

Exploring the Relationship between Worry and Impulsivity in Military Recruits: The Role of Mindfulness and Self-compassion as Potential Mediators

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Abstract

When military recruits cannot tolerate the stressful environment in the military, they typically become more impulsive. Impulsivity serves to avoid the stress, or, in other words, to release the pressure and cope. Becoming more impulsive, however, is related to damaging behaviours and unsuccessful coping. This research explored the relationship between worry and impulsivity in armed forces, and the possibility of mindfulness and self-compassion mediating this relationship. Participants ($n = 166$), who were in the second week of their basic military training, completed questionnaires in mindfulness, self-compassion, worry and impulsivity. Results indicated that worry related positively to impulsivity. Further, the negative relationship of worry with mindfulness and self-compassion mediated the relationship between worry and impulsivity. Findings support the notion that lacking mindfulness and self-compassion, in excessive worriers, may lead to impulsivity. This research concluded that mindfulness and self-compassion may assist military personnel who are exposed to highly stressful environments. Alternative explanations and future directions are discussed. Copyright © 2014 John Wiley & Sons, Ltd.

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The military is a stressful environment for all people involved. Most affected, however, are the lower-ranking officers and soldiers, who are expected to be submissive and are living under the uncertainty of deployment. In the several months before the possibility of deployment, military members get familiar with stressors one may experience during their impending missions. They receive intensive training on operational skills, physical training and stress tolerance. Unfortunately, stress-tolerance training usually comes with much exposure to stressful situations, to desensitize them or make them more aware. They also have to prepare themselves psychologically to leave loved ones behind and potentially face violent and uncertain situations, all of which add up to the already worrisome environment. Of course, there are minor stressors as well, such as wearing a perfectly ironed uniform, laying the bed perfectly for inspection, having a locker that is highly organized according to standardized instructions (e.g. polishing brush needs to be at the bottom

left shelf), being cleanly shaved and having perfectly polished boots. Some soldiers cope well with such demands and experiences, whereas others respond to such experiences with higher levels of anxiety and worry (e.g. Clemons, 1996).

Worrying can be described as repeatedly thinking about potential future threats (e.g. deployment), risks (e.g. injuries) and uncertainties (e.g. 'Am I as brave as others?'), which are all part of military life (Borkovec, Robinson, Pruzinsky, & Depree, 1983; Mantzios, Wilson, Linnell, & Morris, 2014; Watkins, 2008; Watkins, Moulds, & Mackintosh, 2005). Worry is vague and involves an inability to cope actively (Borkovec, Ray, & Stöber, 1998), which, in turn, relates to anxiety (e.g. Hong, 2007; Muris, Roelofs, Meesters, & Boomsma, 2004; Watkins, 2008), generalized anxiety disorder (American Psychiatric Association, 2013) and depression (Fresco, Frankel, Mennin, Turk, & Heimberg, 2002; Starcevic, 1995) and highly correlates with rumination (Fresco et al., 2002; Muris et al.,

2004). Accordingly, research findings support the notion that increased worry is a factor that is associated with increased anxiety and depression, which are also evident in military personnel (e.g. Williams et al., 2010). When living in an environment that naturally predisposes recruits to excessive stress-provoking experiences, which are associated with increased worrying, military recruits do need ways to cope effectively. Unfortunately, however, many recruits cope by 'blowing off steam' or by becoming more impulsive, when circumstances allow them to be (e.g. alcohol use and abuse; Stahre, Brewer, Fonseca, & Naimi, 2009).

