MAJOR RESEARCH PROJECT

LITERATURE REVIEW:

Self-Compassion, Depression and Anxiety in a Cancer Population: A Systematic Review

EMPIRCAL PAPER:

Does Self-Compassion Facilitate Disengagement from Unachievable Goals?

Submitted by Lois Coy, to the University of Exeter

as a thesis for the degree of Doctor of Clinical Psychology, May 2021

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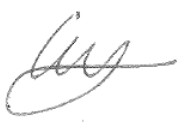

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SCHOOL OF PSYCHOLOGY

DOCTORATE IN CLINICAL PSYCHOLOGY

LITERATURE REVIEW

Self-Compassion, Depression and Anxiety in a Cancer Population: A Systematic Review

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Abstract

Objectives: Individuals with a cancer diagnosis can experience many difficulties, including anxiety and depression. One construct found to be related to anxiety and depression is self-compassion. This review aimed to examine studies that explored these relationships in adults who have received a cancer diagnosis.

Methods: A literature search was conducted using five databases. Studies that had examined adults who had received any cancer diagnosis and any form of treatment were included.

Results: Ten studies were found that met the inclusion criteria. A narrative synthesis of these studies provided support for the existence of inverse relationships between self-compassion and both anxiety and depression (effects ranging from small-large).

Conclusion: Overall, the strength and direction of the cross-sectional relationships between self-compassion and depression/anxiety in this population appeared to be in line with those reported in other populations (Macbeth & Gumley, 2012). Knowledge of these relationships may allow earlier detection of anxiety and depression in this population. Further experimental and longitudinal research is needed to establish causality. Different factors may mediate (e.g., illness perceptions) and moderate (e.g., lymphedema status) these relationships. Further exploration is required of any cognitive factors or cancer characteristics that could play an influential role, to enable the appropriate design and administration of interventions.

Keywords*: Anxiety, cancer, depression, psycho-oncology, self-perception, systematic review*

Background

The Impact of a Cancer Diagnosis

In the United Kingdom, there are approximately 367,000 new cancer diagnoses a year (Cancer Research, 2021). Individuals with cancer often experience several challenges, including physical symptoms, uncertainty about prognosis, existential threat, and disruption to life goals (Haydon et al., 2019; Pinto-Gouveia et al., 2014). Beyond successful treatment, cancer survivors can experience a myriad of difficulties, including fatigue, changes in appearance, early menopause, and fear of reoccurrence (Chinh et al., 2020; Jones et al., 2016; Przezdziecki et al., 2013; Shapiro, 2018).

It is unsurprising, therefore, that individuals with a cancer diagnosis can experience psychological problems (both before, during, and after available treatment), with symptoms of depression and anxiety being the most reported psychological difficulties (Honda & Goodwin, 2004; Pinto-Gouveia et al., 2014; Shapiro, 2018). Symptoms of depression can include 'markedly diminished interest or pleasure in all, or almost all activities nearly every day' (American Psychiatric Association [APA], pp.160), and feelings of worthlessness, sadness or hopelessness, whilst symptoms of anxiety can include intense fear and anticipation of threats, along with accompanying physiological arousal (e.g., muscle tension) and behavioural avoidance (APA, 2013). Whilst such responses are understandable after receipt of a cancer diagnosis, symptoms of depression and anxiety in this population have been linked to reduced adherence to medical care, longer hospital duration, reduced quality of life, and lower survival rates (Lerman et al., 1994; Pinto-Gouveia et al., 2014; Pirl & Roth, 1999; Reich et al., 2008; Satin et al., 2009; Spiegel & Giese-Davis, 2003). Furthermore, individuals may be highly blaming of themselves for not

'coping better', which in turn may further exacerbate psychological difficulties (Austin et al., 2021). Thus, appropriate psychological support should be developed and offered at all phases of the cancer experience, to improve individual wellbeing and prognosis (Kılıç et al., 2020; Gorman, 1998; National Institute for Health and Care Excellence [NICE], 2002, 2004). Several different psychological concepts that may influence psychological wellbeing following a diagnosis of cancer have been investigated. One such factor is self-compassion.

Self-Compassion

The construct of self-compassion can be conceptualised in different ways. Gilbert (2009b) proposed an evolutionary understanding that focused on the interplay between 'threat', 'drive' and 'soothing' emotional regulation systems. The 'threat' system is linked to emotions such as fear and anger, which have evolved to protect individuals against danger (Gilbert, 2009b; Macbeth & Gumley, 2012). The 'drive' system consists of motivational capacities linked to the need to seek and gain important resources to survive (e.g., food). Finally, the 'soothing' system is based on the evolved mammalian attachment system, which consists of the ability to care for and attune to the feelings of others (Gilbert, 2009b; Macbeth & Gumley, 2012). Thus, the 'soothing' system relates to the giving and receiving of care and empathy, which can invoke feelings of calmness and safety (Gilbert, 2009b; Macbeth & Gumley, 2012). Gilbert (2009b) suggests that self-compassion arises from the activation of this 'soothing' system through the generation of self-directed attention, imagery, thinking and behaviours that are caring and kind.

A further definition of self-compassion commonly referenced is proposed by Neff (2003a, 2016). Neff (2016) suggests that a self-compassionate frame of mind includes three components, each with a positive and negative pole that represent

compassionate versus uncompassionate self-responding: self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification. Self-kindness describes the ability to be kind and accepting towards oneself, as opposed to being self-judgemental, which is where one is critical towards oneself (Neff, 2003a). Common humanity involves the recognition of the shared human experience of failure and suffering, whilst isolation describes the sense of feeling alone with one's imperfections (Neff, 2016). Finally, mindfulness entails the ability to be aware and accepting of one's own experience of suffering without getting 'entangled' in it (Neff, 2016), whereas over-identification describes when one gets 'caught up' and focused on aversive experiences (Neff, 2003a). It is proposed that these six elements are conceptually distinct but combine to create a self-compassionate frame of mind (Neff, 2016).

The different existing conceptualisations of self-compassion and accompanying measurement tools must be considered when consolidating research regarding self-compassion (Strauss et al., 2016). A range of definitions share common aspects, including that self-compassion consists of a recognition of suffering and a willingness to tolerate uncomfortable feelings related to this suffering (Strauss et al., 2016). Thus, it is suggested that self-compassion is compassion – "a deep awareness of the suffering of another coupled with the wish to relieve it" (Gilbert, 2009a pp. xiii) – turned towards the self. However, much existing research into self-compassion, and subsequent understanding of its impact, has been conducted using the 26-item or the 12-item Self Compassion Scales (SCS [Neff, 2003b] and SCS-SF [Raes et al., 2011] respectively [Neff, 2009]). These scales are based on Neff's (2003a) definition of self-compassion, with items and subscales designed to measure the six components of self-compassion indicated by her. As

Neff's (2003a) conceptualisation of self-compassion is most widely researched and measured, and to allow for a consistent consolidation of research findings, this review will adopt this definition.

