

# The Role of Negative Cognition, Intolerance of Uncertainty, Mindfulness, and Self-Compassion in Weight Regulation Among Male Army Recruits

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**Abstract** The present study examined weight gain in a stressful environment (i.e., following compulsory enrollment in the Greek army). It was predicted that higher levels of mindfulness and self-compassion would relate negatively to weight gain, whilst negative automatic thoughts and intolerance of uncertainty would positively relate to weight gain. This research also explored the strength of independent variables when predicting weight gain, plus the additional contribution of self-compassion when controlling for the effect of mindfulness on weight gain. Ninety-seven military recruits completed the psychological scales on the first day of enrollment. Their height and weight were measured at baseline and after 5 weeks to record weight gain. Results revealed that 43 participants gained weight, whilst 54 lost weight. Those who lost weight reported significantly higher scores in mindfulness and self-compassion, whereas those who gained weight reported significantly higher scores in negative automatic thoughts and intolerance of uncertainty. Furthermore, negative automatic thoughts and intolerance of uncertainty did not significantly predict weight gain, after mindfulness and self-compassion were taken into account. Also, self-compassion uniquely contributed to the negative prediction of weight gain, once mindfulness was taken into account. This research concluded that negative cognition may play a role in weight gain; however, mindfulness and self-compassion may be more useful traits in predicting weight gain, given that once they are taken into account, negative cognition stop being significant predictors.

**Keywords** Self-compassion · Mindfulness · Weight regulation · Intolerance of uncertainty · Negative automatic thoughts

## Introduction

The increasing number of people gaining weight is of international concern (Finucane et al. 2011). Weight gain is the result of an imbalance between energy intake and expenditure and is explained by genetic, environmental, and psychological factors (e.g., Cohen and Farley 2008; Elfhag and Morey 2008; Maes et al. 1997; Wansink 2004). To overcome the problem, behavioural scientists have attempted to support people with behavioural and cognitive practices, which adjust eating and assist weight loss (e.g., Goodrick et al. 1998; Telch et al. 1990). However, when dieting, many people lose less weight than required to improve their health and quickly regain the weight that was lost (Stroebe et al. 2008; Wadden and Butryn 2003).

Indeed, most research on weight management explored regulation in dieters. However, the present study did not require dieting. Instead, this research explored weight gain, which often occurs when one is not actively dieting, but when one is between diets (and unintentionally fails to maintain weight loss after dieting), or when one is exposed to stressful and uncertain environments (e.g., a competitive work environment or unemployment). In fact, gaining weight is often observed in stressful environments (Greeno and Wing 1994), especially when those environments project an uncertain future (e.g., Byrne et al. 2003; Elfhag and Morey 2008; Ganley 1989), such as joining the armed forces.

Joining the armed forces can be stressful (e.g., Clemons 1996; Dawson 2000). However, as all men are automatically obliged to serve 1 year in the military in Greece, this adds two

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additional stressors. First, many are ill-prepared for a stringent training regime. Second, some men are obese, making the training particularly challenging. Normally, when one has chosen to join the military as a recruit, one loses a little fat and gains a little muscle mass due to the rigorous physical training regime. On the other hand, food is the only distraction and old habit that recruits are exposed to during their initial training. Preliminary findings showed that about 50 % of the recruits unintentionally gained weight on entering the Greek military (Mantzios 2012). This presented an excellent opportunity to study those who unintentionally gain weight in a stressful environment, despite rigorously exercising. Furthermore, these new recruits are immediately exposed to uncertainties (such as handling weapons, loss of independence and freedom, intimidating physical and psychological demands, involuntary deployment), as well as a restricted diet; all of which can give rise to negative automatic thinking.

At first glance, negative automatic thoughts and, in particular, intolerance of uncertainty may not appear related to weight gain. However, negative automatic thoughts are internal events that disrupt psychological well-being and require management to enable the self-regulation of behaviour. In particular, negative automatic thoughts (e.g., ‘I’m a failure, I do not know the point of even trying’) often sabotage weight regulation efforts (e.g., Kuehnel and Wadden 1994; Waller et al. 2000). Additionally, as they are automatic, they are more difficult to manage (e.g., Stewart and Payne 2008). When people attempt to control such thoughts, they often find themselves immersed in an ongoing battle, amplifying them as they do so (Wegner 1989; Wegner et al. 1987). If one’s main coping strategy for dealing with negative thoughts (e.g., threats to personal feelings of safety) is distracting oneself with food, this will certainly result in weight gain if the thoughts continue. This is not uncommon when joining the military, as this is one of a few distractions available for soldiers who are often deprived access to other distractions, e.g., television or alcohol (see Johnsen et al. 1998 for avoidance-coping in military personnel).

