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Self-compassion: a moderator of the negative outcomes of stress

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## Self-compassion: a moderator of the negative outcomes of stress

### ABSTRACT

NHS mental health staff are highly stressed with many negative implications. Self-compassion is consistently related to lower stress and higher psychological wellbeing and recent research found high self-compassion elicits lesser stress response. The present study explored this in a highly stressed population. An online survey was conducted across five mental health trusts with 281 staff (83.6% females, mean age = 39.64 years) with scales measuring self-compassion, stress, mental well-being, anxiety, depression and sleep quality. Analyses found self-compassion only moderates the stress-depression relationship: high self-compassion corresponds to a weaker association between stress and depression. This supports previous evidence showing self-compassion relates to differing stress reactivity and suggests self-compassion is related to resilience and can act as a protective factor.

<b>KEY WORDS:</b>	<b>SELF-COMPASSION</b>	<b>STRESS</b>	<b>ANXIETY</b>	<b>DEPRESSION</b>	<b>NHS</b>
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## Introduction

Defined as person-environment transactions, psychological stress occurs when an individual perceives an event as requiring greater resources (psychological, biological or social) than possessed (Cohen & Herbert, 1996). NHS (National Health Service) mental health staff are highly stressed, more so than other professions (Office for National Statistics, 2017). Stress-related illness in mental health trusts is above average and increasing (National Health Service, 2017; 2018). A recent survey (“Struggling to cope”, 2017) revealed many mental health workers experience work-related stress weekly (74%), and daily (36%). This stress is said to be reflective of the current working environment (Rimmer, 2018): trusts have experienced recent organisational restructure, transformations, and reductions in real-term funding (Gilburt, 2015). This has been said to have caused reductions in staffing levels and skill mix within teams (Gilburt, 2015, 2018) which staff cite as the cause of increases in violence and aggression from service users (“Struggling to cope”, 2017). Additionally, the work type may contribute to stress. Staff deal with complex, emotionally difficult cases, leading to burnout and compassion fatigue (Collins & Long, 2003). Whilst minor stress can provide productivity benefits (Hargrove, Nelson & Cooper, 2013), higher levels have negative outcomes including anxiety, depression, sleep issues and negative health consequences (Bergdahl & Bergdahl, 2002; Schneiderman, Ironson & Siegel, 2005; Weinberg & Creed, 2000). Disadvantages extend beyond staff, to care quality, patient safety and economic costs: absenteeism, staff loss, high staff turnover and unfilled job roles (Gilburt, 2015).

Interventions exist aiming to reduce negative outcomes or directly reduce stress, and indirectly improve outcomes (Goyal et al., 2014). However, these stressors still exist, it is difficult to eradicate these on an individual level, especially in the mental health worker context. These interventions are reactive opposed to preventative as stress has already had a negative impact despite calls for proactive strategies for healthcare staff (Firth-Cozens, 2003). MBSR (mindfulness-based stress reduction) is a popular stress reduction therapy, aiming to increase mindfulness to improve the ability to cope with stress and outcomes (Grossman, Niemann, Schmidt & Walach, 2004). Mindfulness is purposefully paying attention in the present moment, non-judgementally to one's experiences (Kabat-Zinn, 2003) and was originally suggested as the mechanism of action. However, recently, self-compassion has been suggested as an additional mechanism (Keng, Smoski, Robins, Ekblad & Brantley, 2012) with stronger associations to psychological well-being versus mindfulness (Baer, Lykins & Peters, 2012). This, along with stress and resilience connections (Hall, Row, Wuensch & Godley, 2013; Kemper, Mo & Khayat, 2015) has ignited much interest in the concept. It is important to further examine self-compassion; it's potential as a protective factor for possible utility for proactive interventions to buffer stress outcomes.

Self-compassion is described by Neff (2003a; 2003b) as treating oneself with kindness and consideration through failure and suffering opposed to self-criticising, judging or ignoring it. It comprises six facets: self-kindness versus self-judgement involves sympathy and warmth to oneself in times of failure, or feelings of inadequacy, opposed to ignoring the feelings or self-criticising. Common humanity

versus isolation is recognising everyone suffers, nobody is ever alone in suffering. Lastly, mindfulness versus over-identification is taking a 'step-back' approach to emotions, they are not ignored or exaggerated; seeing oneself and one's situation with perspective. These factors are opposing but not mutually exclusive, they are distinct, inter-correlated and mutually-enhancing, with self-compassion as the overarching, higher-order factor. Self-compassion is conceptually distinct from self-pity, self-indulgence (Neff, 2003b) and self-esteem (Neff, 2011).

Those high in self-compassion are thought to be more resilient (Neff & McGehee, 2010); those kinder and more forgiving to oneself cope better with negative events; they 'bounce back' from adversity. It has consistently been found to predict resilience, even when controlling for other factors (McArthur et al., 2017; Olson & Kemper, 2014; Olson, Kemper & Mahan, 2015). This is another benefit over mindfulness, which loses predictive power when controlling for other factors (Kemper et al., 2015). Self-compassion is suggested to have resilience benefits via its association with emotional regulation (Sünbül, 2016) and emotional intelligence (Heffernan, Quinn Griffin, McNulty & Fitzpatrick, 2010). However, research relies on resilience scales, limiting exploration of tangible resilience benefits.

Higher self-compassion has been reliably related to lower perceived stress: (Hall et al., 2013) and has been implicated in different stress reactions biologically and psychologically, suggesting tangible resilience benefits. In laboratory stress tests, self-compassion training resulted in reduced sympathetic and parasympathetic responses versus controls. However, HPA (Hypothalamus-pituitary-adrenal) activation showed no difference suggesting self-compassion may have buffering limitations. Alternatively, the authors proposed, as the HPA axis is comparatively slower acting, differences would not appear in the short study (Arch et al., 2014). Further supporting evidence shows higher self-compassion produced lesser stress-induced inflammation (Breines et al., 2014). Individuals also react differently psychologically to stressful hypothetical situations; those with higher self-compassion react less negatively (Leary, Tate, Adams, Batts Allen & Hancock, 2007). Emotional regulatory abilities have been suggested, again, to mediate this reduced reactivity (Finlay-Jones, Rees & Kane, 2015). However, immediate reactivity across self-compassion levels does not necessarily translate to long-term outcomes and may be different for naturally occurring stress.

Beyond stress associations, self-compassion has been consistently correlated with higher psychological well-being (Barnard & Curry, 2011; MacBeth & Gumley, 2012; Neff, 2009). For example, depression symptom severity can be predicted by self-compassion (Van Dam, Sheppard, Forsyth & Earleywine, 2011). This link is supported with experimental research: when depressive feelings are induced, prior self-compassion training reduced depressed mood versus controls, which, again, was concluded as a result of emotional regulation benefits (Diedrich, Grant, Hofman, Hiller & Berking, 2014). However, depressed mood was measured on a singular 1-100 scale; effects may not be consistent with comprehensive depression scales.

Depression development, relapse and reoccurrence are associated with stress and stressful life events (Hammen, 2005; Kendler, Karkowski & Prescott, 1999; Monroe, Roberts, Kupfer & Frank, 1996; Swindle, Cronkite & Moos, 1989) to which self-criticism is thought to be a vulnerability factor (Mongrain & Leather, 2006; Neitzel & Harris, 1990), predisposing individuals to stress-related depression (Smith, O'Keeffe & Jenkins, 1988). Low self-compassion can be partly characterised by self-criticism, so is a plausible additional vulnerability factor, with high self-compassion a protective factor. Supporting laboratory studies show self-compassion training prior to stress tests attenuates negative emotions as measured on Likert scales of multiple emotions (Leary et al., 2007). However, such scales cannot confirm a similar effect for clinical depression and artificial laboratory settings might not correspond to real-world settings.

Anxiety onset, like depression, is associated with stress (Aktekin et al., 2001; Ben-zur & Zeidner, 1991) with stressful life events thought to be a trigger (Brown, Harris & Eales, 1993; Kendler, Hettema, Butera, Gardner & Prescott, 2003). Also, like depression, self-compassion predicts anxiety (Neff, Hsieh & Dejitterat, 2005) with predictability holding when controlling for other variables (Barnard & Curry, 2011). Anxiety responses to laboratory stress tests are known to differ as a function of self-compassion; those high in self-compassion had lesser anxiety symptoms to social ego threats (Neff, Kirkpatrick & Rude, 2007). Furthermore, inducing self-compassion prior to tests limited increase in anxiety compared to control groups (Arch et al., 2014; Harwood & Kocovski, 2017). Inducing self-compassion shows it is a concept with manipulability and the use of comprehensive anxiety measures, showing tangible benefit. However, research needs to examine if these effects are present in more natural environments as effects in laboratory social stress tests may differ to naturally occurring stress, so results have limited generalisability or applicability.