Growing evidence indicates that self-compassion can lessen the negative impact of difficult life events (Brion et al., 2014; Zeller et al., 2015). Higher levels of self-compassion are related to increased wellbeing (Neff, 2003b; Zessin et al., 2015), positive affect (Wren et al., 2012), and more adaptive coping strategies such as seeking social support (Allen & Leary, 2010; Kılıç et al., 2020). Furthermore, Macbeth & Gumley's (2012) meta-analysis concluded that self-compassion is negatively related to symptoms of mood disorders (including anxiety and depression), with a large effect size of r = -.54. Therapies which increase self-compassion have also been found to significantly decrease symptoms of anxiety and depression in individuals with and without various chronic health conditions (Kılıç et al., 2020; Kirby et al., 2017). Thus, it is possible that self-compassion, and interventions designed to increase self-compassion, may help to reduce symptoms of anxiety and depression in individuals with cancer. It is also possible that those experiencing anxiety and depression have a reduced capacity to be self-compassionate (MacBeth & Gumley, 2012), which could in turn negatively impact the use of adaptive coping strategies (Allen & Leary, 2010).

Review Aims

Whilst Macbeth and Gumley (2012) systematically examined the relationship between self-compassion and symptoms of anxiety and depression, their review did not include any studies with samples of adults with a diagnosis of cancer. A diagnosis of cancer is often met with fear and a perception of fatality (Daher, 2012). Individuals may be required to consider mortality, tolerate uncertainty about the

future, and cope with appearance- or function-altering physical changes (Holland et al., 2010; Shapiro et al., 2018). Cancer can also be associated with stigma, isolation, and self-blame, due to physical alterations, fear of speaking about the disease, and perceptions around the causes of illness and 'expected' coping (Holland et al., 2010). This is particularly the case when behaviours (e.g., exercise) are presented as potentially preventative (Daher, 2012; Holland et al., 2010). Indeed, it has been proposed that individuals with cancer are often "held responsible for their own survival in a way that other patients are not" (Holland et al., 2010, pp. 364). Although experiences vary widely, stigma and self-blame can result in more frequent symptoms of depression and anxiety (Else-Quest et al., 2009; Phelan et al., 2013). It is possible that self-compassion may be particularly relevant in 'buffering' against psychological suffering in this population due to the high levels of experienced stressful events, psychological and physical challenges, and feelings of shame and isolation that may prevail (Pinto-Gouveia et al., 2014; van der Donk et al., 2020).

For this review, Neff's (2003a) definition of self-compassion will be utilised. The experiences of individuals who have received a diagnosis of cancer may differ depending on numerous factors, including cancer type and stage, age at diagnosis and treatment needed. To provide an initial synthesis of existing research, this review will focus on studies that have examined adults who have received any cancer diagnosis and any treatment. The review will examine all aspects of the relationship between self-compassion and depression and anxiety (including through direct experimental manipulation or association). Thus, the following question will be examined: What is the relationship between self-compassion and depression and anxiety in adults who have received a diagnosis of cancer?

Methods

This review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Protocols 2015 (PRISMA-2015) guidelines (Moher et al., 2015).

Eligibility Criteria

The inclusion and exclusion criteria for this review are displayed in Table 1. Both self-compassion and depression/anxiety can be treated interchangeably as exposure or outcome, in PECOS terminology; thus, PECOS headings are not utilised. As this review focuses on all aspects of the relationship between self-compassion and depression/anxiety, all quantitative studies are included that analyse the relationship (either through direct experimental manipulation of self-compassion or depression/anxiety, or a direct analysis of the association between these measures, see 'Study Designs' in Table 1). This review will focus on quantitative studies only to allow a more consistent synthesis of evidence.

Table 1

Eligibility Criteria

	Inclusion	Exclusion
Population	Adults (aged 18+ years) of any gender. Human participants who have been diagnosed with any type (e.g., breast cancer) or stage (I-VI) of cancer. Participants may have completed or be still undergoing any form of cancer treatment. If	Studies which do not specify that all participants are aged ≥18 years. Studies in which it is not clearly started that any included participants have received a diagnosis of cancer (e.g., studies in which participants are under investigation for cancer without

	studies contain a mixed sample of participants (e.g., those with a diagnosis of cancer and those without), they will be included if relevant analysis has been performed separately for participants (aged ≥18) with a diagnosis of cancer.	any prior diagnosis). No limits to the time spent in remission apply.
Self-Compassion	Interventions or validated measures that are designed to directly influence or measure the overall construct of self-compassion, either as trait or state. Neff's (2003a) definition of self-compassion will be used. Most prominent measures include the Self Compassion Scale (Neff, 2003b) and the Self Compassion Scale Short-Form (Raes et al., 2011). Studies will be included if they examined the overall construct of Neff's (2003a) definition of self-compassion (e.g., using the total score of the SCS or an intervention that addresses all	Interventions or measures that are designed to address only self-criticism, compassion to others, or the individual components of self-compassion according to Neff (2003a, e.g., self-kindness, common humanity and/or mindfulness). Experimental studies which focus on compassion more broadly or do not address SC as the main focus on the intervention.

three components of self-kindness, mindfulness and common humanity). However, if individual components of self-compassion have been analysed (e.g., subscale scores of the SCS) alongside the overall construct, these results will also be examined.

For the purposes of this review, studies will be classed as having directly manipulated self-compassion (e.g., through a self-compassion focused intervention) if self-compassion theory is mentioned in the introduction, and the intervention is described as addressing the three components of self-compassion as defined by Neff (2003a). Prior papers mentioned in methods sections can be examined to gain a more detailed description of the intervention used if necessary.

Depression/ Anxiety	Interventions or validated self-report or interviewer-based measures that are designed to directly manipulate or measure either depression or anxiety symptoms. Examples of measures include the Patient Health Questionnaire-9 (Kroenke et al., 2001), the Beck Depression and Anxiety inventories (Beck, et al., 1996; 1988), the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983), and the Depression Anxiety Stress Scales (Lovibond & Lovibond, 1995). Studies that examine whether participants meet diagnostic criteria for anxiety or depression (as defined by the Diagnostic and Statistical Manual of Mental Disorders [APA, 2013]) will also be included.	Measures of symptoms of specific anxiety disorders (e.g., Post Traumatic Stress Disorder) or general mood.
Comparator	Experimental studies may include active, passive or no control conditions.	None.