Generally, the field of impulsivity suffers from some debates regarding the components that should be included or excluded in regard to the term, which in effect creates some disagreement about the definition of impulsivity (Franken & Muris, 2006; Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001; Whiteside & Lynam, 2001). A widely used definition is that impulsivity describes 'a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individuals or to others' (Stanford et al., 2009, p. 385). The Barratt Impulsivity Scale is the measure that is linked with the aforementioned definition and has three main factors: attention impulsiveness (i.e. inability to focus attention), motor impulsiveness (i.e. acting without thinking) and non-planning impulsiveness (i.e. lack of plan for the future—Stanford et al., 2009). Being unable to control one's impulses can lead to acting out and wrong decisions. Higher levels of impulsivity have been related to substance abuse, conduct disorders and unhealthy behaviours such as alcohol abuse and cigarette smoking (e.g. McCown, 1988; Mitchell, 1999; Moeller et al., 2001); all of which have been observed to be higher in military personnel compared with the general population (e.g. Stahre et al., 2009). However, research examining the relationship between impulsivity and worry is limited.

Of the few studies that exist, Gay, Schmidt and Van der Linden (2011) examined worry and impulsivity in a student sample. They found that specific facets of impulsivity uniquely related to higher levels of worry. Of those facets, 'negative urgency' (i.e. the tendency to act impulsively when faced with negative affect) accounted for the most variance. Therefore, a distinct and unique relationship between worry and impulsivity emerges in the presence of negative affect, and, unfortunately, military environments appear to have a close relationship with negative affect that is further linked to other psychological problems such as post-traumatic stress disorder (Monson, Price, Rodriguez, Ripley, & Warner, 2004). Needless to say, such relationships do exist in the military, and the relationship between worry and impulsivity appears to be vital in understanding the way the stressful environment affects people in it, and in effect, direct ways to cope with it. In

fact, people usually find themselves giving in to their impulses (e.g. smoking, overeating, alcohol and prescription drug abuse) as a way of coping with the anxiety and worry that exist in military life (e.g. Lynch & Oelman, 1981; Norris & Brims, 2002; Stahre et al., 2009). Therefore, other means to cope and tolerate the worrisome and anxious military life may be useful. This research investigates whether the psychological traits of mindfulness and self-compassion may be relevant to such association and whether lack of such traits may account for higher levels of worry and impulsivity observed in past research.

Indeed, mindfulness assists in reducing worrisome thoughts and impulsive reactions (Delgado et al., 2010; Peters, Erisman, Upton, Baer, & Roemer, 2011), whereas lack of mindful awareness may account for such relationship between worry and impulsivity. The trait of mindfulness has been described as the experience of centring attention and awareness on what is taking place in the present moment (Brown & Ryan, 2003). Indeed, research showed that higher levels of mindfulness assist in noticing the impulsive reactions and the worry that exist in the present moment, while mindlessness prompts thinking of the past and the future (e.g. Bandura, 1996; Brown & Ryan, 2003). In other words, being less mindful may fuel worrisome distress, which, in turn, may lead to impulsivity to alleviate the anguish that is felt. Past research demonstrated that higher scores in mindfulness related to lower affect, depression and anxiety (Brown & Ryan, 2003; Shapiro, Oman, Thoresen, Plante, & Flinders, 2008; Weinstein, Brown, & Ryan, 2009). Also, higher mindfulness related to successful self-regulation, including reduced reactivity to emotional stimuli (Creswell, Way, Eisenberger, & Lieberman, 2007) and reduced impulsive reactions (Brown & Ryan, 2003; Levesque & Brown, 2007; Mantzios & Giannou, 2014). However, if one is low in mindfulness, the reverse is more likely to happen. Specifically, worrying may pull the person away from the present moment and into future-oriented uncertainties and negative thinking patterns (Mantzios et al., 2014), which may lead to reactive impulsivity as a way to avoid the undesirable moment (Mantzios & Wilson, 2013). Most people, however, are typically overwhelmed when worrying becomes excessive, which in turn, may extinguish any ability of being mindful whatsoever. Importantly, this possibility highlights the need for a method that centres more on suffering in relation to worrisome thoughts, namely, the method of showing compassion to oneself.