Self-compassions buffering of the stress-related anxiety is additionally supported by self-criticism evidence. It is a feature of low self-compassion and is associated with increased amygdala activation, a brain area known to deal with emotional responses (Longe et al., 2010; Martin, Ressler, Binder & Nemeroff, 2009; Phillips, Carroll & Der, 2015). This increased emotional response to stimuli may contribute to the increased anxiety symptoms.

Interest in self-compassion has widened from mental to physical well-being to which, sleep is highly related (Cappuccio, D'Elia, Strazzullo & Miller, 2010). Many correlational and observational studies have shown stress is related to sleep disturbance (Edell-Gustafsson, 2002; Åkerstedt, Kecklund & Axelsson, 2007). Additionally, stressors present in NHS working environments including high work demands, shift work, overtime and hectic environments contribute to sleep disturbance (Åkerstedt et al., 2002; Åkerstedt, Fredlund, Gillberg & Jansson, 2002). This can have negative implications for staff including lower quality of life, greater absenteeism, less success at work, increased chance of mistakes, thus reduced patient safety (Groeger, Zijlstra & Dijk, 2004; Lin, Laio, Chen & Fan, 2014; Maunder, Hunter & Lancee, 2011; Patterson et al., 2012).

Self-compassion is correlated with, and suggested as a technique to reduce, sleep disturbance in various populations (Kemper et al., 2015; Marques et al., 2016; Teixeira, Simões, Marques, Espírito-Santo & Lemos, 2016). However, there is a paucity of evidence confirming this. Social support has been found to moderate the relationship between stress and fatigue (Liffman, Thorsteinsson, Brown & Hine, 2012). Whilst conceptually distinct, social support and self-compassion have similarities. Social support involves receiving concern, acceptance, empathy from another; another angle to consider self-compassion could be concern, acceptance and empathy for oneself. Thus, like social support, self-compassion has potential to impact the stress-sleep relationship. Furthermore, MBSR has been shown to reduce sleep disturbance (Shapiro, Bootzin, Figueredo, Lopez & Schwartz, 2003). As one mechanism of action is self-compassion, it is logical to suspect a beneficial relationship of self-compassion on sleep. However, affirmatory evidence is lacking.

Despite plentiful literature demonstrating associations between high self-compassion, resilience, and higher psychological well-being, there is a dearth of research exploring the complex relationship beyond correlations. Much evidence exists showing self-compassion buffers against stress-related depression, anxiety and potentially sleep. However, it is majorly laboratory-based, examining narrow, specific stressors, (usually social stressors) and short-term, specific outcomes. The present study aimed to investigate self-compassions moderating potential, as an indicator of resilience to naturally occurring workplace stress and its potential to buffer against wide-ranging real-life negative outcomes including depression, anxiety and sleep disturbance. An overall mental well-being measure was included. Additionally, most of the literature used global self-compassion score, yet facets are known to have different relationships to anxiety and depression: positive items have weaker relationships and common humanity has no significant relationship (Mills, Gilbert, Bellew, McEwan & Gale, 2007; Ying, 2009). This highlights the importance of examining the facets as distinct concepts, which the present study aimed to do.

The present research looked to study NHS mental health workers who are often overlooked in healthcare worker and stress literature despite high-stress levels (National Health Service, 2017, 2018). Participants were not limited to clinical staff as all workers are subject to similar organisation-related pressures. This aimed to extend generalisability as self-compassion and stress reactivity research primarily used undergraduate. Stress is excessive within the NHS population; a stressed workforce leads to negative outcomes for individuals, the economy and for patients, thus, is an important research area. Furthermore, self-compassion is particularly relevant, as their professions are characterised by care and compassion for others where, ethically, self-care and self-compassion should come first, and is a suggested precursor (Malinowski, 2014; Raab, 2014).

Given the evidence, self-compassion is related to stress and its outcomes, and its known to affect laboratory-based stress reactivity, it is hypothesised high self-compassion will be associated with:

1. a weaker stress-depression relationship
2. a weaker stress-anxiety relationship

3. a weaker relationship between stress and negative mental well-being
4. a weaker stress-disturbed sleep relationship

For each hypothesis, additional analysis was undertaken to explore self-compassions facets.



## Method

### Design

The present study was a correlational design with the one predictor variable: perceived stress, and 4 outcome variables: depression, anxiety, mental well-being and sleep disturbance. The moderator variable was self-compassion.

### Participants

There were 336 participants who entered the survey, 55 ended before completion, 65 partially completed the survey (responses in progress). 281 participants completed the survey (83.6% females, mean age = 39.64 years, SD = 12.66). Participants worked three or more days per week across five NHS mental health trusts in the south of England (Surrey and Borders Partnership NHS Foundation Trust; Kent and Medway NHS and Social Care Partnership Trust; Southern Health NHS Trust; Dorset Healthcare University NHS Foundation Trust; Solent NHS Trust). They were recruited via opportunistic sampling. See Tables 1-5 for descriptive statistics.

**Table 1**

#### Descriptive statistics

	N	Range	Min	Max	Mean	Std. Deviation
<b>Age</b>	281	48	19	67	39.64	12.66
<b>Working days per week</b>	280	4	3	7	4.58	0.77
<b>Patient hours per week</b>	280	40	0	40	16.86	11.34
<b>Stress-related days off over past year</b>	276	100	0	100	3.00	10.05

**Note:** Demographic data was missing due to completion errors by participants. For these cases, the survey was completed fully, just omitting demographic data. They were included in the analysis as errors did not impact this.

**Table 2**

#### Frequency and percentage across clinical vs. non-clinical job roles

Job type	Frequency	Percent
<b>Clinical</b>	195	69.4
<b>Non-clinical</b>	86	30.6
<b>Total</b>	281	

**Table 3****Frequency and percentage across job roles**

Job role	Frequency	Percent
<b>Psychiatrist</b>	5	1.8
<b>Psychologist</b>	23	8.2
<b>Admin</b>	35	12.5
<b>Nurse</b>	45	16.0
<b>Support worker</b>	28	10.0
<b>Social worker</b>	7	2.5
<b>Assistant Psychologist</b>	19	6.8
<b>Occupational Therapist</b>	13	4.6
<b>Therapist</b>	45	16.0
<b>Managerial</b>	25	8.9
<b>Corporate</b>	10	3.6
<b>Other</b>	26	9.3
<b>Total</b>	281	

**Table 4****Frequency and percent across education level**

Education level	Frequency	Percent
<b>Postgraduate Degree</b>	111	22.6
<b>Bachelor's Degree</b>	96	19.5
<b>College Education</b>	51	10.4
<b>Secondary Education</b>	21	4.3
<b>No Formal Education</b>	2	0.4
<b>Total</b>	281	

**Table 5**  
**Frequency and percentage across NHS mental health trusts**

Trust	Frequency	Percent
<b>SABP</b>	51	18.4
<b>KMPT</b>	82	29.6
<b>Dorset HC</b>	69	24.9
<b>Southern</b>	34	12.3
<b>Solent</b>	41	14.8
<b>Total</b>	277	

**Note:** SABP – Surrey and Borders Partnership NHS Foundation Trust; KMPT - Kent and Medway NHS and Social Care Partnership Trust; Southern - Southern Health NHS Trust; Dorset HC - Dorset Healthcare University NHS Foundation Trust; Solent - Solent NHS Trust

Some trust data is missing due to participant completion error. It was decided to keep these four cases in main analysis as survey was completed fully, just omitting trust data. Therefore, errors did not impact analysis.

## Materials

The following scales were used:

Self-Compassion Scale (SCS) - Long form (Neff, 2003b): a Likert scale of 26 items along six subscales (Self-kindness vs. self-judgement; Common humanity vs. isolation; Mindfulness vs. over-identification). It has good test-retest reliability and validity in measuring self-compassion without overlap to similar concepts (e.g. self-esteem). Additionally, good internal consistency and reliability was found for each subscale (Cronbach's alphas of .75 - .81; Neff, 2003b). Higher scores indicate higher self-compassion. The long form of the scale was chosen to examine subscale differences.