Study Design /Analysis	Quantitative studies using cross-sectional, longitudinal, non-experimental, or experimental designs. Experimental studies will be included if either self-compassion or depression/anxiety has been directly manipulated (e.g., through an intervention) and the other concept measured as the dependent variable. Experimental studies that have not directly manipulated either self-compassion, depression or anxiety will also be included if they have directly analysed the relationship between measures of self-compassion and depression/anxiety (e.g., through correlation or mediation analysis). This includes studies which conduct such analyses only pre-intervention. Non-experimental studies must have explicitly analysed the	Review papers, editorials, case studies and qualitative studies. Experimental studies which do not directly manipulate either self-compassion (e.g., mindfulness-based interventions) or depression/anxiety (e.g., studies in which depression/anxiety are treated as outcomes from an intervention that directly manipulates other processes such as mindfulness) and have also not directly analysed relationships between these measures. Studies which have performed analysis on measures or sub-scales of measures that do not capture information on either depression or anxiety exclusively (e.g., studies including only an analysis of the Depression Anxiety and Stress Scales total score, or studies including only an analysis of the Hospital Anxiety and Depression Scale total score).

	relationship between self-compassion and depression/anxiety (e.g., through correlation or regression analysis), either cross-sectionally or longitudinally.	
Additional	Any publication date and published in a peer-reviewed journal.	Studies published in any language other than English, commentaries, dissertations, study protocols, books, conference abstracts. Studies for which the full-text article is unavailable.

Search Strategy

Table 2 displays search terms selected following scoping searches of the existing literature and prior systematic reviews. Truncations and wildcards were used when necessary to search all endings (truncation) and spelling variations (wildcard). Boolean operators were used to define the relationships between search terms. For example, the search was narrowed by linking the below terms for ‘Population’, ‘Self-Compassion and ‘Depression/Anxiety’ using the Boolean operator AND.

Table 2

Search Terms

Population	cancer OR neoplasm OR oncolog* OR chemotherap* OR tum?r.

Self-Compassion	“self compassion” OR “self kind*” OR “loving kind*” OR “self sooth*” OR “self reassur*” OR “self empathy*” OR “self comfort”
Depression/Anxiety	depress* OR anxi* OR distress.

The following databases were searched by title and abstract in September 2020: PsycInfo, PubMed, CINAHL, Web of Science and EMBASE. Where possible, restrictions were placed on search results to exclude papers that were not published in English language or in a peer-reviewed journal. Reference lists and citations of included articles were manually screened to identify literature omitted from the initial searches. References from relevant review papers were also searched (Table 3).

Table 3

Review Papers Searched

Authors	Title
Austin et al. (2021)	Compassion-based interventions for people with long-term physical conditions: a mixed methods systematic review.
Inwood & Ferrari (2018)	Mechanisms of change in the relationship between self-compassion, emotion regulation, and mental health: A systematic review.
Kılıç et al. (2020)	Review of the effectiveness of self-compassion-related interventions for individuals with chronic physical health conditions.

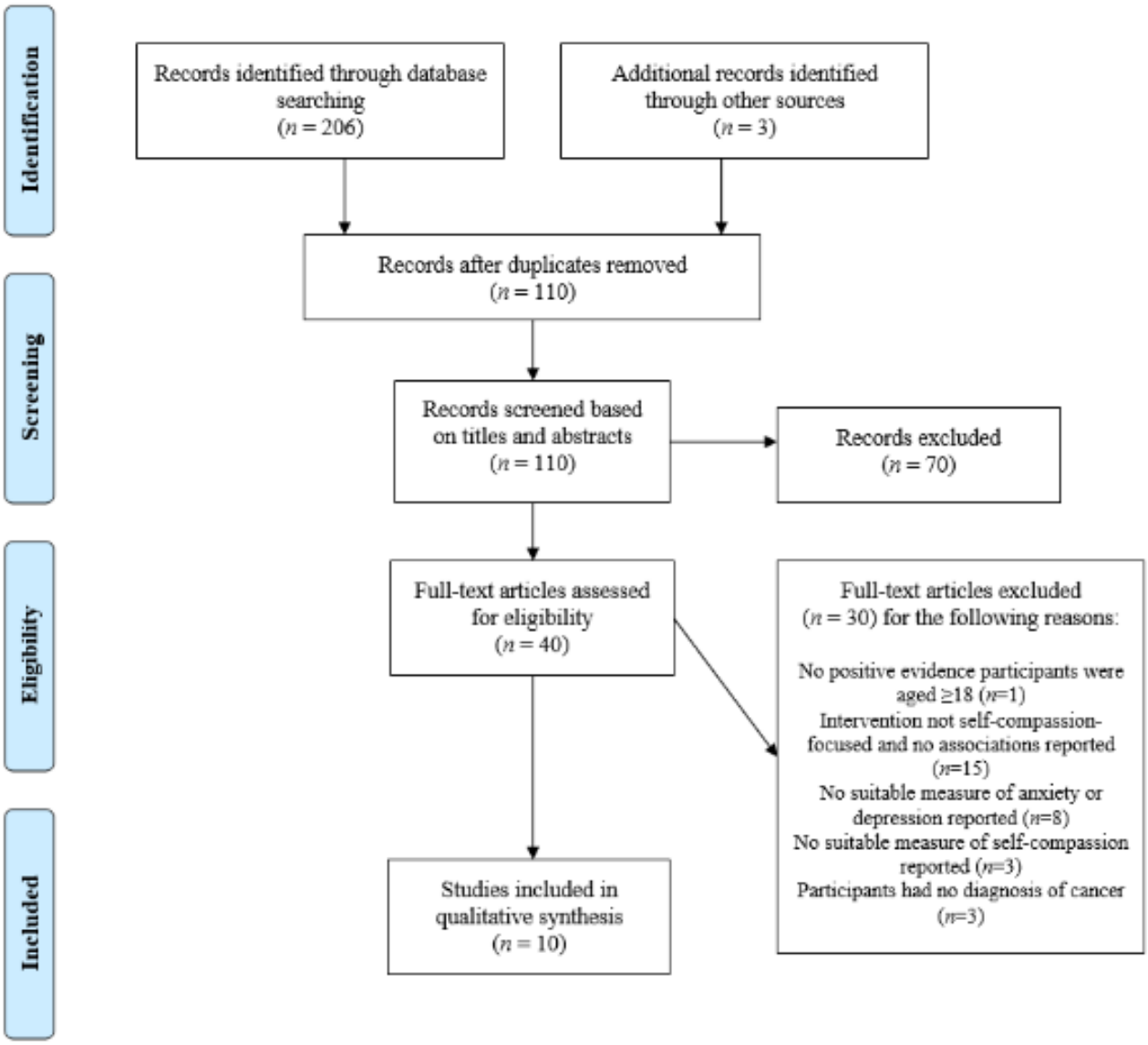
MacBeth & Gumley (2012)	Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology.
Wilson et al. (2019)	Effectiveness of self-compassion related therapies: a systematic review and meta-analysis.