Indeed, another approach to living and perceiving, the absence of which may explain such relationship between worry and impulsivity, may be self-compassion. Like mindfulness, self-compassion is a powerful tool for dealing with worry and suffering. Self-compassion is described as experiencing one's own suffering through feelings of kindness towards oneself, with a mindful

awareness and recognition that one's experience is part of the common human experience (see Neff, 2003a, 2003b, for review). Further, self-compassion associates negatively with self-criticism, depression, anxiety, rumination, thought suppression and neurotic perfectionism and positively with life satisfaction and social connectedness (Neff, 2003a, 2003b; see also Raes, 2010). Recent research indicated that higher scores of self-compassion increased the effectiveness of mindfulness training (Birnie, Speca, & Carlson, 2010) and mediated the relationship between mindfulness and well-being (Hollis-Walker & Colosimo, 2011) and mindfulness practice and stress (Shapiro, Astin, Bishop, & Cordova, 2005). Therefore, self-compassion is a vital aspect when exploring the benefits of mindfulness (see Baer, 2010, for review). Overall, compassion stimulates uniquely a self-soothing system that assists affect regulation and re-directs attention with feelings of gentleness and kindness (Gilbert, 2005, 2009). This finding appears to explain even more how people could deal with troublesome thoughts and matching impulsive reactions (see also Mantzios, Wilson, & Giannou, 2013). That is mostly because self-compassion helps in accepting worrisome thoughts instead of avoiding them. Paradoxically, suppressing worry with avoidance and impulsive reactions—e.g. by using prescription drugs as an impulsive behaviour that serves as a tool for avoidance—may result to an increase of occurrence and intensity of such thoughts (e.g. Wegner, Schneider, Carter, & White, 1987). On the contrary, aspects of self-compassion, such as the 'common humanity' component, have been shown to help military members, where the belief that 'we are all in this together' and a self-decentred attitude assisted members in reducing stress (Gold & Friedman, 2000).

Therefore, this research envisaged that there would be a positive relationship between worry and impulsivity. Further, this research explored if mindfulness and self-compassion were mediators of the relationship between worry and impulsivity, proposing that self-compassion may assist service members more than mindful awareness.

Methods

Participants

A sample of 166 military recruits from an Army base in Greece participated in the present study after 2 weeks of enrolment. The questionnaires were completed on-site, and the response rate was 96.4%, with six participants asking their data to be excluded from the study. A general assessment of medical and psychological well-being was performed for all recruits (i.e. as a military requirement) prior to recruiting participants for this study, which ensured that none of the participants displayed any clinical disorders or medical conditions that may have affected the results. All participants

($n = 160$) were male military recruits with a mean age of 25.38 years ($SD = 2.23$).

Instruments

Preceding the description of the scales that were used, it should be noted that all scales were translated into Greek. The translation process that was used for attaining standardization from the original language (English) to the intended language (Greek) was forward-backward translation. Further, all scales were accepted as valid and reliable measures before continuing into any further analyses (see Mantzios et al., 2013, for translation protocol that was followed for all scales; for unpublished translated scales, see Mantzios, 2012).

Self-compassion Scale (Neff, 2003a)

This scale calculates the qualities of self-compassion with a high score indicating increased feelings of compassion towards oneself. It is a 26-item scale that is composed of six subscales: self-kindness, self-judgement, common humanity, isolation, mindfulness and over-identification. Responses were given on a five-point scale from 1 (*almost never*) to 5 (*almost always*) with items such as 'When times are really difficult, I tend to be tough on myself'. The original scale demonstrated excellent reliability ($\alpha = 0.93$; e.g. Neff, 2003a), as did the Greek version ($\alpha = 0.87$; Mantzios et al., 2013). The present study produced Cronbach's alpha of 0.83, but the factors that loaded were different from the original scale and did not allow for further investigations with the subscales.

Mindful Attention and Awareness Scale (Brown & Ryan, 2003)

This scale is a 15-item, single-factor instrument that measures one's tendency to function routinely without being aware and attentive of the present experience, with a high score indicating increased mindfulness. Responses were given on a six-point scale from 1 (*almost always*) to 6 (*almost never*) and include, for example, 'I rush through activities without being really attentive to them' and 'I forget a person's name almost as soon as I've been told it for the first time'. The original version of the scale reported Cronbach's α of 0.82 (Brown & Ryan, 2003), and for the Greek scale, researchers reported Cronbach's alpha of 0.86 (Mantzios et al., 2013). In the current study, Cronbach's alpha was 0.87.