Perceived stress scale 10-item (PSS-10; Cohen & Williamson, 1988): a 10-item scale shown to be at least as useful as the original 14-item version with Cronbach's alphas of .78 and .75 respectively (Cohen & Williamson, 1988). The PSS-10 has shown high reliability with a Cronbach's alpha of .89 (Roberti, Harrington & Storch, 2006) and is not affected by a gender bias (Taylor, 2015). Higher scores correspond to higher perceived stress. The shorter version was chosen to ease time burden on participants.

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS; Tennant et al., 2007): a 14-item Likert scale where higher scores relate to higher mental well-being, with a

good content validity (Cronbach's alphas .89 and .91), and test-retest reliability (Cronbach's alpha of .83; Tennant et al., 2007). It uses positive wording, lessening psychological burden on participants.

The Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983): a 14-item scale with seven questions on anxiety and seven on depression; higher scores mean higher depression or anxiety. A meta-analysis found good internal consistency for the depression and anxiety scales with Cronbach's alphas of .82 and .83 respectively (Bjelland, Dahl, Haug & Neckelmann, 2002). By measuring both anxiety and depression, it negates the need for separate, longer scales.

The Pittsburgh Sleep Quality Index (PSQI; Buysse, Reynolds, Monk, Berman & Kupfer, 1989): a 24-item scale measuring sleep disturbance with higher scores meaning greater sleep disturbance, demonstrated to have good internal homogeneity (Grandner, Kripke, Yoon, & Youngstedt, 2006). An analysis with primary insomnia patients revealed high internal consistency with a Cronbach's alpha of .85 (Backhaus, Junghanns, Broocks, Riemann & Hohagen, 2002).

Participants were also asked to provide demographic information.

## **Procedure**

Ethical approval was obtained from the Health Research Authority (HRA) and Bournemouth University. Research and Development approval was gained from each NHS trust.

Participants were recruited via advertisements including targeted social media and distributions from NHS trust research departments in the form of bulletins, emails, posters. They were provided with the online survey link (Qualtrics) where they were presented with a participant information sheet, consent items and demographic questions. Participants were presented with the following order of scales: SCS, HADS, PSS, PSQI, WEMWBS. After each section, participants were required to confirm their willingness to continue, if they declined, they were directed to a debrief page.

Participants had the option to opt for a paper version of the survey. A £25 Amazon voucher competition was offered to those who were interested in, or participated in the study. A link to the competition was displayed on each debrief page, including those displayed when participants declined to continue.

Once completed, or participants declined to continue a debrief page was displayed. It thanked participants for their participation and directed them to services if they were affected by any of the questions, and displayed contacts for general questions.

## Results

Moderation analysis was used to test whether self-compassion impacted the relationship between stress and depression, anxiety, mental well-being or sleep disturbance. The test was conducted using the PROCESS plugin (Hayes, 2017) and SPSS version 25. Mean scores and standard deviations were calculated for each scale. A G\*Power test was calculated to determine the sample size power. The minimum sample required was 36 for a large effect size ( $f^2 = .35$ ), 17 for a medium effect size ( $f^2 = .15$ ), 550 for a small effect size ( $f^2 = .02$ ). Variable correlations are presented in Table 6, as expected, all variables are significantly correlated.

**Table 6**  
**Correlations of all variables using Pearson's correlation (2-tailed)**

	1	2	3	4	5	6	7	8	9	10	11
1. SCS-SK											
2. SCS-SJ	-.68*										
3. SCS-CH	.71*	-.54*									
4. SCS-I	-.56*	.72*	-.53*								
5. SCS-M	.73*	-.54*	.74*	-.55*							
6. SCS-OI	-.54*	.78*	-.48*	.74*	-.57*						
7. SCS	.84*	-.86*	.79*	-.83*	.82*	-.83*					
8. HADS-D	-.47*	.46*	-.38*	.55*	-.41*	.43*	-.55*				
9. HADS-A	-.39*	.58*	-.32*	.52*	-.38*	.55*	-.55*	.49*			
10. PSS	-.52*	.54*	-.47*	.63*	-.54*	.61*	-.67*	.68*	.63*		
11. PSQI	-.27*	.22*	-.25*	.30*	-.35*	.26*	-.33*	.40*	.36*	.44*	
12. WEMWBS	.57*	-.58*	.46*	-.65*	.52*	-.56*	.67*	-.76*	-.57*	-.76*	-.45*

**Note:** SCS-SK: self-kindness; SCS-SJ: Self-judgement; SCS-CH: common humanity; SCS-I: Isolation; SCS-M: mindfulness; SCS-OI: over-identification; SCS: self-compassion scale; HADS-D: Depression from HADS scale; HADS-A: anxiety from HADS scale; PSS: perceived stress scale; PSQI: The Pittsburgh Sleep Quality Index; WEMWBS The Warwick-Edinburgh Mental Well-being Scale. \* significance  $p < .001$

Analysis of the depression, anxiety, perceived stress and scales in regard to score interpretation was conducted.

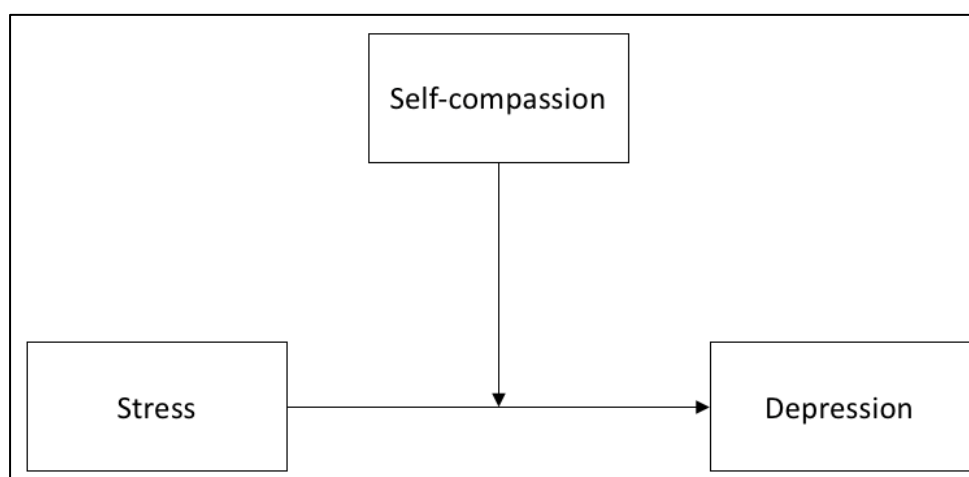
## Assumption checks

For each dependent variable, assumptions of linearity, normal distribution of residuals, multicollinearity, heteroscedacity and homogeneity of variance was assessed. They were deemed to be met for depression, anxiety and mental well-being. For sleep disturbance, there was slight positive skew, issues with heteroscedacity and homogeneity of variance, results were interpreted with caution. Outliers were established using Mahalanobis, Cook's and Leverage values distances and were excluded on the basis of outlying on two or more tests. Heteroscedacity

constant inference tests (Huber-white) was used to correct to heteroscedacity errors and means were centred to avoid multicollinearity.

### Relationship between stress and depression as moderated by self-compassion

One case was excluded as it was outlying on two of the aforementioned tests. When depression was the outcome variable, stress was the predictor and self-compassion the moderator, the model was found to be significant  $F(3, 276) = 120.78, p < .001, R^2 = .50$ . All predictors of depression in the model were significant: stress:  $b = .31, t(276) = 10.47, p < .001$ ; self-compassion:  $b = -.79, t(276) = -2.68, p = .008$ . The interaction between self-compassion and stress was also found to be significant  $b = -.06, t(276) = -1.99, p = .048$ . Self-compassion significantly moderates the relationship between stress and depression (see Figure 1 for illustration).



