. These dimensions include Self-kindness (SK), Common humanity (CH), and
Mindfulness (MI), which involve being kind and understanding towards oneself, recognizing
that personal failures and pain are common experiences, and maintaining awareness of one's
painful thoughts and feelings. The remaining three dimensions evaluate the "hindrances" to
self-compassion, including Self-judgment (SJ), Isolation (IS), and Overidentification (OI).
These dimensions assess factors that hinder self-compassion, such as being self-critical and
unsympathetic towards one's shortcomings, isolating oneself from others, and
over-identifying with one's painful thoughts and emotions (Neff, 2022).

The goal of this study is to investigate how self-compassion functions as a coping mechanism among RWs, and its potential impact on their mental health and well-being.

Specifically, we aim to explore how self-compassion may promote resilience and reduce the
risk of negative outcomes such as compassion fatigue and burn-out. To achieve these aims,
we will utilize Latent Profile Analysis to identify distinct profiles of personality, protective
factors, risk factors, and outcomes among RWs. We will then examine whether individuals in
the adaptive profile show higher levels of positive dimensions of self-compassion and lower
levels of negative dimensions of self-compassion, while individuals in the maladaptive profile
exhibit the opposite pattern.

By addressing these research questions, the study aims to shed light on the role of self-compassion in RWs, its potential impact on their mental health and well-being, and its implications for promoting resilience and reducing the risk of negative outcomes such as compassion fatigue and burn-out.

Personality traits and coping strategies as protective factors

Personality traits play a crucial role in determining an individual's susceptibility to 70 burnout. For instance, a meta-analysis conducted by Swider and Zimmerman (2010) 71 revealed that the Five Factor Model of Personality, comprising neuroticism, extraversion, agreeableness, conscientiousness, and openness, collectively account for a significant proportion of the variance in levels of job burnout among individuals. This finding suggests that personality traits are a potent predictor of burnout levels, implying that the etiology of 75 burnout may not solely originate from external factors but also from intrinsic personality attributes. Specifically, Bianchi (2018) found that neuroticism is the strongest correlate for burnout. Individuals with low levels of extraversion tend to focus on negative aspects of events and use predominantly emotion-focused coping strategies (Connor-Smith & Flachsbart, 2007). Moreover, individuals with low levels of conscientiousness tend to experience higher levels of depersonalization and reduced personal accomplishment (Kokkinos, 2007). Conversely, individuals with high levels of agreeableness exhibit a greater ability to build successful interpersonal relationships at work, are gentle, and cooperative,

and show lower levels of burnout (Angelini, 2023). On the other hand, the literature has not established a clear link between openness and burnout (Angelini, 2023; Răducu & Stănculescu, 2022). Therefore, we may expect that elevated levels of neuroticism and lower levels of extraversion, agreeableness, and conscientiousness (but not openness) may provide a "personality marker" for rescue workers who are less able to mobilize internal resources and build resistance against stressors.

Coping refers to the cognitive and behavioral efforts individuals make to manage
environmental stressors, as described by Lazarus and Folkman (1984). Research has
identified two types of coping strategies: adaptive (problem-solving and cognitive
reappraisal) and maladaptive (suppression, rumination, and avoidance). Studies have
consistently found that maladaptive coping strategies are particularly harmful to
psychological well-being, as evidenced by Joormann and Stanton (2016), Liu and Thompson
(2017), and Moritz et al. (2016). In contrast, the lack of adaptive coping strategies seems to
be less relevant to the development of psychological disorders, as suggested by studies
conducted by Aldao and Nolen-Hoeksema (2012) and Moritz et al. (2016).

A considerable amount of research has also demonstrated a clear relationship between 99 personality traits and coping strategies (Sica et al., 2021). However, Connor-Smith and 100 Flachsbart (2007) meta-analysis comprising 124 studies emphasized the importance of 101 distinguishing between specific strategies. Specifically, extraversion showed positive 102 correlations with problem-focused and emotion-focused strategies. On the other hand, 103 neuroticism was negatively related to problem-focused and positive-oriented strategies, particularly acceptance, and positively related to emotional-focused and avoidance-oriented strategies. Agreeableness and openness exhibited a weak association with coping, primarily 106 with social support and problem-focused strategies, while conscientiousness showed a strong 107 link to problem-focused strategies. Additionally, the use of drugs and alcohol, classified as 108 avoidance-oriented strategies, was negatively associated with Agreeableness and 109

Conscientiousness (Afshar-Oromieh et al., 2015; Connor-Smith & Flachsbart, 2007).