The Penn State Worry Questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990)

This scale consists of 16 items assessing domains of worry commonly exhibited in anxiety disorders. The questionnaire consists of 11 items that directly assess worry and five items that assess the lack of worry. Sample items are 'My worries overwhelm me' and 'I never worry about anything' (reverse scored). Scores range from 16 to 80, and research has identified that scores over 65 are indicative of generalized anxiety disorder

(e.g. Fresco, Mennin, Heimberg, & Turk, 2003). This aforementioned cut-off score was utilized to exclude clinical cases, but none of the participants displayed such high scores owing to the general assessment that occurred during enlistment and prior to this study. Respondents rate each item on a scale of 1 (*not at all typical*) to 5 (*very typical*) with higher total scores indicative of pathological worry. The questionnaire has good reliability and validity (Meyer et al., 1990), and for the current study, Cronbach's alpha was 0.85.

Barratt Impulsivity Scale (Patton, Stanford, & Barratt, 1995)

The current version of the instrument (Barratt Impulsivity Scale 11) consists of a 30-item questionnaire with three subscales: attention, motor and non-planning impulsiveness. All items are scored using four points (1—*rarely/never* and 4—*frequently/always*) with items like 'I do things without thinking' and 'I get easily bored when solving thought problems'. The factor structure of the scale has been found to be internally consistent (Patton et al., 1995). In the current study, Cronbach's alpha was 0.79.

Procedure and design

Potential participants gathered in a theatre and were invited to participate in this study that related to worry and impulsivity in the military. Participants who wished to take part were given an informed consent form and a questionnaire pack. After the completion of the questionnaires, participants were thanked for their participation and debriefed about the potential benefits of being more mindful and compassionate to themselves.

The aims of the study were addressed through linear regressions and mediation analyses. Linear regressions were used to address whether worry was associated with impulsivity. Next, two mediation analyses were performed (one for self-compassion and one for mindfulness as potential mediators). Self-compassion and mindfulness were examined as mediators between worry and impulsivity. Mediation analysis customarily involves four necessary steps (see Baron & Kenny, 1986, for review). For each mediation analysis, four

regressions were performed. Initially, the first regression is testing whether the causal variable (i.e. worry) is correlated with the outcome (i.e. impulsivity), and the second is between the causal variable and the mediator (i.e. self-compassion or mindfulness). The third regression tests the relationship between mediator and outcome variables. Finally, the fourth regression tests whether the causal variable is correlated with the outcome, while controlling for the mediator.

Preacher and Hayes (2004, 2006) suggested a fifth step involving bootstrapping methods, showing whether a reduction in the strength is statistically significant by supplying superior confidence intervals that are bias corrected and accelerated. This non-parametric method used solves the distribution problem seen in Sobel testing (Preacher & Hayes, 2004), and the point estimate of the indirect cross-product is the mean for these additional samples (see z-scores in results). This research used the SPSS Macro provided by Preacher and Hayes, which assisted in setting parameter estimates based on 5000 bootstrap samples to ensure stability of the analyses.

Results

The descriptive statistics, including inter-correlations between these variables, are presented in Table I. Results show that mindfulness and self-compassion are positively correlated and both relate negatively to worry and impulsivity, which are also positively interrelated. Age was investigated with the main variables and showed no significant relationships and was, thus, excluded from any further analyses. Also, it should be noted that explorations of the impulsivity subscales revealed that the attentional subscale correlated more strongly with mindfulness ($r = -0.541$, $p < 0.01$), self-compassion ($r = -0.517$, $p < 0.01$) and worry ($r = -0.296$, $p < 0.01$). Similar, but of lower significance, correlations were observed with the non-planning subscale ($r = -0.329$, $p < 0.01$ for mindfulness; $r = -0.358$, $p < 0.01$ for self-compassion; $r = 0.159$, $p < 0.05$ for worry), whereas the motor subscale did not correlate with worry ($r = 0.125$, $p = 0.12$; $r = -0.231$, $p < 0.01$ for mindfulness; $r = -0.276$, $p < 0.01$ for self-compassion). Therefore, excluding the motor subscale or exploring