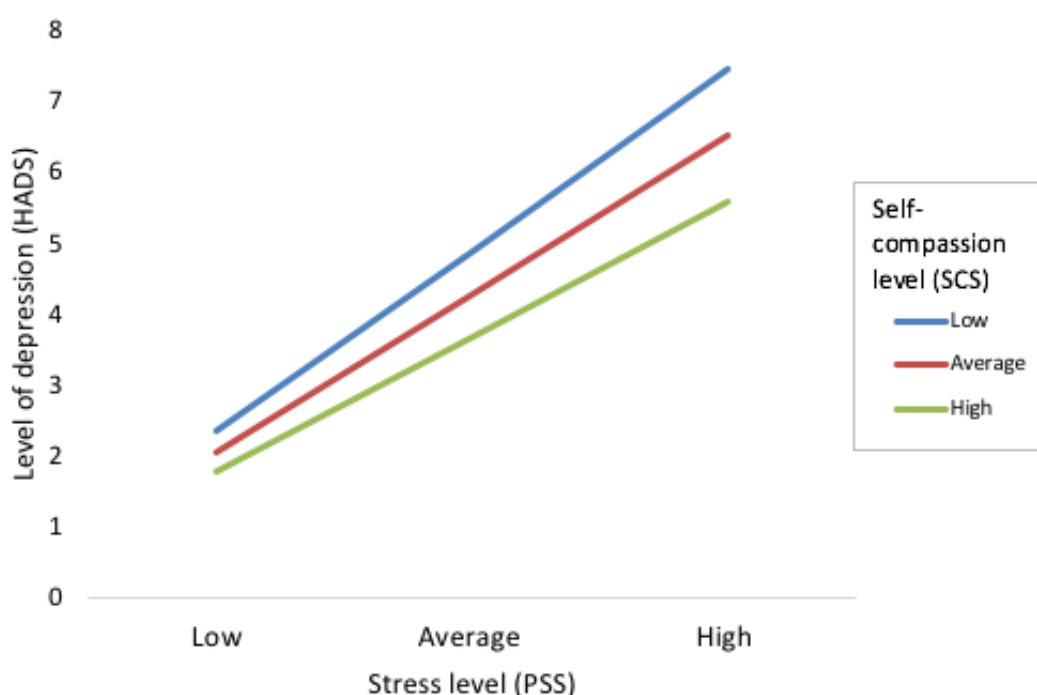
**Figure 1: Illustration of the moderator effect of self-compassion on the relationship between stress and depression**

For low self-compassion, one unit increase in stress gives 0.36 units increase in depression score. For those with average self-compassion, one unit increase in stress gives 0.31 unit increase in depression score. For those with high self-compassion, for every unit increase in stress, there is 0.27 increase in depression score (see Table 7).

A simple slopes analysis using the Johnson-Neyman method found the effect of the focal predictor (stress) on depression is significant at all levels of the moderator (self-compassion); the strength of the stress-depression relationship decreases as self-compassion increases. This effect was illustrated graphically in Figure 2, which shows the change in line steepness (relationship strength) of the stress-depression relationship at levels of self-compassion.

**Table 7**  
**Conditional effects of self-compassion on depression**

Self-compassion	$\beta$	$p$	95% CI	
Low self-compassion (1 SD below mean)	.36	< .001	.28	.43
Average self-compassion (at the mean)	.31	< .001	.25	.37
High self-compassion (1 SD above mean)	.27	< .001	.20	.32



**Figure 2: The moderating effect of self-compassion on the relationship between stress and depression.**

**Note:** low, average and high categorisation of the stress and self-compassion variables refers to 1 SD below the mean, at the mean and 1 SD above the mean respectively.

### Self-kindness

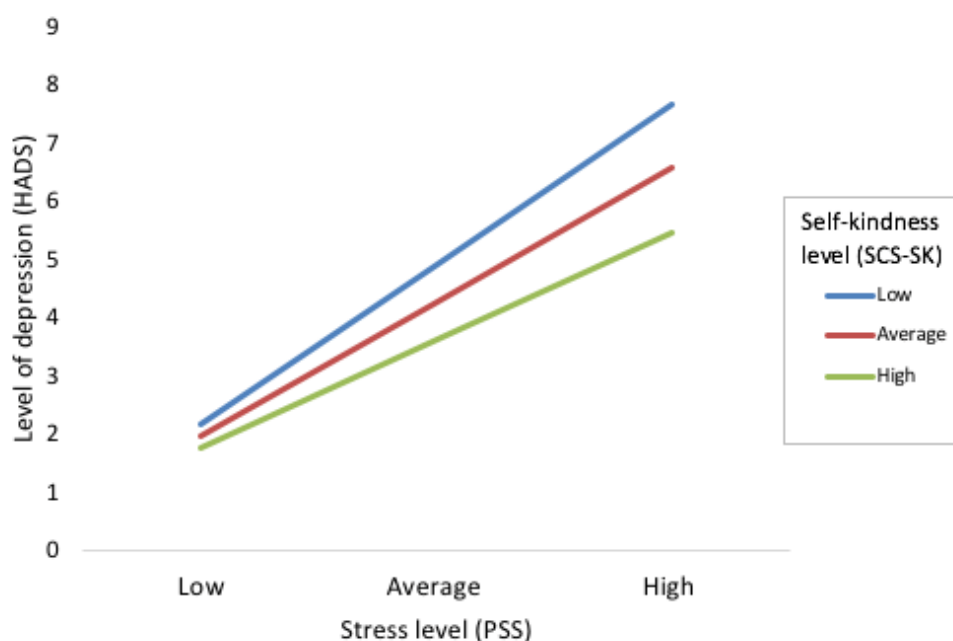
When self-kindness was included as the moderator instead of self-compassion, the overall model was significant  $F(3,276) = 125.71, p < .001, R^2 = .51$ . Within the model, stress was a significant predictor  $b = .32, t(276) = 12.84, p < .001$ , as was self-kindness  $b = -.71, t(276) = -3.28, p = .001$ , and their interaction  $b = -.07, t(276) = -2.45, p = .015$ . Thus, self-kindness moderates the stress-depression relationship; the stress-depression relationship weakens as self-kindness increases.

For low self-kindness, one unit increase in stress relates to 0.38 units increase in depression. Average self-kindness, gives 0.32 unit increase in depression for every one unit increase in stress. For those with high self-kindness, for every unit increase in stress corresponds to 0.26 increase in depression score (see Table 8).

**Table 8**  
**Conditional effects of self-kindness on depression**

Self-kindness	$\beta$	$p$	95% CI	
Low self-kindness (1 SD below mean)	.38	< .001	.31	.46
Average self-kindness (at the mean)	.32	< .001	.27	.37
High self-kindness (1 SD above mean)	.26	< .001	.20	.32

The Johnson-Neyman method simple slopes analysis found stress significantly predicts depression at all levels of self-kindness, yet the strength of the relationship decreases as self-kindness increases (see Figure 3 for an illustration).



**Figure 3: The moderating effect of self-kindness on the stress-depression relationship.**

**Note:** low, average and high categorisation of the stress and self-kindness variables refers to 1 SD below the mean, at the mean and 1 SD above the mean respectively.



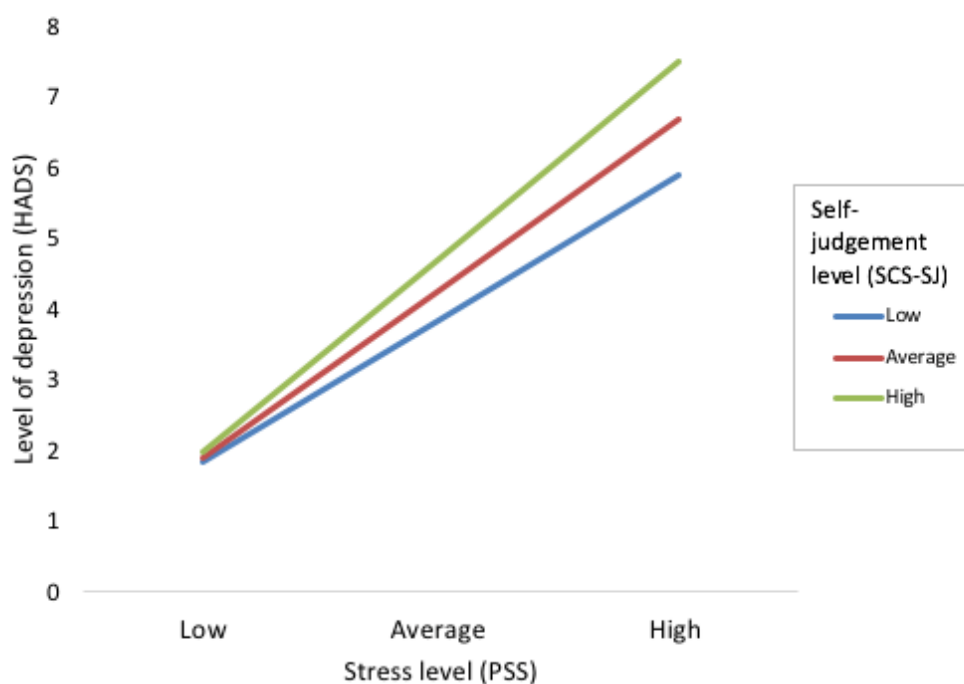
## Self-judgement

When replacing self-kindness with self-judgement, the overall model was significant  $F(3,276) = 116.78, p < .001. R^2 = .51$ . Within the model, stress was a significant predictor  $b = .33, t(276) = 12.88, p < .001$ , as was self-judgement  $b = .46, t(276) = 2.06, p = .040$ , as was their interaction  $b = -.05, t(276) = 2.26, p = .025$ . Thus, self-judgement moderates the stress-depression relationship; the relationship strengthens as self-judgement increases.