There is also a subset of negative automatic thoughts that may cause further problems—specifically, negative thoughts around uncertainty. Intolerance of uncertainty is defined as the inclination to respond adversely to uncertain situations and events (Dugas et al. 2004). Intolerance of uncertainty often leads to anxiety and depression (e.g., Asmundson and Carleton 2005; Berenbaum et al. 2008; Holaway et al. 2006; McEvoy and Mahoney 2011), as well as cognitive avoidance and perfectionism (Buhr and Dugas 2006; Laugesen et al. 2003). Although everyone is likely to experience uncertainty, in cases where uncertainty is too frequent or too difficult to manage, it becomes problematic (e.g., keeping a job whilst others experience job loss or being automatically recruited into the military). When unable to tolerate such uncertainties, intolerance may lead to worry, anxiety, and depression; all of

which have been linked to overeating and weight gain (e.g., Elfhag and Morey 2008). Furthermore, Heatherton and Baumeister (1991) proposed that people often overeat to escape self-critical thoughts. These self-critical thoughts are frequently associated with uncertainty (e.g., ‘I may screw up; I do not know how to deal with this situation’). Therefore, this research envisaged that higher levels of negative automatic thoughts and intolerance of uncertainty would relate to weight gain.

Once avoiding negative thoughts in an uncertain and stressful environment may not be a viable option, how one relates to such thoughts may be more promising. Mindfulness allows people to face experiences rather than avoid them, and thus, prevents the escalation of rumination, worries, or negative automatic thoughts (Segal et al. 2002). For example, Verplanken et al. (2007) found a significant negative correlation between mindfulness and habitual negative thinking. Diminishing the adverse effects of negative thinking through mindfulness is achieved (a) by becoming aware of when and where the automatic thoughts arise and (b) by reducing the importance of the negative thoughts through acceptance (Verplanken and Tangelder 2011). In recent years, some weight loss strategies have included mindfulness, and this has been shown to be useful for people who attempt to lose weight (Forman et al. 2009; Lillis et al. 2009; Mantzios and Wilson 2014; Tapper et al. 2009). However, this research attempted to identify factors that would promote or hinder weight gain, whilst such previous research looks at developing mindfulness as a skill and not at the trait of mindfulness.

The trait of mindfulness has been described as the experience of centering attention and awareness on what is taking place in the present moment (Brown and Ryan 2003). Research demonstrates that high scores on the trait of mindfulness predict lower depression, anxiety, and unpleasant affect (Brown and Ryan 2003; Shapiro et al. 2008; Weinstein et al. 2009). Furthermore, higher trait mindfulness also relates to successful self-regulation, including lower reactivity to emotional stimuli (Creswell et al. 2007) and lower automatic and impulsive reactions (Brown and Ryan 2003; Lattimore et al. 2011; Levesque and Brown 2007; Wenk-Sormaz 2005). However, if one is low on mindfulness, the reverse is more likely to happen, that is, negative automatic thoughts may pull the person away from the present moment and into negative rumination (Verplanken et al. 2007). Thus, those high in mindfulness or who have practised mindfulness may be able to accept negative automatic thoughts and intolerance of uncertainty and weaken their impact (Verplanken and Tangelder 2011). Consequently, mindfulness emerges as a factor that could potentially hinder weight gain. However, mindfulness does not target the suffering that comes with negative automatic thoughts, as mindfulness acknowledges all present moments (positive, negative, neutral) and the experience rather than the individual that has the experience (see Neff and

Germer 2013 for review). Perhaps, reframing suffering and reinforcing acceptance as seen in self-compassion research may also be helpful.

Neff (2003a) described self-compassion as experiencing one's own suffering through feelings of kindness toward oneself, with a mindful awareness and the recognition that one's suffering is part of the common human experience (see Neff 2003a, b for review). Self-compassion is negatively associated with self-criticism, depression, anxiety, rumination, thought suppression, and neurotic perfectionism and positively associated with life satisfaction and social connectedness (Neff 2003a, b). Gilbert (2005, 2009) suggested that compassion uniquely stimulates the neural self-soothing system that assists affect regulation and redirects attention with feelings of gentleness and kindness.