Screening Procedures

Microsoft Excel was used to collate results and remove duplicates. Titles and abstracts of identified articles were read in a preliminary screening process. The full text of articles which appeared to fit the outlined eligibility criteria (Table 1) were then examined to determine whether to include them. This process, including reasons for exclusion, is depicted in Figure 1 (Moher et al., 2015). To enhance objectivity and reliability, a second rater independently assessed the eligibility of six articles at the full-test screening stage (Liberati et al., 2009). Initial inter-rater agreement (66.7%) yielded a kappa coefficient of .4 (McHugh, 2012). Discussion revealed areas in which additional clarity in eligibility criteria wording was required. Following this, six articles were again assessed, and inter-rater agreement was 100% ($\kappa = 1.0$; McHugh, 2012).

Figure 1

PRISMA Flowchart of the Screening Process



Evaluation Criteria

The quality of cross-sectional and longitudinal studies was evaluated using the Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies (QAT-OC), and the Quality Assessment of Case-Control Studies (QACCS) tool was used to evaluate the case-control study (National Heart, Lung & Blood Institute, 2014a, 2014b). These tools provided 14-item and 12-item checklists respectively that were used to assign a quality rating of either ‘poor’, ‘fair’ or ‘good’. The quality of

experimental studies was assessed using the Quality Assessment Tool for Quantitative Studies ([QAT-QS]; Effective Public Health Practice Project, 1998). This is because the QAT-OC lacks consideration of some factors relevant to experiments (e.g., randomization). The QAT-QS was used to rate eight areas of quality as either methodologically 'weak' 'moderate' or strong'. An independent rater assessed the quality of three articles to ensure consistent application of the checklists. There was complete agreement regarding the quality of studies ($\kappa = 1.0$; McHugh, 2012).

Results

A summary of the methodology, results and quality of the included studies are presented in Tables 4 and 5. The order of studies in both tables are presented according to design. Effect sizes will be described using Cohen's (1992) classification.

Table 4

Summary of Methodology of Included Studies

Reference	Design	Intervention	Control	Sample	Cancer Characteristics	Treatment Characteristics	Self-Compassion Measure	Anxiety and/or depression measures
1. Gillanders et al. (2015).	Cross-sectional.	N/A.	N/A.	105 adults (45.0% f) recruited from an NHS oncology service, Scotland. Age range = 18 - 80+ years. Most common age group = 60 - 79 years (60%).	Heterogeneous cancer diagnoses. Most common = urological cancer (37%). Time since diagnosis *M* = 3.6 years, *SD* = 4.6. Range 1-24 years.	Heterogeneous treatments. Most common: chemotherapy (63%). 66% of sample in active treatment.	SCS.	HADS (depression and anxiety).
2. Przezdziecki et al. (2013).	Cross-sectional, online.	N/A.	N/A.	279 adult cancer survivors (100% f) recruited from community breast cancer consumer organisations, Australia.	Breast cancer diagnoses. Heterogeneous time since diagnosis. Most common time since diagnoses = 5+ years (37%).	Heterogeneous treatments. Most common = surgery (100%). All sample completed active treatment (e.g., surgery, chemotherapy, radiation therapy).	SCS.	DASS-21 (depression and anxiety).

				M age = 53.4 years (*SD* = 9.4). Age range = 23 – 73 years.				
3. Sherman et al. (2017).	Cross-sectional, online.	N/A.	N/A.	75 adults (100% f) recruited from a breast cancer institute and private hospital, Australia. *M* age = 47.8 years (*SD* = 8.9). Age range = 27 - 66 years.	Breast cancer diagnoses. Heterogeneous time since diagnosis. Most common time since diagnoses = 1-2 years (40%).	All had undergone NSM & IBR. Heterogeneous adjuvant treatment received. Most common adjuvant treatment = a combination of chemotherapy and hormonal therapy (25.70%).	SCS-SF.	DASS-21 (depression and anxiety).
4. Todorov et al. (2019).	Cross-sectional, online.	N/A.	N/A.	215 adult cancer survivors (100% f) recruited from Breast Cancer Network, Australia. *M* age = 60.70 years (*SD* = 9.33).	Breast cancer diagnoses. Early & advanced stages (94% early). *M* time since diagnosis = 95.0 months (*SD* = 64.9 months). Range of time since diagnosis 1- 480 months.	Heterogeneous treatments. Most common treatment = surgery (100%). All sample completed active treatment (e.g., surgery, chemotherapy, radiation therapy).	SCS-SF.	DASS-21 (depression and anxiety).
5. Zhu et al. (2020).	Cross-sectional.	N/A.	N/A.	301 adults (60.4% f) recruited from	Heterogeneous cancer diagnoses. Most common = breast cancer	Heterogeneous treatments. Most common treatment =	Chinese SCS-SF.	Chinese PHQ-9 (depression) & Chinese

				two hospitals, China. *M* age = 50.1 years (*SD* = 13.1).	(22%). Stages I-VI. Most common stage = stage IV (31.6%). Time since diagnoses *M* months = 14.3, *SD* = 16.4).	chemotherapy alone (65%).		STAI-6 (anxiety).
6. Van der Donk et al. (2020).	Cross-sectional case control.	N/A.	N/A.	Clinical population: 245 adults (24.9% f) recruited from a medical centre, Netherlands. *M* age = 65.35 years (*SD* = 12.01). Compared to 245 matched, healthy adult controls. Controls recruited from register office in same region.	Heterogeneous cancer diagnoses. Most common = urological cancers (52.8%). Time since diagnosis *M* years = 2.39 (*SD* = 1.39).	Heterogeneous treatments. Most common = Surgery with radiotherapy (30.2%). All had finished radiotherapy treatment for at least 2 months. All participants were treated with curative intent.	Dutch SCS (24-items).	Dutch CES-D (depression).
7. Przezsziecki et al. (2016).	Cross-sectional analysis (at the start of a RCT self-compassion	Writing about a negative event experienced in relation to	Writing about a negative event experience d in	105 adult cancer survivors (100% f) recruited from the Breast Cancer	Breast cancer diagnoses. Time since diagnoses not reported.	Heterogeneous treatment types. Most common treatment not reported.	SCS.	DASS-21 (depression and anxiety).