Table I. Correlation coefficients between mindfulness, self-compassion, impulsivity and worry ($n = 97$)

Measures	1	2	3	<i>M</i>	<i>SD</i>
(1) Mindful Attention Awareness Scale	—			3.58	0.97
(2) Self-compassion Scale	0.447**	—		3.14	0.94
(3) Barratt's Impulsivity Scale	-0.439**	-0.461**	—	71.01	12.9
(4) Penn State Worry Questionnaire	-0.371**	-0.571**	0.229**	43.41	13.0

Note: Mean scores (*M*) and standard deviations (*SD*) are presented.

** $p < 0.01$.

only the attentional subscale would produce more significant results, which were excluded from any further analyses as they were not within the aims of this study and are given as a point of reference for fellow researchers and readers. On the other hand, some consideration is given in the discussion.

Furthermore, two mediation analyses were conducted, one for self-compassion and one for mindfulness as potential mediators of the relationship between worry and impulsivity.

Firstly, worry related to impulsivity ($\beta = 0.229$, $SE = 0.08$, $p = 0.004$) and to self-compassion ($\beta = -0.571$, $SE = 0.07$, $p < 0.001$), self-compassion related to impulsivity ($\beta = -0.490$, $SE = 0.08$, $p < 0.001$) and the relationship between worry and impulsivity significantly decreased when self-compassion was included in the model ($\beta = 0.021$, $SE = 0.09$, $p = 0.556$), $z = 4.77$, $p < 0.001$ (95% confidence interval [0.174, 0.412]). Secondly, worry related to impulsivity ($\beta = 0.229$, $SE = 0.08$, $p = 0.004$) and to mindfulness ($\beta = -0.371$, $SE = 0.07$, $p < 0.001$), mindfulness related to impulsivity ($\beta = -0.411$, $SE = 0.08$, $p < 0.001$) and the relationship between worry and impulsivity significantly decreased when mindfulness was included in the model ($\beta = .076$, $SE = 0.08$, $p = 0.322$), $z = 3.66$, $p < 0.001$ (95% confidence interval [0.086, 0.248]). Since the relationship between worry and impulsivity is no longer statistically significant, once the mediators are entered into the model, the results obtained for both mindfulness and self-compassion suggests full mediations (Baron & Kenny, 1986; Preacher & Hayes, 2004). (Table II)

Discussion

The aim of this research was to explore the relationship between worry and impulsivity in military recruits and to investigate whether mindfulness and self-compassion could mediate such relationship.

Firstly, correlation coefficients revealed a positive and significant relationship between worry and impulsivity. Findings are consistent with previous results suggesting such positive relationship (Coughe, Timpano, & Goetz,

2011; Gay et al., 2011). Furthermore, both mindfulness and self-compassion related negatively to both worry and impulsivity. Impulsivity subscales showed a similar trend in relation to other variables (hence, excluding them from any further analyses), and findings were in agreement with past research that investigated the relationship of impulsivity subscales and mindfulness (Lattimore, Fisher, & Malinowski, 2011).

Secondly, both mindfulness and self-compassion reduced the relationship between worry and impulsivity. In other words, findings suggest that lower levels of mindfulness and self-compassion increase the relationship between worry and impulsivity, whereas higher levels decrease this relationship. The present findings expand and support other research that looked into military personnel and veterans, where the benefits of mindfulness were noted (e.g. Vujanovic, Niles, Pietrefesa, Schmertz, & Potter, 2011). On the other hand, the present findings highlight the notion that self-compassion can be of additional help to service members.