The Johnson-Neyman method simple slopes analysis found the effect of stress on depression is significant at all levels of self-judgement, size of the effect increases as self-judgement increases (see Figure 4). For those of low, medium and high self-judgement, one unit increase in stress corresponds to 0.28, 0.33 and 0.39 unit increase in depression score respectively (see Table 9).

**Table 9**  
**Conditional effects of self-judgement on depression**

Self-judgement	$\beta$	$p$	95% CI	
Low self-judgement (1 SD below mean)	.28	< .001	.22	.35
Average self-judgement (at the mean)	.33	< .001	.28	.39
High self-judgement (1 SD above mean)	.39	< .001	.31	.46



**Figure 4: The moderating effect of self-judgement on the stress-depression relationship.**

**Note:** low, average and high categorisation of the stress and self-judgement variables refers to 1 SD below the mean, at the mean and 1 SD above the mean respectively.

**Common humanity**

Common humanity was inputted into the model, replacing self-judgement, it was not found to moderate the stress-depression relationship. The overall model was significant  $F(3,276) = 101.76, p < .001, R^2 = .48$ . Within the model, stress was a significant predictor, common humanity was not, and neither was the interaction (see Table 10). Common humanity does not moderate the stress-depression relationship.

**Table 10**  
**Depression as predicted by stress and common humanity**

	$\beta$	$p$	95% CI	
Stress	.34	< .001	.29	.40
Common humanity	-.34	.125	-.77	.09
Stress X common humanity	-.02	.430	-.07	.03

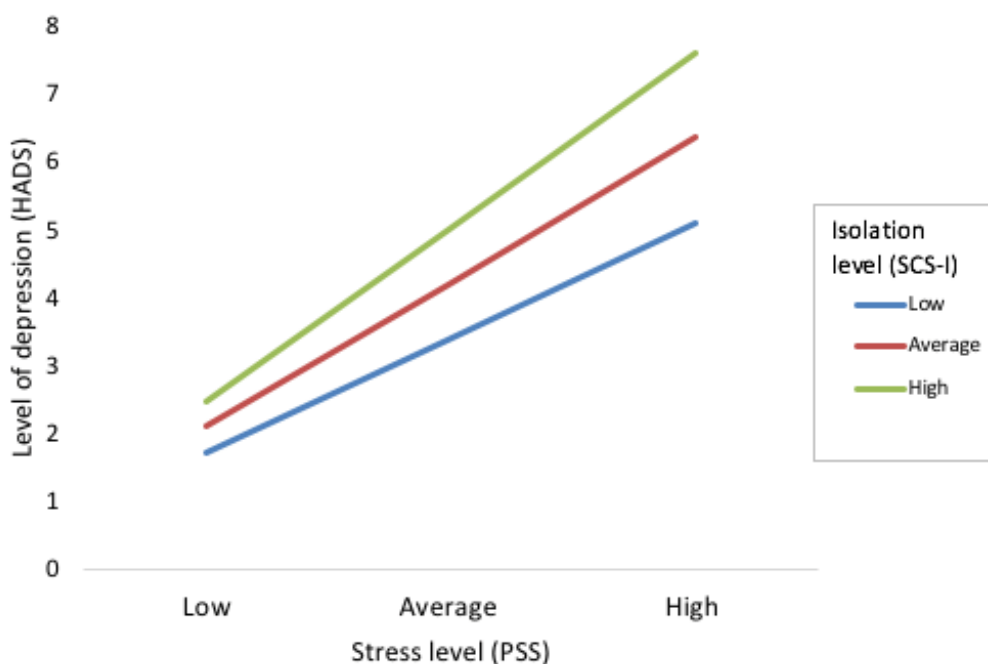
**Isolation**

Isolation replaced common humanity in the model and was found to be a moderator. The overall model was significant  $F(3,276) = 127.05, p < .001, R^2 = .51$ . Within the model, stress was a significant predictor  $b = .30, t(276) = 10.96, p < .001$ , as was isolation  $b = .80, t(276) = 3.85, p < .001$ , as was the interaction  $b = -.06, t(276) = 2.74, p = .007$ . The stress-depression relationship strengthens as isolation increases: isolation is a moderator.

The Johnson-Neyman simple slopes analysis method demonstrated the effect of stress on depression is significant at all levels of the isolation (see Figure 5). For every unit increase in stress, low, medium and high isolation corresponds to 0.24, 0.30 and 0.36 unit increases in depression score respectively (see Table 11).

**Table 11**  
**Conditional effects of isolation on depression**

Isolation	$\beta$	$p$	95% CI	
Low isolation (1 SD below mean)	.24	< .001	.18	.30
Average isolation (at the mean)	.30	< .001	.24	.35
High isolation (1 SD above mean)	.36	< .001	.28	.44



**Figure 5: Moderation effect of isolation on the stress-depression relationship.**

**Note:** low, average and high categorisation of the stress and isolation variables refers to 1 SD below the mean, at the mean and 1 SD above the mean respectively.

### Mindfulness

When mindfulness was used in analyses, it found not to be a moderator of the stress-depression relationship. The overall model was significant  $F(3,276) = 104.69$ ,  $p < .001$ ,  $R^2 = .48$ . Stress was a significant predictor, yet mindfulness was not, and neither was the interaction (see Table 12). Thus, mindfulness does not moderate the stress-depression relationship.

**Table 12**  
**Depression as predicted by stress and mindfulness**

	$\beta$	$p$	95% CI	
Stress	.35	< .001	.29	.41
Mindfulness	-.23	.376	-.73	.28
Stress X mindfulness	-.02	.367	-.08	.03

### Over-identification

Mindfulness was replaced by over-identification and was not found as a moderator of the stress-depression relationship. The model was significant  $F(3,276) = 105.58, p < .001, R^2 = .48$ . Within the model, stress was a significant predictor, over-identification was not, and neither was the interaction (see Table 13).

**Table 13**  
**Depression as predicted by stress and over-identification**

	$\beta$	$p$	95% CI	
Stress	.37	< .001	.31	.43
Over-identification	-.04	.858	-.52	.44
Stress X over-identification	-.02	.331	-.02	.07

### Relationship between stress and anxiety as moderated by self-compassion

Two outliers were excluded on the basis the outlay on two or more of the aforementioned distance values.

Stress, self-compassion and anxiety were put as predictor, moderator and outcome variables respectively. The model was found to be significant overall  $F(3,275) = 69.87, p < .001, R^2 = .41$ . Stress levels were found to predict anxiety  $b = .22, t(275) = 8.12, p < .001$  as were self-compassion levels  $b = -1.12, t(275) = -4.63, p < .001$ . However, the interaction between stress and self-compassion did not predict anxiety:  $b = -0.24, t(275) = -.88, p = .380$ . Thus, the test did not find self-compassion to moderate the stress-anxiety relationship. Exploration of the self-compassion subscales did not reveal any significant interactions.

### Self-kindness

When self-kindness was used as the moderator, it was found not to moderate the stress-anxiety relationship. The overall model was significant  $F(3,275) = 61.30, p <$

.001,  $R^2 = .39$ . Within the model, however, stress was a significant predictor, self-kindness and their interaction was not (see Table 14).

**Table 14**  
**Anxiety predicted by self-kindness and stress**

	$\beta$	$p$	95% CI	
Stress	.28	< .001	.23	.33
Self-Kindness	-.34	.076	-.72	.04
Stress X self-kindness	-.03	.191	-.07	.01

### Self-judgement

When self-judgement replaced self-kindness in the model, it did not moderate the stress-anxiety relationship. The overall model was significant  $F(3,275) = 86.29$ ,  $p < .001$ ,  $R^2 = .47$ . Stress and self-judgement were significant predictors, yet their interaction was not (see Table 15).