	intervention).	post-treatment bodily changes, with self-compassionate prompts.	relation to post-treatment bodily changes, without self-compassionate prompts.	Network, Australia were included in the final analysis. *M* age = 55.4 (*SD* = 9.8). Age range = 25 – 81 years.		All sample completed active treatment (e.g., surgery, chemotherapy, radiation therapy).		
8. Kingston et al. (2015).	RCT MBCT intervention.	8-week MBCT intervention (one session per week plus home practice).	Treatment as usual (MBCT intervention completed in phase 2).	16 adults (62.5% f) recruited from oncology teams in a teaching hospital, England. Intervention group *M* age = 49. 8 years (*SD* = 10.89) Control group *M* age = 50.4 years (*SD* 13.2).	Heterogeneous cancer diagnoses. Most common diagnosis = breast cancer (38%). Time since diagnosis not reported.	Patients in 'stable phase' - either in remission (56%) or on oral chemotherapy (44%). Information about other treatments received not provided.	SCS.	HADS (depression and anxiety).
9. Sherman et al. (2018).	RCT self-compassion intervention.	My Changed Body (MyCB). A 30-minute, online structured writing	Expressive writing. A 30-minute online writing activity without any self-	304 adult cancer survivors (100% f) recruited from nationwide breast cancer consumer organisations,	Breast cancer diagnoses. Stages I-III. Intervention group *M* time since diagnosis = 6.7 years (SD= 6.5). Control group *M*	Heterogeneous treatments. Most common treatment = combination of surgery, RT and chemotherapy (45%).	SCS-SF.	DASS-21 (depression and anxiety).

		exercise with self-compassion focused writing prompts.	compassion focused writing prompts.	teaching hospitals and lymphedema clinics, Australia. Intervention group *M* age = 57.5 years (*SD* = 9.0). Control group *M* age = 57.2 years (*SD* = 10.0).	time since diagnosis = 5.2 years (SD = 4.6).	All sample completed active treatment.		
10. Zhu et al. (2019).	Longitudinal.	N/A.	N/A.	153 adults (65.8% f) recruited from a hospital, China. *M* age = 50.8 years (*SD* = 11.6). Age range = 18 -79.	Heterogeneous cancer diagnoses. Most common diagnosis = breast cancer (28%). Stages I-VI. Most common stage = stage II (39.5%) First assessment occurred within 1 week of diagnosis.	Heterogeneous treatments. Most common treatment: Chemotherapy alone (42.1%). 100% of sample undergoing treatment during study.	Chinese SCS-SF.	Chinese PHQ-9 (depression) & Chinese STAI-6 (anxiety).

Note. N = number of participants; f = female; SCS, Self-Compassion Scale; SCS-SF, Self-Compassion Scale-Short Form; DASS-21, Depression Anxiety and Stress Scale-21; HADS, Hospital Anxiety and Depression Scale; PHQ-9; Patient Health Questionnaire-9; STAI-6; State Trait Anxiety Inventory-6; CES-D, Centre for Epidemiological Studies-Depression; RCT, Randomised Controlled Trail; MBCT; Mindfulness Based Cognitive Therapy.

Table 5

Summary of Results of Included Studies

Reference	Design	Main Findings	Strengths and Limitations	Quality Rating
1. Gillanders et al. (2015)	Cross-sectional.	Self-compassion was significantly negatively associated with anxiety (r = -.50) and depression (r = -.44). Self-compassion was not found to significantly predict symptoms of anxiety (β = 0.01) or depression (β = 0.17) when five other predictors were included in regression models.	**Strengths:** Internal consistency of used scales was good. Considered covariates. **Limitations:** Did not recruit sufficient sample size to meet that indicated by power analysis. Only 41% of invited individuals participated. No information presented on disease stage or socio-economic status. Pre-dominantly white British sample so may not generalise.	Fair (QAT-OC)
2. Przezdziecki et al. (2013)	Cross-sectional, online.	Self-compassion was significantly negatively correlated with anxiety (r = -.39) and depression (r =-.57). Mediation analysis demonstrated that self-compassion partially mediated an indirect effect of body image disturbance on symptoms of depression (β = 0.22, 95% CI = 0.14-0.33) and anxiety (β = 0.11, 95% CI = 0.06 – 0.18).	**Strengths:** Internal consistency of used scales were good. Explored the mediation effects of self-compassion. Large sample size. **Limitations:** No sample size justification or power analysis. Only 31% of invited individuals participated. No information presented on disease stage or ethnicity. Participants were engaging in ongoing community support with access to computers, so results may not generalise.	Fair (QAT-OC)
3. Sherman et al. (2017)	Cross-sectional, online.	Self-compassion was significantly negatively correlated with anxiety (r = -53) and depression (r = -.60). For symptoms of depression, the main effect of self-compassion was not significant. For anxiety, the main effect of self-compassion was statistically significant (F = 8.10, p = .006, η_p^2 = .11), with higher self-compassion associated with lower anxiety.	**Strengths:** Conducted power analysis and justified recruited sample size. Internal consistency of used scales were good. **Limitations:** For recruitment from the breast cancer charity, information was not presented on how many invited individuals participated. Only 44% of invited individuals from breast clinics	Fair (QAT-OC)

			participated. Measures were implemented inconsistently across study participants (some responses were made through post and some online). Unclear as to whether exclusion criteria were consistently applied across different recruitment pools. No information provided on cancer stage. Participants was predominantly married, meaning results may not generalise. Did not present graphs, means or post-hoc analysis on interaction effects for depressive symptoms.	
4. Todorov et al. (2019)	Cross-sectional, online.	Self-compassion was significantly negatively correlated with anxiety (r = -.43) and depression *(r* = -.56). Self-compassion explained 26.9% of additional variance in depression scores (β = -0.59, SE = 0.46, R^2 = .392) and 15.3% of additional variance in anxiety scores (β = -0.44, SE = 0.37, R^2 = .219), over and above included covariates. After including hope, self-compassion remained negatively and statistically significantly associated with both anxiety and depression.	**Strengths:** Conducted power analysis and justified recruited sample size. Considered covariates. **Limitations:** Only 12% of invited individuals participated. All participants were recruited from community organisations for individuals affected by cancer, with 94% percent of individuals diagnosed with early-stage cancer. Thus, results may not be generalisable.	Fair (QAT-OC)
5. Zhu et al. (2020)[a]	Cross-sectional.	Self-compassion was significantly negatively associated with anxiety (r = -.39) and depression (r = -.37). The negative component of self-compassion was also significantly negatively associated with anxiety (r = -.41) and depression (r = -.44), whilst the positive component of self-compassion was only significantly correlated with anxiety (r = -.14), not depression (r = -.06).	**Strengths:** Examined factors which may mediated effects of self-compassion. Large sample size. 92% of invited individuals participated. **Limitations:** No sample size justification or power analysis. Validity of translated measures difficult to ascertain.	Poor (QAT-OC)