There are two ways where self-compassion can be helpful to people who are trying not to gain any weight. First, self-compassion can assist by supporting mindfulness. Indeed, recent research showed that higher scores of self-compassion increased the effectiveness of mindfulness training (Birnie et al. 2010) and self-compassion partly mediated the relationship between mindfulness and well-being (Hollis-Walker and Colosimo 2011). In other words, mindfulness may support efforts to self-regulate, since successful self-regulation depends on paying close attention to present behaviour (Baumeister et al. 1994; Carver and Scheier 1981; Duval and Wicklund 1972; Mischel et al. 1996). Self-compassion, however, may assist in managing affect in overwhelming situations further, since a sense of common humanity and self-kindness are strengthening acceptance, and may make such occurrences (i.e., adjusting to the military and weight regulation) more tolerable (see Allen and Leary 2010). Second, self-compassion can be of assistance directly to eating behaviours. Consider for instance restrictive eaters, who often display the paradoxical tendency to eat more after breaking their diet (Herman and Mack 1975), simply as a way of coping with failure to restrict oneself in the first place (Heatherton et al. 1990). Adams and Leary (2007) demonstrated that self-compassion can put an end to such paradox, by assisting people in feeling more compassionate about their failings.

Furthermore, the common humanity component of self-compassion has been shown to help military recruits. The belief that 'we are all in this together' assisted recruits in reducing stress (Gold and Friedman 2000), whilst reducing stress may aid people who are attempting to regulate their weight (see Elfhag and Morey 2008). Therefore, this research expected higher levels of self-compassion and mindfulness to prevent weight gain in stressful situations.

The main aim examined in the current study was to investigate psychological factors relating to weight gain in a stressful environment. Negative automatic thoughts and intolerance of uncertainty were expected to positively predict weight gain, as these would serve to undermine weight regulation efforts.

Mindfulness and self-compassion, on the other hand, were expected to negatively predict weight gain, as they should theoretically allow for the acceptance of stressful situations, and thus, reduce the desire to overeat as a coping mechanism. Also, this research tried to identify which independent variables prevailed when tested together, as well as the contribution of self-compassion when accounting for the effect of mindfulness in weight gain.

## Method

### Participants

A sample of 102 military recruits from an army base in Greece participated in the study. A general assessment of medical and psychological well-being was performed for all recruits (as a military requirement) prior to recruitment. This assessment served as a basis for excluding participants with eating or clinical disorders. Five participants were released from their duty after the first week for medical reasons and were thus excluded from the analyses. The remaining sample of 97 men had a body mass index of  $M=25.9$  (age  $M=21.03$  years,  $SD=2.4$  years). None were underweight, 47 were of normal weight ( $BMI_{\text{range}}=18.5\text{--}24.9$ ), and 50 were overweight, that is, 33 were overweight according to their BMI ( $BMI_{\text{range}}=25\text{--}29.9$ ) and 17 were obese ( $BMI_{\text{range}}=30\text{--}39.9$ ) (see WHO 2012 for BMI particulars).

During the study, no participant maintained the same weight during the 5-week training period. Therefore, two groups were created—those who gained weight and those who lost weight. Of the 97 participants, 43 gained weight over the 5 weeks of training ( $M=2.40$  kg,  $SD=1.05$ ; range 1–7 kg;  $BMI=26.33$ ) and 54 lost weight ( $M=3.83$  kg,  $SD=1.24$ ; range=2–8 kg;  $BMI=24.67$ ). Note that the BMI of the two groups was not significantly different [ $t(95)=-0.30, p=.76$ ], thus, any difference between these groups is not due to proportional weight differences. Of those who gained weight, 21 were overweight/obese and 22 were of normal weight and of those who lost weight, 29 were overweight/obese and 25 were of normal weight.

### 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 was forward-backward translation. Furthermore, all scales were accepted as valid and reliable measures before continuing into any further analyses (see Mantzios and Wilson 2013a, b for review).

*Self-Compassion Scale* (Neff 2003a). The scale calculates the qualities of self-compassion with a high score indicating

increased feelings of compassion towards oneself. Responses were given on a 5-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”. It is a 26-item scale which is composed of six subscales: self-kindness, self-judgment, common humanity, isolation, mindfulness, and overidentification. The original scale demonstrated excellent reliability ( $\alpha=.93$ ; e.g., Neff 2003a, b), as did the Greek version ( $\alpha=.87$ ; Mantzios and Wilson 2013a, b). The Cronbach’s alpha for the present study was  $\alpha=.73$ .