Indeed, results show that self-compassion has a higher negative relationship to worry and is a stronger mediator of the association between worry and impulsivity. Such findings could be explained in two ways. Firstly, self-compassion may add something more to people in stressful environments. It is rational to assume that the extra contribution comes from common humanity (vs isolation) and self-kindness (vs self-judgement, the other two aspects of self-compassion—see Neff, 2003b). Specifically, the ‘common humanity’ component has been shown to help military recruits. In fact, the belief that ‘we are all in this together’ assisted recruits in reducing stress (Gold & Friedman, 2000). Understanding that all co-workers may have similar worries may simply be another component that assists and enhances acceptance of worrisome thoughts and feelings, rather than mindlessly (or impulsively) trying to avoid what is to be anticipated in stressful environments. Further, military initiation comes with a chain of command, and people in the lower part of this chain usually need to tolerate

Table II. Summary of mediation analysis between worry and impulsivity, while controlling for mindfulness and self-compassion

Mediator	Regression equations	β	SE	t	p
Mindfulness	1. IV to mediator	-0.371	0.07	-5.34	<0.001
	2. Mediator on DV	-0.411	0.08	2.96	<0.001
	3. IV on DV	0.229	0.08	-05.03	0.004
	4. IV and M on DV	0.076	0.08	0.99	0.322
Self-compassion	1. IV to mediator	-0.571	0.07	-05.69	<0.001
	2. Mediator on DV	-0.490	0.08	2.96	<0.001
	3. IV on DV	0.229	0.08	-5.03	0.004
	4. IV and M on DV	0.021	0.09	-0.59	0.556

Note: IV = Independent Variable, DV = Dependent Variable, M = Mediator. The total path (3) minus the direct path (4) equals the indirect path, presented within the text.

the obedience–punishment nature of the military, as well as more violence, distress and suffering (e.g. Lee & Cho, 1999; Malszecki, 2004). To endure such unkind environments, one must be able to calm oneself and cope effectively. Self-soothing is essential to this, and self-soothing requires a kinder, more understanding attitude, rather than another critical (and abusive) voice from oneself (Gilbert, 2009). Secondly, recent findings show that self-compassion assists more with negative automatic thoughts and with tolerating uncertainty than mindfulness (Mantzios et al., 2014), which could be characteristic of self-compassion, as it centres more on personal suffering. Indeed, the mindfulness component of self-compassion centralizes on a balanced awareness of negative thoughts and feelings, compared with the typical mindfulness that acknowledges all experiences (see Neff & Germer, 2013, for a review).

However, these are not the only components that may explain the additional contribution of self-compassion. Self-judgement or self-criticism (Gilbert, 2007), a factor also central in mindfulness research (i.e. non-judgement), may be more significant than the positive attributes of self-compassion described earlier. Self-criticism has been positively associated with anxiety, anger and post-traumatic stress disorder (Brewin, 2003; Gilbert & Miles, 2000; Lee, 2005), all of which are seen in military personnel (e.g. Schnurr, Spiro, & Paris, 2000). Self-criticism could explain further additional contributions, simply because it is seen as the opposite of self-kindness (Neff, 2003b). Another speculation could be that male participants or male military personnel may feel more reluctant to be kind to themselves and find the reduction of self-criticism more aligned to their masculine identity. Therefore, the role of self-criticism (or self-judgement) may be more relevant, and future research needs to look into the role of these components and identify which of these are more significant, and therefore, more relevant to embark upon in future clinical applications and specific populations.

All in all, such attributes (mindfulness, self-kindness and a sense of common humanity, or a lack of self-judgement, isolation and mindlessness) help to inoculate against worrisome and negative interpretations of one's self and life. Indeed, they encourage and foster the ability to self-soothe and project a realistic assessment of what is happening, therefore providing an alternative strategy to cope. Also, the present findings suggest that stressful and worrisome environments and matching impulsive reactions may have health implications. Indeed, past research has shown that service members, who practised mindfulness-based and compassion-based interventions, gained less weight when they enlisted, with self-compassion being of more help than mindfulness alone (Mantzios & Wilson, 2014). Further research is needed to explore and identify what makes mindfulness and self-compassion components that may assist military personnel.