		Various illness perceptions (e.g., perceived consequence) were found to mediate the influence of SC on symptoms of depression and anxiety, explaining 32.69% and 25.31% of the total effect respectively. None of the illness perceptions were found to mediate the relationship between the positive component of self-compassion and depression, however, personal control explained 22.30% of the total effect of positive self-compassion on anxiety symptoms. Consequence and timeline cyclical (illness perceptions) were found to explain 25.56% of the total effect of the negative component of self-compassion on depression, whilst perceived consequence explained 17.87% of the total effect of the negative component of self-compassion on symptoms of anxiety. Thus, illness perceptions were found to partially mediate the association of self-compassion with symptoms of depression and anxiety. This effect was found more often for negative self-compassion than for positive self-compassion.		
6. Van der Donk et al. (2020)[b]	Cross-sectional case control.	Total self-compassion was significantly negatively associated with depression (r = -.47). The negative component of self-compassion was significantly positively associated with depressive symptoms (r = .42), whilst the association between the positive component of self-compassion and depression was not significant (r = -.16). Self-judgement, isolation and over-identification subscales were significantly positively associated	**Strengths:** Justification of sample size provided. Examined positive and negative components of self-compassion, as well as total score. **Limitations:** Only 30% of invited patients and 11% of healthy controls participated. Unclear as to whether relevant confounding variates were controlled for in the analysis. Unclear as to whether healthy controls were selected randomly.	Fair (QACCS)

		with depressive symptoms (*r* = .29, .43 and .33 respectively), whilst the mindfulness subscale was significantly negatively associated with depressive symptoms (*r* = -.24). No significant interaction effects were found between group and total self-compassion, or either of the two self-compassion components (positive and negative), for depression scores. This suggests that there were no significant differences between cancer patients and healthy controls in the association of both total self-compassion and the two self-compassion components with depression.		
7. Przezsziecki et al. (2016)	Cross-sectional analysis (at the start of a RCT self-compassion intervention).	Pre-intervention, significant negative correlations were found between self-compassion and symptoms of depression (*r* = -.52) and anxiety (*r* = -.29).	**Strengths:** Conducted power analysis and justified recruited sample size. Internal consistency of used scales were good. **Limitations:** Information was not presented on the proportion of invited individuals who participated. Participants were mainly partnered so results may not generalise.	Fair (QAT-OC)
8. Kingston et al. (2015)	RCT MBCT intervention.	Pre- to post- intervention changes in total self-compassion and all Self Compassion Scale subscale scores were not significantly associated with any changes in anxiety or depression symptoms, as measured by the Hospital Anxiety and Depression Scale.	**Strengths:** Randomisation process deemed appropriate. **Limitations:** Small sample size. Insufficient analysis was conducted to meet proposed research aims (mediation analysis). Unclear depiction of number of participants randomised; thus, number of withdrawals is unclear. Consistency of intervention was not measured. Internal reliability of measures for study not reported. Not all potential confounders were examined or account for in the analysis. All participants were of Caucasian Irish ethnicity, so	Weak (QAT-QS)

			results may not generalise. It is unclear as to whether the intervention group also received treatment as usual.	
9. Sherman et al. (2018)	RCT self-compassion intervention.	A significant group-time interaction effect was found for self-compassion scores (F = 6.17, p <.001). Mean scores suggest that self-compassion scores 1 week and 1-month post-intervention increased more for those in the self-compassion group compared to those in the control group. The group-time interactions for depression (F = 1.33, p = .263) and anxiety (F = 2.21, p = .086) were not significant, suggesting that depression and anxiety scores were not significantly altered post-intervention for those in the self-compassion group compared to the control group. There was a significant lymphedema status–group– time effect for depression (F = 5.47, p = .001) and anxiety (F = 4.04, p = .007). For participants with lymphedema, depression and anxiety scores were found to be decreased to a greater degree in those who received the self-compassion intervention compared to the control group.	**Strengths:** Active control group utilised. Large sample size. Randomisation process described sufficiently and deemed appropriate. Conducted power analysis and justified recruited sample size. Reports percentage of those who completed the whole intervention. Low attrition to follow up (8% rate for both experimental and control groups). Use of intent-to-treat analysis. **Limitations:** Only 61% percent of invited individuals participated. Unclear reasons provided for dropouts. Self-selected sample may not be generalisable to those not receiving support from cancer consumer organisation or clinics, individuals who do not have internet access, or advanced cancer. Did not control for amount written or content of written information (due to anonymity reasons). Did not present graphs or post-hoc analysis for group-time interaction effects for self-compassion scores.	Moderate (QAT-QS)
10. Zhu et al. (2019)[c]	Longitudinal.	Total self-compassion at T1 was significantly negatively associated with depression and anxiety at T1 (depression r = -.38, anxiety r = -.40) and T2, (depression r = -.33, anxiety r = -.42), and with T3 anxiety (r = .24), but not T3 depression (r = -.15).	**Strengths:** 80% of invited individuals participated. Non-western culture sample. Longitudinal associations examined. Examined associations of positive and negative	Poor (QAT-OC)

	The positive component of self-compassion at T1 was significantly negatively associated with anxiety at T1 (r = -.21), T2, (r = -.25) and T3 (r = -.18), and with depression at T3 (r = -.23) but not T1 (r = -.12) and T2 (r = -.12). The negative component of self-compassion at T1 was significantly negatively associated with depression and anxiety at T1 (depression r = -.40, anxiety r = -.34) and T2 (depression r = -.32, anxiety = .30), but not at T3 (depression r = .08, anxiety r = -.11). Regression analysis showed that total self-compassion and both self-compassion components (positive and negative, entered simultaneously) at T1 were significantly related to symptoms of depression and anxiety at T1, explaining 18% to 16% and 24% to 18% of the variance of symptoms, respectively. When controlling for T1 symptoms, total self-compassion at T1 only significantly predicted symptoms of anxiety at T2 (β = -0.23), not T3 (β = -0.16), nor symptoms of depression at T2 (β = -0.13). Total self-compassion at T1 was not correlated with depression at T3, so this analysis was not completed. The positive component of self-compassion at T1 was found to predict symptoms of anxiety at both time points (T2 β = -0.21, T3 β = -0.18), as well as symptoms of depression at T3 (β =	components of self-compassion, as well as total score. **Limitations:** No sample size justification or power analysis. Attrition of participants to T3 assessment was 37%, resulting in possible sample bias. Results may not generalise to individuals who are not married, or beyond the treatment phase. Validity of translated measures difficult to ascertain. Errors in results reporting.

	-0.17), but not T2 (β = -0.09). No significant predictive value of the negative component of self-compassion was found.