Furthermore, it has been established that having access to sufficient internal and 111 external resources can help individuals cope with situational demands, as well as build 112 resistance against stressors. For RWs, perceived social support is a crucial external resource 113 that plays a significant role in mitigating burnout. Studies conducted by Setti, Lourel, and 114 Argentero (2016) have shown that RWs who perceive support from their colleagues and 115 superiors are less likely to experience emotional exhaustion, depersonalization, and inefficacy, 116 which are the three dimensions of burnout. These findings are consistent with previous 117 research that has linked social support to lower levels of burnout and posttraumatic 118 symptoms (Armstrong-Stassen, 2004). The stress-buffering hypothesis (Cohen & Wills, 110 1985), the social support deterioration model (Norris & Kaniasty, 1996), and the 120 conservation of resources model (Hobfoll, 1989) all suggest that perceived social support can 121 protect against the negative effects of stress. 122

The overall psychological distressing symptoms in RWs often linked to burnout and PTSD. The meta-analysis of Berger et al. (2012), for example, shows that RWs have a prevalence of PTSD that is much higher than that of the general population. Therefore, the identification of individual differences that signal increased risk for PTSD is important.

Purpose of the study

We posit that a LPA will detect a high and a low profile of resilience among RWs. The
"low resilience" profile should include high levels of neuroticism and maladaptive coping, low
levels of extraversion, agreeableness, conscientiousness, and perceived social support, as well
as high levels of reported post-traumatic symptoms. Conversely, an adaptive profile of
resilience should have the opposite pattern.

We expect that the "low resilience" profile will covary with elevated levels of "negative" self-compassion and with lower levels of "positive" self-compassion, when compared to the

"high resilience" profile group.

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Specifically, the study aims to:

- Investigate whether the overall level of self-compassion varies between RWs and a control community sample.
 - Explore whether the "high-resilience" and "low-resilience profiles" described above can be used to descrive individual differences in RWs protective and risk factors.
- Determine whether the "high-resilience" and "low-resilience" profiles can accound for individual differences of RWs to rely on self-compassion.
- Examine the relationship between direct vs indirect involvement in alleviating the suffering of others (job qualifications) and the ability to rely on self-compassion.

145 Methods

Instruments. In addition to administering specific questions targeted towards the RW group, we also administered the following scales to both participant groups.

Self-Compassion. The Self-Compassion Scale [SCS; Neff (2003)] was used to measure 148 self-compassione. The SCS is a 26-item self-report measure designed to assess 149 self-compassion, or the ability to extend kindness and understanding to oneself during 150 challenging times. The SCS is composed of six subscales, with three of them (Self-Kindness, 151 SK; Common-Humanity, CH; and Mindfulness, MI) measuring compassionate 152 self-responding, and the remaining three (Self-Judgment, SJ; Isolation, IS; and 153 Over-Identification, OI) assessing uncompassionate self-responding. The SCS total score (SCS-TS) is obtained by inverting the scores of the subscales related to uncompassionate self-responding. The Italian version of the SCS by Veneziani, Fuochi, and Voci (2017) was 156 used in the present study. The SCS demonstrated good internal consistency, with a total 157 reliability of $\omega = .92$. The subscales also demonstrated adequate reliability: SK ($\omega = .90$), 158 CH ($\omega = .78$), MI ($\omega = .78$), SJ ($\omega = .85$), IS ($\omega = .89$), and OI ($\omega = .86$). 159

Personality traits. The NEO-Five Factor Inventory (NEO-FFI-60; Costa and McCrae 160 (1992)) was employed to examine personality traits. The NEO-FFI-60 is a widely used 161 60-item self-report questionnaire that assesses five broad domains of personality: 162 Neuroticism (N), Extraversion (E), Openness to experience (O), Agreeableness (A), and 163 Conscientiousness (C). The internal consistency of the five sub-scales of the NEO-FFI-60 has 164 been found to be adequate (Murray, Rawlings, Allen, & Trinder, 2003). In the current study, 165 we used the Italian version of the NEO-FFI-60 developed by Caprara, Barbaranelli, and 166 Guido (2001). The Neuroticism ($\omega = .92$), Extraversion ($\omega = .83$), Conscientiousness ($\omega =$ 167 .87), and Openness ($\omega = .78$) subscales showed adequate internal consistency, whereas 168 reliability was low for Agreableness ($\omega = .66$) – see also Burton, Delvecchio, Germani, and 169 Mazzeschi (2021). 170