*Mindful Attention and Awareness Scale* (Brown and Ryan 2003). The scale is a 15-item, single factor instrument that measures one’s tendency to function on automatic pilot without attention to present experience, with a high score indicating increased mindfulness. Responses were given on a 6-point scale from 1 (almost always) to 6 (almost never) and include, for example, “I forget a person’s name almost as soon as I have been told it for the first time” and “I rush through activities without being really attentive to them”. The original version of the scale reported a Cronbach’s alpha of  $\alpha=.82$  (Brown and Ryan 2003) and for the Greek scale, researchers reported a Cronbach’s alpha of  $\alpha=.86$  (Mantzios and Wilson 2013a, b). The Cronbach’s alpha for the present study was  $\alpha=.89$ .

*Intolerance of Uncertainty Scale* (Buhr and Dugas 2002) The intolerance of uncertainty scale is composed of 27 items such as “uncertainty makes me uneasy, anxious, or stressed” and “when it’s time to act, uncertainty paralyzes me”. Respondents rated on a 5-point scale how strongly each of 27 items best described intolerance of uncertainty with higher scores yielding increased intolerance. The authors of the English scale reported a Cronbach’s  $\alpha=.94$  (Dugas et al. 2005), and the Greek version was  $\alpha=.89$  (Mantzios 2012). The Cronbach’s alpha for the present study was  $\alpha=.90$ .

*Automatic Thoughts Questionnaire* (Hollon and Kendall 1980) The questionnaire is a 30-item questionnaire used to assess negative cognition by measuring the cognitive self-

statements of an individual. Responses were given on a 5-point scale from 1 (not at all) to 5 (all the time) and include items such as “I feel so helpless” and “I wish I were somewhere else”. Individuals respond on a 5-point scale with higher scores indicating increased occurrences of negative automatic thoughts. Developers of the scale reported a Cronbach’s alpha of  $\alpha=.98$ , and the Greek version has a Cronbach’s alpha of  $\alpha=.91$  (Mantzios 2012). The Cronbach’s alpha for the present study was  $\alpha=.93$ .

#### Procedure and Design

Potential participants gathered in a theatre, and they were told about the study (that is, that it related to weight maintenance in the military). Participants who wished to take part were given a questionnaire pack. As part of the army procedures, their weight and height were measured at baseline and their weight was measured again 5 weeks later. The consent form gave permission to access the weight measurements for the present study. Furthermore, those who chose to participate were informed that many soldiers appear to gain weight, thus, they should watch their weight, but not diet or skip meals. Overall, the goal of new recruits was not to gain any weight and maintain their current weight status.

## Results

### Data Overview

The descriptive statistics, including intercorrelations between mindfulness, self-compassion, negative automatic thoughts, intolerance of uncertainty, and weight change are presented in Table 1. As shown in Table 1, mindfulness and self-compassion are positively correlated and both relate negatively to negative automatic thoughts and intolerance of uncertainty (all  $p<.01$ ). Weight gain (i.e.,  $\text{weight}_{\text{follow-up}} - \text{weight}_{\text{baseline}}$ ) related negatively to mindfulness and self-

**Table 1** Correlation coefficients between mindfulness, self-compassion, negative automatic thoughts, intolerance of uncertainty, and weight maintenance ( $n=97$ ). Also, a summary of mean scores ( $M$ ) and standard deviations ( $SD$ ) are presented

Measures	1	2	3	4	$M$	$SD$
(1) Mindful attention awareness scale	–				4.47	.94
(2) Self compassion scale	.393**	–			3.38	.44
(3) Automatic thoughts questionnaire	-.431**	-.548**	–		2.54	.66
(4) Intolerance of uncertainty scale	-.349**	-.518**	.610**	–	1.94	.49
(5) Weight gain	-.571**	-.602**	.447**	.322**	1.07	3.32

\* $p<.05$ ; \*\* $p<.01$

compassion and positively to negative automatic thoughts and intolerance of uncertainty.