Note: RCT = Randomised Controlled Trial; MBCT = Mindfulness Based Cognitive Therapy; QAT-OC = Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies; QAT-QS = Quantitative Assessment Tool for Quantitative Studies; QACCS = Quality Assessment of Case-Control Studies; T1 = Time 1; T2 = Time 2; T3 = Time 3.

[a] Increased negative component scores represent decreased uncompassionate self-responding, increased positive component scores represent increased compassionate self-responding.

[b] Increased negative component scores represent increased uncompassionate self-responding, increased positive component scores represent increased compassionate self-responding.

[c] Increased negative component scores represent decreased uncompassionate self-responding, increased positive component scores represent increased compassionate self-responding

Overview of Selected Studies

Studies were published between 2013 to 2020. Most studies were cross-sectional (*n* = 7), one of which used a case-control design. Two studies were experimental, one using a self-compassion intervention and the other MBCT. The remaining study used a prospective cohort longitudinal design.

Population

Studies were conducted in Australia (*n* = 5), China (*n* = 2), England (*n* = 1), Scotland (*n* = 1) and the Netherlands (*n* = 1). Sample sizes ranged from 16 to 304, with a total of 1798 participants across all studies (66.6% female). Mean ages of selected samples ranged from 47.8 – 65.4 years. Samples of all studies had received heterogeneous forms of cancer treatment. Five studies included only women who had received a diagnosis of breast cancer, four samples of which had completed active treatment. The remaining studies included samples of individuals with heterogeneous cancer diagnoses, where the most common cancer diagnoses were breast (*n* = 3) and urological (*n* = 2).

Measures of Self-Compassion

To measure self-compassion, studies used the SCS (*n* = 4, Neff, 2003b), the SCS-SF (*n* = 3), a Chinese version of the SCS-SF (*n* = 2) and a Dutch version of the SCS (*n* = 1). All studies calculated a total self-compassion score, with three reporting results for compassionate (positive) and uncompassionate (negative) self-responding components. Such component scores are created from the positive (self-kindness, mindfulness & common humanity) and negative (self-criticism, self-judgement and isolation) subscale results. Two studies performed analysis on individual subscales of the SCS. The SCS has been suggested to have good internal reliability, discriminant validity and convergent validity (Neff, 2003b). The SCS-SF has been found to have adequate internal

consistency (α ≥ .86) and correlates highly with the SCS (*r* ≥ .97, Raes et al., 2011). Internal consistencies of included studies' total and component self-compassion scores were good to excellent (α's ≥ .70). The internal consistencies of subscale scores were acceptable to good (α's ≥ .60).

Measures of Depression and Anxiety

Seven studies measured both depression and anxiety using either the DASS-21 (*n* = 5, Lovibond & Lovibond, 1995), or the HADS (*n* = 2, Zigmond & Snaith, 1983). The DASS-21 is a short form of the 42-item DASS (Lovibond & Lovibond, 1995) and has been suggested to have adequate construct validity and reliability (Henry & Crawford, 2005). Two studies used Chinese versions of the PHQ-9 and the STAI-6 to measure depression and anxiety, respectively. Finally, van der Donk (2020) used a Dutch version of the CES-D to measure depression. Reported internal consistencies of measures of depression and anxiety were respectively excellent (α's > .80) and good to excellent (α's >.70).

Quality Assessment

Most included studies were 'Fair/Moderate' (*n* = 7), and three studies were 'Poor/Weak'. The main limitations were low or undeterminable proportions of individuals participating from the pool of individuals invited, lack of power analysis reporting and lack of generalisability. Most studies used self-selected samples, presenting a risk of bias.

Evidence from Samples with Breast Cancer Diagnoses

All studies used the DASS-21 to measure anxiety and depression.

Cross-Sectional Studies

Przezdziecki (2013) and Todorov (2019) reported moderate negative correlations between self-compassion and anxiety, and large negative correlations between self-compassion and depression. Significant small and

large negative associations between self-compassion and anxiety and depression respectively were reported by Przezdziecki (2016), whilst Sherman (2017) found large negative correlations between self-compassion and both anxiety and depression. In addition, Todorov (2019) found that self-compassion uniquely explained variance in anxiety and depression scores, even when covariates including hope were included in the regression model. Finally, Przezdziecki (2013) reported that self-compassion partially mediated an effect of body image disturbance on symptoms of both anxiety and depression.

Experimental Study

Sherman (2018) found that a self-compassion writing intervention did not result in significantly different decreases in depression and anxiety scores from pre- to post- intervention, compared to the control writing intervention. However, for participants with lymphedema, the self-compassion intervention resulted in significantly lower levels of anxiety and depression than the control intervention.

Evidence from Samples with Heterogeneous Cancer Diagnoses

Cross-Sectional Studies

Gillanders et al., (2015) found large and moderate negative correlations between self-compassion and anxiety and depression respectively. Van Der Donk (2020) found moderate negative correlations between depression and total and negative self-compassion scores, a finding which was replicated by the poorer quality study conducted by Zhu et al. (2020). The association between positive self-compassion and depression scores, however, was not found to be significant by either of the latter researchers. Van der donk (2020) found that all negative subscales were positively associated with depression scores (small-moderate effects), whilst ‘Mindfulness’ was the only positive subscale that was significantly negatively associated with depression (small

effects). Associations between self-compassion (total as well as positive and negative components) and depression scores were not significantly different between healthy controls and individuals with a diagnosis of cancer (Van der Donk et al., 2020). Zhu et al., (2020) found significant negative associations between anxiety scores and total, negative and positive self-compassion scores (with small-moderate effects).

When controlling for the influence of other known predictors of anxiety and depression (e.g., cognitive fusion), Gillanders et al. (2015) found that total self-compassion did not significantly predict anxiety or depression scores. Zhu et al. (2020) discovered that different illness perceptions (e.g., perceived consequence of illness) partially mediated the association between both total and negative component self-compassion scores and anxiety and depression, as well as the association between positive self-compassion and anxiety.

Experimental Study

Kingston (2015) found that the change in self-compassion (both total and all subscale scores) from pre-to-post group MBCT was not significantly associated with pre-to-post intervention changes in anxiety and depression. However, the quality of this study was rated ‘weak’, and the small sample of participants (*n* = 16) limits generalisability and validity.

Longitudinal Study

Zhu et al. (2019) examined the associations between trait self-compassion and anxiety and depression over three time points (within 1 week after diagnosis [T1], start of medical treatment [T2] and end of medical treatment [T3]). Total and negative self-compassion scores at T1 negatively correlated with anxiety at all time points, and with depression at T1 and T2. Significant negative associations were also detected between positive self-

compassion and anxiety (T1 and T2) and depression (T3). Effect sizes were small to moderate.