Adaptive and maladaptive coping strategies. The Coping Orientation to Problems 171 Experienced (COPE) test was used to assess adaptive and maladaptive coping. The COPE 172 test (Carver, Scheier, & Weintraub, 1989) is a self-report questionnaire commonly used to 173 assess an individual's coping skills and strategies when dealing with stressful and challenging 174 events. In the present study, we utilized the scoring system proposed by Lyne and Roger 175 (2000), which divides the COPE items into three subscales: Active Coping, Emotion-Focused 176 Coping, and Avoidance Coping. Active Coping reflects a constructive and active approach to 177 coping, in which individuals acknowledge the occurrence of a stressful situation and take 178 action to address the problem through problem-solving, gathering information, and 179 analyzing the situation logically. The other two subscales, Emotion-Focused Coping 180 (expressing feelings and seeking emotional support) and Avoidance Coping (behavioural disengagement (giving up), denial, and mental disengagement), represent more passive approaches to problem-solving, suggesting a belief that the situation cannot be changed. 183 These subscales assess maladaptive coping strategies. In our study, we utilized the Italian 184 version of the COPE questionnaire developed by Sica, Novara, Dorz, and Sanavio (1997; Sica 185 et al., 2021; see also Sica et al., 2008). The reliability of the total scale was satisfactory ($\omega =$ 186

.87); reliability coefficients for each subscale were acceptable: Active coping: $\omega = .89$; Emotion-focused coping: $\omega = .77$; Avoidance coping: $\omega = 0.82$.

Perceived social support. The Multidimensional Scale of Perceived Social Support 189 [MSPSS; Zimet, Dahlem, Zimet, and Farley (1988)] was used to evaluate the perceived 190 availability of social support. The MSPSS encompasses three social support subscales, 191 namely family, friends, and significant others, with the items encompassing expressions such 192 as "I can talk about my problems with my family," "I can count on my friends when things 193 go wrong," and "There is a special person who is around when I am in need." Participants 194 were requested to rate their responses to the 12 items on a seven-point Likert scale, with 195 higher total scores indicating greater perceived social support, ranging from "very strongly disagree" to "very strongly agree." Previous research has established the MSPSS's good 197 test-retest reliability and discriminant and construct validity (Zimet et al., 1988). For this 198 investigation, we utilized the Italian version of the scale (Prezza & Principato, 2002). The 199 internal consistency of the current sample was found to be good, with coefficients of ω of 200 0.94 for the family subscale, 0.96 for the friends subscale, and 0.95 for the significant others 201 subscale. 202

Post-traumatic stress. The Impact of Event Scale - Revised [IES-R; Weiss (2007)] was 203 used to evaluate subjective distress associated with traumatic events. The IES-R is a 204 self-report instrument comprising 22 items, designed to capture the essential features of 205 traumatic stress reactions, including intrusion, avoidance, and persistent hyperarousal. 206 These features correspond to criteria B, C, and D of the DSM-IV diagnosis of posttraumatic stress disorder (PTSD). The IES-R includes sub-scales for each of these domains, and it is commonly used to assess PTSD symptomatology in rescue workers. Previous research has 209 demonstrated that the IES-R has good internal consistency and test-retest stability. 210 Additionally, a study by Craparo, Faraci, Rotondo, and Gori (2013) examined the 211 psychometric properties of the Italian translation of the IES-R and found good concurrent 212

and discriminant validity, as well as good test-retest reliability. In the present sample, IES-R demonstrated high levels of internal consistency, with a total reliability $\omega = .94$. The reliability for each of the sub-scales was also high, with $\omega = .91$ for intrusion, $\omega = .82$ for avoidance, and $\omega = .87$ for hyperarousal.

Post-traumatic growth. We employed the Post-Traumatic Growth Inventory [PTGI; 217 Tedeschi and Calhoun (1996)] to examine the potential positive changes following one or 218 more traumatic or stressful events. The PTGI is a self-report inventory composed of 21 219 items and encompasses five subscales, namely Relating to others, New possibilities, Personal 220 strength, Appreciation of life, and Spiritual change. Previous research has demonstrated that 221 the PTGI has good internal consistency, construct-convergent validity, and discriminant 222 validity (Tedeschi & Calhoun, 1996). Moreover, the Italian version of the PTGI has been 223 found to have good internal consistency and validity (Prati & Pietrantoni, 2014). In the 224 present study, the PTGI demonstrated high levels of internal consistency, with a total 225 reliability of $\omega = .95$. The reliability for each of the sub-scales was also adequate, with $\omega =$ 226 .91 for Relating to others, $\omega = .84$ for New possibilities, $\omega = .84$ for Personal strength, $\omega =$ 227 .79 for Appreciation of life, and $\omega = .75$ for Spiritual changes. 228

229 Participants

230 Material

231 Procedure

232 Data analysis

233 Statistical analyses

Latent Profile Analysis (LPA) is a finite mixture modeling technique that partitions individuals into discrete classes based on their responses to observed variables. This technique is particularly useful for identifying subgroups of individuals that can be meaningfully compared (Lanza & Rhoades, 2013). The primary objectives of LVA are

twofold. Firstly, to ensure homogeneity within each identified profile so that individuals
grouped together are as similar as possible. Secondly, to maximize heterogeneity between
profiles so that each profile accurately represents a distinct grouping of individuals. The
classes generated by LVA are considered latent since they are not directly observable but are
inferred based on similarities in the data. LPA accounts for measurement errors related to
the uncertainty in profile membership and provides fit statistics to determine the number of
profiles that best represent the data.