## Main Analyses

Initially, since no other research explored weight gain with negative automatic thoughts and intolerance of uncertainty, this research investigated whether weight gain would be predicted by higher levels of intolerance of uncertainty and negative automatic thoughts. As shown in Table 2, those who gained weight were significantly higher in negative automatic thoughts, including intolerance of uncertainty, than those who lost weight. Those who lost weight were significantly higher in mindfulness and self-compassion, but lower in negative automatic thoughts, including intolerance of uncertainty, than those who gained weight. These findings were further explored through regressions. Since intolerance of uncertainty is a subgroup of negative automatic thoughts, the chance of multicollinearity among these predictors creating instability in the regression coefficients was high, making it difficult to assess the separate effects of the independent variables. Therefore, two separate linear regressions were conducted. Weight gain was explained by intolerance of uncertainty [adjusted  $R^2=.098$ ,  $F(1, 95)=11.45$ ,  $p<.001$ ] and negative automatic thoughts [adjusted  $R^2=.191$ ,  $F(1, 95)=23.7$ ,  $p<.001$ ]. The relationship between weight gain and intolerance of uncertainty ( $\beta=.33$ ,  $p<.001$ ), as well as between weight gain and negative automatic thoughts were positive ( $\beta=-.45$ ,  $p<.001$ , see Table 2). Therefore, increases in negative automatic thoughts including intolerance of uncertainty were associated with higher weight gain.

To determine the effect of all independent variables on weight gain, a multiple regression was performed with self-compassion, mindfulness, negative automatic thoughts, and intolerance of uncertainty. Results indicated that only mindfulness ( $\beta=-.40$ ,  $p<.001$ ) and self-compassion ( $\beta=-.45$ ,  $p<.001$ ) scores significantly predicted weight gain [adjusted  $R^2=-.48$ ,  $F(4, 92)=23.19$ ,  $p<.001$ ] (see Table 3). Therefore,

the results indicated that the effect of negative automatic thoughts and intolerance of uncertainty was nonsignificant, once the effects of mindfulness and self-compassion were taken into account.

Last, this research aimed to explore if self-compassion accounted for additional variance when predicting weight gain and controlling for mindfulness. A hierarchical regression revealed that self-compassion accounted for additional variance in weight gain when controlling for mindfulness [ $\Delta R^2=.17$ ;  $\Delta F(2, 94)=31.4$ ,  $p<.001$ ]. Therefore, self-compassion appears to uniquely contribute to the prediction of weight gain.

## Discussion

The main aim of the current study was to explore psychological factors relating to weight gain in a stressful environment. As expected, it was found that positive predictors of weight gain were negative automatic thoughts and intolerance of uncertainty, whilst self-compassion and mindfulness related negatively to weight gain. However, results were not that straightforward.

To begin with, results revealed that 44 % of the sample gained weight, whilst 56 % lost weight and none of the participants maintained their weight, thus replicating previous findings in new military recruits (Mantzios 2012). Exploring those groups further revealed that those who gained weight were significantly higher in negative automatic thoughts and intolerance of uncertainty than those who lost weight. Furthermore, those who lost weight were significantly higher in mindfulness and self-compassion than those who gained weight.

Further analyses revealed that negative automatic thoughts and intolerance of uncertainty were predictors of weight gain when examined independently, although they did not significantly predict weight gain once the effect of mindfulness and self-compassion were taken into account. People usually dwell over experiences or try to avoid them. Either way, the

**Table 2** Means and standard deviations of mindfulness, self-compassion, automatic thoughts, and intolerance of uncertainty according to weight change, i.e., weight loss ( $n=54$ ) compared to weight gain ( $n=43$ )

Measures	Weight change	Mean	SD	<i>t</i>	Significance
Mindfulness attention and awareness scale	Loss	4.99	0.71	-7.87	<.001
	Gain	3.81	0.77		
Self compassion scale	Loss	3.63	0.37	-9.13	<.001
	Gain	3.05	0.26		
Automatic thought questionnaire	Loss	52.04	9.72	5.25	<.001
	Gain	66.12	16.42		
Intolerance of uncertainty scale	Loss	63.17	16.34	3.60	.001
	Gain	75.47	17.22		

**Table 3** Summary of multiple regressions for self-compassion, mindfulness, negative automatic thoughts, intolerance of uncertainty in predicting weight maintenance

Variables	<i>B</i>	SE <i>B</i>	Beta	<i>t</i>	Significance	Confidence intervals	
						Lower	Upper
SCS	-3.27	.68	.45	-4.82	<.001	1.92	4.61
MAAS	-1.37	.29	.39	-4.66	<.001	.77	1.95
NATQ	.02	.02	-.09	.91	.368	-.07	.03
IUS	-.02	.02	.10	-.99	.324	-.02	.05