**Table 15**  
**Anxiety predicted by self-judgement and stress**

	$\beta$	$p$	95% CI	
Stress	.21	< .001	.16	.25
Self-judgement	1.28	< .001	.92	1.65
Stress X self-judgement	.01	.267	-.02	.07

### Common humanity

When common humanity was used, it was found not to moderate the stress-anxiety relationship. The overall model was significant  $F(3,275) = 63.49$ ,  $p < .001$ ,  $R^2 = .38$ . Within the model, stress was a significant predictor, yet common humanity and their interaction was not (see Table 16).

**Table 16**  
**Anxiety predicted by common humanity and stress**

	$\beta$	$p$	95% CI	
Stress	.29	< .001	.24	.34
Common humanity	-.09	.712	-.55	.37
Stress X common humanity	.02	.560	-.04	.07

### Isolation

Isolation replaced common humanity and also did not moderate the stress-anxiety relationship. The overall model was significant  $F(3,275) = 65.34, p < .001, R^2 = .41$ . Within the model, stress and isolation were significant predictors and their interaction was not (see Table 17).

**Table 17**  
**Anxiety predicted by isolation and stress**

	$\beta$	$p$	95% CI	
Stress	.23	< .001	.18	.28
Isolation	.78	.001	.39	1.17
Stress X isolation	.03	.132	-.01	.08

### Mindfulness

When mindfulness was used as the moderator, it was found not to moderate the stress-anxiety relationship. Overall, the model was significant  $F(3,275) = 61.63, p < .001, R^2 = .38$ . Stress was a significant predictor, yet mindfulness and their interaction were not (see Table 18).

**Table 18**  
**Anxiety predicted by mindfulness and stress**

	$\beta$	$p$	95% CI	
Stress	.28	< .001	.22	.34
Mindfulness	-.10	.440	-.70	.30
Stress X mindfulness	.01	.628	-.04	.06

### Over-identification

When over-identification replaced mindfulness, it did not to moderate the stress-anxiety relationship. The overall model was significant  $F(3,275) = 75.71, p < .001, R^2 = .42$ . Within the model, stress and over-identification were significant predictors yet, their interaction was not (see Table 19).

**Table 19**  
**Anxiety predicted by over-identification and stress**

	$\beta$	$p$	95% CI	
Stress	.21	< .001	.16	.27
Over-identification	.99	< .001	.60	1.38
Stress X over-identification	.02	.520	-.03	.06

### **Relationship between stress and mental well-being as moderated by self-compassion**

For mental well-being, eight outliers were excluded. Stress was used as the predictor, self-compassion as the moderator and mental well-being as the outcome. The model was significant  $F(3,272) = 191.35, p < .001, R^2 = .64$ . Stress levels predicted mental well-being  $b = -.84, t(272) = -11.22, p < .001$ , self-compassion levels also predicted mental well-being  $b = 4.27, t(272) = 5.66, p < .001$ . However, the interaction between stress and self-compassion did not predict mental well-being:  $b = .06, t(272) = 1.08, p = .282$ . Thus, self-compassion did not moderate the stress-mental well-being relationship.

### **Self-kindness**

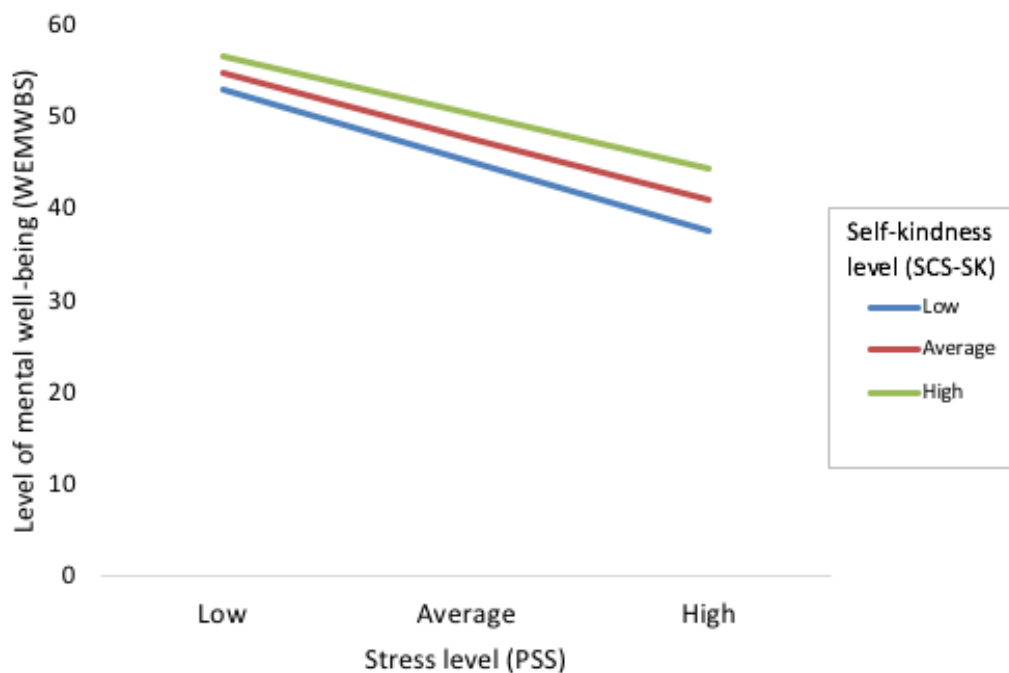
Further exploration of the self-compassion sub-scales revealed when self-kindness was put into the model instead of self-compassion, it did moderate the stress-well-being relationship. The model overall was significant  $F(3,272) = 184.85, p = < .001, R^2 = .64$ . Stress significantly predicted mental well-being  $b = -.97, t(272) = -14.96, p < .001$ . Self-kindness significantly predicted mental well-being  $b = 2.89, t(272) = 4.98, p < .001$ . The interaction between self-kindness and stress was also found to significantly predict of mental well-being  $b = .11, t(272) = 2.07, p = .039$ . Therefore, self-kindness moderates the stress-mental well-being relationship. For those with low self-kindness, the relationship between stress and mental well-being is stronger, and more negative than for those with higher self-kindness.

For every unit increase in stress: those of low self-kindness get 1.07 decrease in mental well-being, those of average self-kindness get 0.97 decrease in mental well-being and those of high self-kindness get 0.87 decrease in mental well-being (see Table 20).

**Table 20****Conditional effects of self-kindness on mental well-being**

Self-kindness	$\beta$	$p$	95% CI	
Low self-kindness (1 SD below mean)	-1.07	<.001	-1.24	-.91
Average self-kindness (at the mean)	-.97	<.001	-1.10	-.84
High self-kindness (1 SD above mean)	-.87	<.001	-1.03	-.71

A simple slopes analysis using the Johnson-Neyman method found the zone of significance was spread across all values of self-kindness. The relationship between stress and mental well-being is significant across all levels of self-kindness and gets weaker with increasing levels of self-kindness (see Figure 6 for illustration).



**Figure 6: The moderating effect of self-kindness on the relationship between stress and mental well-being.**

**Note:** low, average and high categorisation of the stress and self-kindness variables refers to 1 SD below the mean, at the mean and 1 SD above the mean respectively.



### Self-judgement

With self-judgement as the moderator, the model was significant  $F(3,272) = 187.81$ ,  $p < .001$ ,  $R^2 = .63$ . Within the model, stress and self-judgement were significant predictors but their interaction was not (see Table 21). Self-judgement does not moderate the stress-mental well-being relationship.

**Table 21**  
**Mental well-being predicted by self-judgement and stress**

	$\beta$	$p$	95% CI	
Stress	-.96	< .001	-1.08	-.84
Self-judgement	-2.62	< .001	-3.81	-1.43
Stress X self-judgement	-.02	.786	-.13	.10

### Common humanity

Replacing self-judgement with common humanity as the moderator showed the overall model was significant  $F(3,272) = 171.75$ ,  $p < .001$ ,  $R^2 = .61$ . Within the model, stress and common humanity were significant predictors but their interaction was not (see Table 22). Common humanity is not a moderator of the stress-mental well-being relationship.

**Table 22**  
**Mental well-being predicted by common humanity and stress**

	$\beta$	$p$	95% CI	
Stress	-1.07	< .001	-1.20	-.93
Common humanity	1.51	.021	.23	-2.78
Stress X common humanity	.03	.655	-.09	.15

### Isolation

When isolation is used as the moderator, the overall model was significant  $F(3,272) = 199.04$ ,  $p < .001$ ,  $R^2 = .66$ . Within the model, however, stress and isolation were significant predictors, but their interaction was not (see Table 23). Isolation does not moderate the stress-mental well-being relationship.