Then again, findings in this study are not as straightforward as presented, and alternative explanations were considered. Firstly, there is no way to determine the causal relationship between worry and impulsivity, and it may be true that impulsivity causes worry. Until now, this research has speculated that impulsivity results from a need to cope and tolerate worrisome and stressful environments. However, being impulsive may be a great source of worry. Impulsive behaviours (e.g. excessive food consumption) may lead to worry (i.e. about gaining weight, being discharged from the military and being unfit to perform physical duties). Freeston, Rhéaume, Letarte, Dugas and Ladouceur (1994) found that participants believed (among other things) that worrying would keep them in control. However, giving into impulses is not really controlling oneself, which could partially explain people's tendency to worry after being impulsive. The relationship between worry and impulsivity appear to compromise an interrelated cycle, where one leads to another, without a clear direction.

Secondly, alternative explanations need to be considered in regard to the higher impact of self-compassion described earlier, which may be artificial for three main reasons. Firstly, the sample size was small and the difference observed with mindfulness was also small. Secondly, the mindfulness scale used in this study was unable to measure everything that mindfulness entails. The developers of this mindfulness scale focused on the present-moment attention and awareness—which is central and foundational in being mindful—but do not incorporate non-judgement or acceptance (Brown & Ryan, 2004). It should be mentioned, however, that results between impulsivity subscales and mindfulness are similar to past research, which used a mindfulness scale that was inclusive of other elements such as non-judgement (Lattimore et al., 2011). Also, the self-compassion scale includes aspects of non-judgement and may therefore account for parts that are missing from the present mindfulness scale. Thirdly, these inclusions of non-judgement and mindfulness in the self-compassion scale create an overlap between mindfulness and self-compassion, which makes it difficult to distinctively separate them and, in effect, study the impact of those two constructs. Because of the overlap and limitations observed between mindfulness and self-compassion, it is necessary to approach the findings with much caution, as the magnitude of one variable over another may not be accurate to the extent presented in earlier parts of this manuscript.

There are a few limitations that need to be considered as well. Firstly, the design was cross-sectional, and most conclusions need to be investigated further in experimental settings and longitudinal designs. Secondly, because of the highly stressful environment that participants were exposed to, findings cannot be generalized unless further research is conducted with other samples. Also, it is not clear whether all participants

perceived the stressful environment similarly, and whether some situations were more stressful than others, whose differences may have shed more light on the present findings. In fact, it remains a mystery whether military personnel develop a worrying personality or whether worrying depends on the stressful situations that are encountered during military life. In other words, it may be more significant to explore the magnitude and duration of stressful events that are encountered during daily activities to make accurate judgments as to what makes military members worry. Future research should also explore the stress levels between participants as a control variable to draw more reliable conclusions and possibly explore armed versus unarmed personnel, as weapons are a great source of stress and worry. Thirdly, ideally, this research should have investigated impulsivity through behavioural measures, and more specifically, by investigating health behaviours such as alcohol and prescription drug use and abuse, smoking and eating. Fourthly, and finally, participants were all male recruits, and findings might not be similar with female recruits, regular service

members and service members that are about to deploy or return from an active combat zone.

In conclusion, the findings of the present research provide preliminary evidence that mindfulness and self-compassion may be useful strategies to cope with excessive worrying in the military and, in doing so, aid impulsive reactions. Impulsive reactions may be consuming more food, smoking and abusing alcohol or prescription drugs, which should be explored in future research. Therefore, this research is not only relevant to stress tolerance but also to the subsequent health behaviours, which may be impulsive reactions to the stress and worry that are felt in such a unique and difficult profession. For now, it is safe to assume that mindfulness and self-compassion assist in ways that may be instrumental to military personnel who need ways to cope effectively under constant and unavoidable exposure to stressful situations.

Conflict of interest

The authors have declared that they have no conflict of interest.

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