*NATQ* negative automatic thought questionnaire, *IUS* intolerance of uncertainty scale, *MAAS* mindful attention and awareness scale, *SCS* self-compassion scale

effects are usually negative (e.g., Cribb et al. 2006), explaining the relationship between negative cognitions and weight gain (see also Mantzios and Wilson 2013a, b). On the other hand, instead of ruminating or avoiding an experience, there is the option of relating differently to the experience, and such difference is best described through acceptance. Mindfulness enables acceptance and assists in acknowledging all experiences, as well as in seeing thoughts as thoughts (instead of rigid expressions that require rumination, avoidance, or suppression). This way, negative cognitions may exist but not affect the way people react to them when they are around food.

Furthermore, self-compassion and mindfulness work differently and add something unlike to the negative prediction of weight gain, as self-compassion appeared to explain an additional amount of variance when controlling for mindfulness. Apart from the reasons given in the introduction, another way that could explain the additional variance is the emphasis on suffering instead of whatever arises in the present moment (see Neff and Germer 2013). This emphasis on suffering may be another feature that assists weight regulation behaviour. In reality, managing weight translates into two main decisions for weight watchers. First, people restrict themselves and regulate their food intake, which adds some form of deprivation and suffering to the present moment. The second choice is for people to give in to the temptation of their favourite foods, but such decisions are usually followed by feelings of distress and shame afterwards. Regardless of the choice one makes when managing weight, there is always some form of suffering that needs to be handled with gentleness, a kind attitude and more compassion. Future research should explore eating behaviour and the role of suffering and self-compassion more thoroughly.

The new military recruits that were used as a sample added some benefits and some limitations to the current study. The benefits included having a controlled environment to examine the psychological traits. All participants were eating the same food (although they had some control over portions) and were exercising at the same level, thus, living in an environment

where energy intake and expenditure was relatively controlled. Furthermore, the participants followed a routine day that was highly planned and controlled (e.g., waking up at 6 a.m., in bed by 10 p.m., eating at specific times and places, and only specific food being available, exercising at certain times), making everyday uncertainty negligible. However, the uncertainty of whether they could cope effectively with such a regime was still very much present (e.g., Hogg 2007). Furthermore, the automatic recruitment of civilians allowed for a relatively randomised sample from the general population and included those who fell within a wide range on the body mass index, allowing therefore for an exploration of weight gain that is apparent in both average, as well as overweight populations.

On the other hand, limitations were evident also. First, the absence of female participants and the unusual military environment (i.e., being constantly under pressure for 5 weeks) suggest that caution should be used when generalising and interpreting the present results. People who serve in the military usually need to adjust and tolerate the anxiety and uncertainty of using weapons (and threats to personal safety), communal living (and loss of personal privacy, as well as sleep deprivation), and leaving behind civilian rights and belongings (i.e., isolation from former social networks, loss of independence and freedom, loss of control over one's life). All of these factors may have strengthened the relationships observed in this study, especially with regards to negative cognitions. Second, future studies may benefit by examining specific uncertainties associated to weight regulation versus more global life-based uncertainties. For example, future studies could explore whether people who successfully manage their weight do so because they are fine with uncertainty (both in weight management and/or universally). Third, almost half of the sample was of an average weight (according to their BMI) and participants were not asked to diet. In fact, if participants were asked to diet (or if the sample was of a higher BMI), results could have been more significant, but such assumptions remain to be explored in future research. Fourth, weight gain could represent an increase in muscle

mass (instead of adipose). Considering the daily exercise routine, the foot patrols, and the frequent engagement in physical activities (such as domestic chores), there is a chance that the weight increase resulted from the labour-intensive environment. Future research should address this limitation by including measures that will measure changes in adipose (and in effect, determine changes in muscle mass).

In conclusion, this research complements the potential and significance of mindfulness and self-compassion in weight regulation research. The findings of the present research also provide preliminary evidence that mindfulness and self-compassion may together be a useful strategy to aid weight maintenance, despite of any negative cognition that may be present. Experimental research could clarify the relationship between mindfulness and self-compassion with negative cognitions and uncertainty further. This research suggests that both mindfulness and self-compassion may be of assistance; consequently, future research should preferably use both components, instead of one or the other.

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