**Table 23**  
**Mental well-being predicted by isolation and stress**

	$\beta$	$p$	95% CI	
Stress	-.90	< .001	-1.03	-.77
Isolation	-2.85	< .001	-3.90	-1.80
Stress X isolation	-.05	.290	-.15	.04

### Mindfulness

When the model included mindfulness as the moderator, overall it was significant  $F(3,272) = 192.53, p < .001, R^2 = .61$ . Within the model, stress and mindfulness were significant predictors but their interaction was not (see Table 24). Mindfulness is not a moderator.

**Table 24**  
**Mental well-being predicted by mindfulness and stress**

	$\beta$	$p$	95% CI	
Stress	-1.02	< .001	-1.17	-.87
Mindfulness	2.07	.007	.57	-3.58
Stress X mindfulness	.01	.930	-.11	.12

### Over-identification

Over-identification as the moderator meant the overall model was significant  $F(3,272) = 176.02, p < .001, R^2 = .61$ . Within the model, stress and over-identification were significant predictors but their interaction was not (see Table 25), so over-identification does not moderate this relationship.

**Table 25**  
**Mental well-being predicted by over-identification and stress**

	$\beta$	$p$	95% CI	
Stress	-1.02	< .001	-1.16	-.88
Over-identification	-1.44	.027	-2.72	-.16
Stress X over-identification	.03	.561	-.08	.15

### Relationship between stress and sleep disturbance as moderated by self-compassion

Eight participants completed the PSQI with errors, therefore their data was not included. Eight outliers were excluded from the analysis. Due to issues with the assumption checks, results were interpreted cautiously.

Stress, self-compassion and sleep disturbance were included as the predictor, the moderator and the outcome variables respectively. The model was significant  $F(3,261) = 27.10, p < .001, R^2 = .22$ . Stress was a significant predictor of sleep  $b = .07, t(261) = 6.68, p < .001$ , however, self-compassion was not a significant predictor  $b = -.04, t(261) = -4.59, p = .647$ , thus the interaction between self-compassion and stress was not a significant predictor of sleep  $b = -.01, t(261) = -.72, p = .470$ ; Self-compassion does not moderate the stress-sleep disturbance relationship.

### Self-kindness

When including self-kindness instead of self-compassion, it was found not to moderate the stress-sleep relationship. The model was significant  $F(3,261) = 18.01, p < .001, R^2 = .23$ . Within the model, stress was a significant predictor but self-kindness their interaction was not (see Table 26).

**Table 26**

**Sleep disturbance predicted by self-kindness and stress**

	$\beta$	$p$	95% CI	
Stress	.07	< .001	.05	.09
Self-kindness	-.05	.466	-.19	.09
Stress X self-kindness	-.01	.320	-.02	.01

### Self-judgement

Self-judgement as the moderator in the model, was found not to moderate the stress-sleep relationship. The overall model was significant  $F(3,261) = 25.62, p < .001, R^2 = .22$ . Within the model, however, stress was a significant predictor but self-judgement their interaction was not (see Table 27).

**Table 27**  
**Sleep disturbance predicted by self-judgement and stress**

	$\beta$	$p$	95% CI	
Stress	.08	< .001	.06	.10
Self-judgement	-.06	.406	-.19	.08
Stress X self-judgement	.003	.679	-.12	.02

### Common humanity

When the moderator variable was common humanity, it was found not to moderate the stress-sleep relationship. The model was significant  $F(3,261) = 28.77$ ,  $p < .001$ ,  $R^2 = .22$ . However, whilst stress was a significant predictor, common humanity their interaction was not (see Table 28).

**Table 28**  
**Sleep disturbance predicted by common humanity and stress**

	$\beta$	$p$	95% CI	
Stress	.07	< .001	.05	.09
Common humanity	-.03	.586	-.16	.09
Stress X common humanity	.003	.686	-.01	.02

### Isolation

When Isolation replaced common humanity, it was found not to moderate the stress-sleep relationship. Whilst the model was significant  $F(3,261) = 25.90$ ,  $p < .001$   $R^2 = .23$  and stress was a significant predictor, isolation and their interaction were not (see Table 29).

**Table 29**  
**Sleep disturbance predicted by isolation and stress**

	$\beta$	$p$	95% CI	
Stress	.07	< .001	.05	.09
Isolation	.02	.755	-.11	.15
Stress X isolation	.01	.307	-.01	.02

### Mindfulness

Mindfulness was used in the model and was found not to moderate the stress-sleep relationship. The model was significant  $F(3,261) = 31.93, p < .001, R^2 = .24$ . Stress was a significant predictor but mindfulness their interaction was not (see Table 30).

**Table 30**  
**Sleep disturbance predicted by mindfulness and stress**

	$\beta$	$p$	95% CI	
Stress	.06	< .001	.04	.08
Mindfulness	-.17	.055	-.34	.004
Stress X mindfulness	-.01	.225	-.03	.01

### Over-identification

When over-Identification was used, it was found not to be a moderator of the stress-sleep relationship. The overall model was significant  $F(3,261) = 27.55, p < .001, R^2 = .23$  and stress was a significant predictor but over-identification their interaction was not (see Table 31).

**Table 31**  
**Sleep disturbance predicted by over-identification and stress**

	$\beta$	$p$	95% CI	
Stress	.08	< .001	.06	.10
Over-identification	-.07	.347	-.21	.07
Stress X over-identification	<.001	.962	-.02	.02

## Discussion

The present study aimed to investigate self-compassion and its facets as moderators of the relationship between stress and its negative outcomes in NHS mental health workers. All variables were significantly correlated, and self-compassion and its facets significantly predicted depression, anxiety and mental well-being but not sleep disturbance. Regarding the moderating relationship, only some hypotheses were met; self-compassion moderates the stress-depression relationship; it weakened the relationship. However, as a whole, self-compassion did not moderate the relationship between stress and: anxiety, mental well-being, or sleep disturbance. Previous research found self-compassion buffers stress biologically, yet this effect did not extend to all biological reactions (Arch et al., 2014). Present research shows self-compassion similarly, has a buffering effect with limitations.

Regarding the stress-depression relationship, the present study has extended understanding by showing self-compassion impacts and moderates; meeting hypothesis 1. Those higher in self-compassion have a weaker stress-depression relationship; increases in stress are correlated with less depressive symptoms. Potentially suggesting they can cope with greater stress before depression becomes clinically significant. The association between stress, self-compassion and depression is deeper and more complex than linear correlation. Previous correlational research suggested self-compassion was a protective factor (Olson et al., 2015; Neff et al., 2007), yet assumptions regarding relationships causation or direction are limited. Those low in depression may, as a consequence, be highly self-compassionate. Risk and protective factors are defined as requiring knowledge of time (Kraemer, Stice, Kazdin, Oxford & Kupfer, 2001). It is common knowledge stress can cause depression (Hammen, 2005; Kendler et al., 1999; Monroe et al., 1996; Swindle et al., 1989). With the direction identified, and present findings demonstrating the weakened stress-depression relationship for those with high self-compassion, one can more confidently suggest self-compassion may act as a protective factor. This conforms to previous research showing high self-compassion is related to resilience (Kemper, et al., 2015; McArthur et al., 2017; Olson & Kemper, 2014; Olson et al., 2015) and reduced negative emotional reactivity to stress tests in laboratory tests (Leary et al., 2007). Present findings extend this, suggesting tangible, clinically relevant resilience benefits of high self-compassion. It promotes more than resilience; it impacts the relationships strength.

Research has already examined mechanisms underlying the self-compassion-depression relationship; rumination is said to mediate this (Raes, 2010). It is possible, the same mechanism underlies current findings. Self-compassion may reduce the impact of stress on depressive symptoms via reductions in stressor-related rumination. Additionally, those with high self-compassion benefit from higher emotional regulatory abilities, tempering laboratory-based stress reactivity (Diedrich et al., 2014; Finlay-Jones et al., 2015). This would explain discussed findings; good emotional regulation in response to a stressor, would mean less vulnerability to emotion-related disorders, such as depression. Self-compassion's emotional regulatory mechanism is supported by evidence showing emotional intelligence moderates the stress-mental health relationship (Ciarrochi, Deane & Anderson, 2002).