The purpose of the LPA was to detect distinct subgroups of RWs who have different profiles on personality dimensions, protective factors, and outcome variables. Standardized scores for five personality measures (neuroticism, extraversion, openness, agreeableness, conscientiousness), three dimensions of coping (COPE-active coping, COPE-avoidance coping, COPE-social emotional coping), perceived social support (MSPSS), and post-traumatic stress (measured using the IES-R) from the RWs were used as observed indicators for the LPA.

We fitted a series of LPA models, ranging from 1 to 10 profiles, using 1000 sets of 252 starting values. To determine the optimal number of profiles, we used information criteria, 253 including Bayesian information criterion (BIC), Akaike information criterion (AIC), and 254 adjusted BIC. We selected the model with the lowest value of these criteria, indicating a 255 better fit. Additionally, we evaluated the accuracy of the classification of individuals into the appropriate profile using entropy, with values closer to 1 indicating higher separation among classes (> 0.80 represents high separation). We also employed the Lo-Mendell-Rubin likelihood ratio test (LMR-LRT), a test statistic to compare the fit of a model with a lower 259 versus higher number of profiles. We used MPLUS 8.6 and the R software for all statistical 260 analyses. 261

262 Results

263 Discussion

The construct of self-compassion is commonly assessed using the Self-Compassion Scale 264 (SCS) self-report questionnaire. The SCS measures six dimensions of self-compassion, three 265 of which evaluate the active components of self-compassion. These dimensions include 266 Self-kindness (SK), Common humanity (CH), and Mindfulness (MI), which involve being 267 kind and understanding towards oneself, recognizing that personal failures and pain are 268 common experiences, and maintaining awareness of one's painful thoughts and feelings. The 260 remaining three dimensions evaluate the "hindrances" to self-compassion, including 270 Self-judgment (SJ), Isolation (IS), and Overidentification (OI). These dimensions assess 271 factors that hinder self-compassion, such as being self-critical and unsympathetic towards 272 one's shortcomings, isolating oneself from others, and over-identifying with one's painful thoughts and emotions (Neff, 2022). 274

Compassion fatigue often leads to a sense of helplessness and a feeling of being unable to do more to help others (Boyle, 2015). This "learned helplessness" may lead individuals who experience compassion fatigue to rely more on non-self-compassionate coping strategies compared to those who are less affected by compassion fatigue (Gonzalez-Mendez & Díaz, 2021).

decrease the use of self-compassionate responding (i.e., self-kindness, common humanity, mindfulness) and increase uncompassionate responding (i.e., self-judgment, isolation, overidentification) – see also Gonzalez-Mendez and Díaz (2021).

We propose that individuals who experience compassion fatigue may not experience
changes in compassionate responding, as their motivation to help others remains intact.
However, they may experience a strong increase in uncompassionate responding (e.g.,
self-blaming), especially in those who are less directly involved in alleviating the suffering of

 $_{287}$ others.

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enabling an individual to mobilise internal resources and build up resistance against stressors

individuals with a strong SOC might experience reduced job stress.

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Sense of coherence (SOC) originates from Antonovsky's (1979, 1987, 1991, 1993) theory 292 of salutogenesis, a paradigm that focuses on factors that promote health and well-being and 293 considers the salutary potential of stressors. SOC is a dispositional orientation that reflects 294 an individual's capacity to cope with life stressors and comprises three components: 295 Comprehensibility, the sense that 19 stimuli are predictable and structured (cognitive component); Manageability, the sense that available resources (both internal and external) 297 are sufficient to cope with demands from the stimuli (instrumental/behavioural component); 298 and Meaningfulness, the sense that the demands have significance and are worthy of 299 investment in terms of personal ideals and standards (motivational component). An 300 individual's SOC is reinforced by their "general resistance resources" (e.g., intelligence, social 301 support, coping strategies, and preventative health orientation), which are shaped by life 302 experiences. 303

These results indicate the need for improving pre-employment strategies to select the most resilient individuals for rescue work, to implement continuous preventive measures for personnel.

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