Facets examination revealed self-kindness, self-judgment and isolation were significant moderators; whereas common humanity, mindfulness, and over-identification were not. Self-kindness weakened the stress-depression relationship, whilst self-judgment and isolation strengthened it. This increases the small prior research base concerning the facets. Higher self-judgement was shown to relate to a stronger stress-depression relationship. Whilst suggestive of a depression vulnerability factor, it is presently limited by missing temporal information, as previously discussed. However, self-criticism, which is conceptually similar, is known as a depression vulnerability factor (Mongrain & Leather, 2006; Neitzel & Harris, 1990). This supports self-judgement and subsequently, the other moderators (isolation and low self-kindness) as further vulnerability factors.

Despite overall self-compassion being a significant moderator, mindfulness, common humanity and over-identification were not, nor were they predictive of depression. Neff's (2003a) conceptualisation states the facets are opposites, not mutually exclusive but mutually enhancing. This may explain why some were correlated but not predictive, due to associations with another predictive. This may be the case for common humanity which was found to be significantly correlated but not a significant predictor or moderator; it might be correlated due to its association with another predictive facet. It had previously failed to reach significance for correlations with depression (Ying, 2009), this disparity potentially produced by a larger sample size in the present study. The inconsistency among facets questions the strength and utility of the relationship between self-compassion and depression; some facets are not predictive or moderators. There is a paucity of evidence regarding specific inter-relations which may impact moderating relationships and potential applications. This highlights the need to consider all facets within analyses.

Anxiety was predicted by stress and self-compassion, supporting previous research (Neff, 2003b; Neff et al., 2005). However, self-compassion was not found to moderate the stress-anxiety relationship; it does not impact the relationship strength. Thus, hypothesis 2 was not met. Further analysis revealed only negative facets were predictive of anxiety conforming with previous evidence (Mills et al. 2007), however, none were moderators. This suggests self-compassion has limits regarding its buffering relationship, conforming to biological evidence (Arch et al., 2014) and may also be limited in promoting resiliency.

Present results do not support laboratory-based literature demonstrating self-compassion levels relate to different anxiety-related stress reactivity despite using similar anxiety measures (Arch et al., 2014; Neff et al., 2007). Different study methodologies may cause this disparity. The laboratory-based research examined immediate reactivity to controlled stressors, yet the present study looks at less proximate reactions to naturally occurring stress. Self-compassion may only affect immediate reactivity and not correspond to long-term outcomes. Alternatively, the present study examines naturally occurring stress meaning a lack of control over stressor cause or nature. Self-compassion may not buffer against different causes of natures of stress, or the buffer effect may still exist, but results were confounded by stressors to which it has no impact. Effects may have also been masked by the

population's anxiety and stress levels which were high and potentially too narrowly distributed or skewed.

Hypothesis 3 was not met as self-compassion was not found to moderate the stress-mental well-being relationship. However, self-compassion and stress predicted levels of mental well-being, supporting previous evidence (Olson et al., 2015). Present research already shows self-compassion moderates some stress-psychological well-being relationships. The scale used, (WEMWBS) is a measure of many aspects of mental well-being and may have included aspects not moderated by self-compassion, thusly leading to insignificant results.

Interestingly, one of the self-compassion facets emerged as a moderator. Self-kindness was found to impact the stress-mental well-being relationship; the relationship was weaker with higher self-kindness. With warmth and understanding towards oneself in times of stress, there is a lesser impact on mental well-being. This demonstrated the facets are distinct, as Neff (2003a, 2003b) suggested, and potentially independently from global self-compassion. Factor analyses have disputed self-compassion as a single higher order factor of the facets (Petrocchi, Ottaviani, & Couyoumdjian, 2014; Williams, Dalgleish, Karl & Kuyken, 2014) suggesting the facets should be separate. This is supported by Neff, Whittaker and Karl's (2017) recent findings: a six-factor correlated model is superior to the higher order model. This would explain present findings, facets can act independently of general self-compassion.

Self-judgement, the suggested opposite to self-kindness, was not a moderator. This backs evidence the facets are not necessarily on a continuum and not mutually exclusive (Neff, 2003a, 2003b). In this instance, it is more important to be kind to oneself than merely not judging oneself. Whilst the other facets are related to less stress and higher mental well-being, self-kindness is notably associated with a reduced mental well-being-stress relationship. Being self-kind has more profound association. This is significant for mental health workers, a population with consistently high stress (72% had moderate or high-stress levels). Increasing self-kindness could buffer stress effects, meaning workers could handle greater stress before it had considerable impact on mental well-being.

Whilst sleep, stress, and self-compassion were all correlated, and stress predicted sleep, self-compassion was neither a predictor or moderator; hypothesis 4 was not met. Furthermore, no facets were predictors or moderators. Stress as a predictor of sleep conforms to prior research (Åkerstedt et al., 2007). Contrary to the literature, there was no self-compassion-sleep relationship (Marques et al., 2016; Teixeira, et al., 2016) and the lack of predictive and moderating relationship contradicts suggestions self-compassion increases might diminish sleep disturbance (Kemper et al., 2015). However, in the present population, this relationship may still exist. This could be attributed to analysis assumptions which were not met, suggesting potential type II errors. Additionally, the scale (PSQI) did not discriminate between internal (e.g. stress) and external (e.g. shift work) related sleep disturbance and the latter may have confounded results. Additionally, sleep disturbance was low, and scoring



was on a narrow scale; the data spread may not have been wide enough to find an effect. Findings suggest self-compassion does not have a similar function to social support in aiding sleep (Liffman et al., 2012), suggesting compassion to oneself and others operates differently.

Subsequent to data collection, Hu, Wang, Sun, Arteta-Garcia and Purol (2018) published research that found self-compassion moderates the effect of stress on sleep latency but no other sleep aspects which is disparate to present findings. They used the same measure as the present study, yet broke it down into components. This suggests the same results may be found presently if the scale has been likewise analysed.

The present research has limitations, firstly with the sample size. Whilst being relatively large, a G\*Power test revealed smaller effects would not have been found with the present sample. Secondly, the SCS (Neff, 2003b) is currently the only self-compassion measurement tool and most of development and factor structure used undergraduate students. Research with other populations have disputed the factor structure (Williams et al., 2014; Costa, Marôco, Pinto-Gouveia, Ferreira & Castilho, 2015; Lopez et al., 2015); appropriateness for the present population is unclear. Additionally, whilst representative, the sample is majorly female. Depression, anxiety and self-compassion levels differ by gender (Leach, Christensen, Mackinnon, Windsor & Butterworth, 2008; Neff, 2003b) suggesting relationships between concepts may also differ by gender and may explain lack of significance.

Despite limitations, the present study has many strengths. Firstly, it includes staff from clinical and non-clinical roles across multiple trusts, facilitating generalisability. Those in non-clinical roles have not been overlooked; results and implications are not job-specific. The present research shows tangible resilience benefits to self-compassion using clinically relevant and validated scales with a large sample.

Individuals for whom stress has a lesser impact on depression, may as a consequence have higher self-compassion. Thus, further research could use longitudinal methodology to collect the temporal nature of the concepts. This is needed to concretely examine low self-compassion, self-judgement, low self-kindness and isolation as risk factors for depression. This would extend understanding to create enhanced models and preventative interventions. Additionally, further research could explore if there would be any specific group (e.g. gender, job role or type) for whom moderating effects are stronger - who may benefit more from self-compassion interventions. Exploration is needed to establish if interventions need to focus on specific facets for optimum efficacy. Contrariwise, as interlinked facets have different associations to outside concepts, interventions may have wide-ranging outcomes.

Regarding practical implications, self-compassion changes the strength of the stress-depression association and somewhat impacts the stress-mental well-being association. Self-compassion can be manipulated, suggesting the utility of

interventions or training, with a focus on self-kindness, in professional training or NHS induction. This could act as a protective strategy promoting staff mental health, opposed to reactive programmes. This could help reduce economic costs of loss of productivity from stress-related outcomes and ultimately improve patient care. The present research provides avenues to design preventative interventions to reduce stress impact.

Whilst self-compassion has not been found to moderate some variables examined, it does not detract from its consistent relationship with better psychological functioning. The present study highlights the need to examine these concepts' relations and the facets deeply, to establish their complex associations, and to reflect the complexity of human psychology. Finding self-compassion as a moderator, affecting the association between stress and depression is substantial: it is mechanism of resilience. This has potential applications in preventing stress-related depression and protecting NHS workers, as a valuable yet vulnerable workforce.

## References

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