Regression analysis found that once relevant covariates were accounted for, total, negative, and (to a lesser extent) positive self-compassion scores at T1 all significantly accounted for variance (16-24%) in depression and anxiety scores at T1. Once baseline anxiety and depression were controlled for, only total and positive self-compassion (T1) significantly negatively predicted anxiety scores at T2, and only positive self-compassion negatively predicted symptoms of anxiety and depression at T3. The methodological quality of this study was 'poor', however, with an attrition rate to T3 assessment of 37%. This limits the validity of the longitudinal results in this review.

Summary

Studies examining only women with a breast cancer diagnosis found negative cross-sectional associations between self-compassion and depression and anxiety (Table 6). Self-compassion uniquely explained variance in anxiety and depression, and partially mediated the relationship between body image disturbance and anxiety and depression. A self-compassion intervention did not significantly alter depression and anxiety scores, apart from in participants with lymphedema. All studies were conducted in Australia, with most samples having finished active treatment. This limits generalisability. For samples with heterogeneous cancer diagnoses, negative cross-sectional associations were found between total self-compassion and depression and anxiety (Table 6). Pre-post MBCT intervention changes in self-compassion and depression/anxiety were not found to be associated, although this interventional study was methodologically weak.

Overall, evidence is lacking as to whether self-compassion is casually linked to decreased anxiety or depression.

Table 6

Summary of Cross-Sectional and Longitudinal Correlation and Regression Evidence.

Study Design		Breast Cancer Diagnoses		Heterogeneous Cancer Diagnoses	
		Anxiety	Depression	Anxiety	Depression
Cross-sectional (including one cross-sectional case control)	Total self-compassion	--, ---, --,-	---, ---, ---, ---	---, --	--, --, --
	Positive self-compassion component	N/A	N/A	-	NS, NS
	Negative self-compassion component	N/A	N/A	--	--, ++[a]
Longitudinal	Total self-compassion (T1)	N/A	N/A	T1: -- T2: -- (--) T3: - (NS)	T1: -- T2: -- (NS) T3: NS (N/A)
	Positive self-compassion component (T1)	N/A	N/A	T1: - T2: - (--) T3: - (-)	T1: NS T2: NS (NS) T3: - (-)
	Negative self-compassion component (T1)	N/A	N/A	T1: -- T2: -- (NS) T3: NS (NS)	T1: -- T2: -- (NS) T3: NS (NS)

Note: T1= Time 1; T2 = Time 2; T3 = Time 3;. - = negative associations; + = positive associations; -/+ = significant small effects; --/++ = significant moderate effects; ---/+++ = significant large effects (Cohen, 1992); NS = not significant; N/A = not applicable. For longitudinal associations, significance values displayed in parentheses depict regression analysis once anxiety and depression symptoms at T1 are controlled for.

[a] For this effect, differing scoring methods were used for the SCS. Therefore, increased negative component scores represent increased uncompassionate responding. For all other effects, increased negative component scores represent decreased uncompassionate responding.

Discussion

This review examines evidence regarding the relationship between self-compassion and symptoms of depression and anxiety in individuals with a cancer diagnosis. Cross-sectional studies consistently demonstrated significant negative associations between self-compassion and both constructs. The associations between self-compassion and depression were large for studies with samples of women who had received a breast cancer diagnosis, and moderate for those with heterogeneous diagnoses. The strength of the relationship between self-compassion and anxiety scores demonstrated more variability, with effects ranging from small to large.

These results appear to fit with MacBeth and Gumley's (2012) meta-analytic coefficient (r = -.54) summarising the relationship between self-compassion and psychopathology (depression, anxiety & stress). Thus, for individuals who have received a cancer diagnosis, higher levels of self-compassion are related to lower depression and anxiety scores. This is concordant with research in other health conditions, which indicates that increased self-compassion is related to lower depression and anxiety in those with chronic pain and epilepsy (Baker et al., 2019; Carvalho et al., 2020b; Edwards et al., 2019).

Insufficient evidence was acquired to indicate whether the associations between self-compassion and depression vs. anxiety were significantly different. It could be tentatively suggested that in this review, the relationship between self-compassion and depression was consistently stronger across studies than between self-compassion and anxiety. It is possible that self-compassion is more greatly linked to cognitive or affective aspects which may contribute particularly to depression in this population, such as rumination

(Brown et al., 2019) or self-blame in response to uncontrollable events (Else-Quest et al., 2009). It must be noted, however, that the beneficial effects of self-compassion are often conceptually and theoretically seen as transdiagnostic (Cuppage et al., 2018). Half of the studies in this review consisted of populations who had finished active treatment, and thus may have been experiencing less acute cancer related stressors that could be anxiety provoking. Therefore, future research should examine any differences between how depression and anxiety relate to self-compassion throughout the cancer journey.

Three studies examined cross-sectional relationships between outcomes and self-compassion scores representing compassionate (positive) and uncompassionate (negative) self-responding. All studies found moderate correlations between negative self-compassion and depression, with higher levels of uncompassionate self-responding related to increased depression, but no significant cross-sectional associations between positive self-compassion and depression. These findings must be interpreted with caution, as two of these studies were rated as having a ‘Poor’ methodological quality and utilised the SCS-SF to calculate component scores; the reliability and validity of this method is questionable due to the limited number of items in the form (Muris & Otgaar, 2020).

These results reflect research where negative self-compassion has been found to be more strongly related to psychopathology than positive self-compassion, including for individuals’ experiencing chronic pain (Carvalho et al., 2020a; Muris & Petrocchi, 2017). This has led to claims that the SCS negative component measures characteristics which are features of psychopathology (Muris & Petrocchi, 2017), including rumination (matched to the over-

identification subscale) and withdrawal (linked to the isolation subscale). Thus, it has been suggested that the use of a total self-compassion score “may inflate the relationship’ between self-compassion and psychopathology (Muris & Petrocchi, 2017, pp.734). Neff (2019a), however, argues that what is measured by the negative component of the SCS (e.g., forms of self-responding) is distinct from symptoms that are measured by depression or anxiety measures; instead, she states that psychopathology is more largely influenced by alternations in uncompassionate self-responding, as opposed to compassionate self-responding. Furthermore, Neff’s (2019b) examination of the factor structure of the SCS in 20 diverse samples suggested that two distinct component scores are not supported psychometrically.

The correlational nature of studies in this review means that it is unclear whether significant relationships are explained by other variables. Todorov et al. (2019) found that self-compassion explained variance in outcomes, controlling for hope, whilst Gillanders et al. (2015a) found that self-compassion did not significantly predict outcomes once additional predictors were accounted for (e.g., cognitive fusion). Further research is required to establish the importance of a range of confounding variables. Relevant variables to explore include self-esteem and optimism, which are conceptually linked to, but distinct from, self-compassion (Imtiaz, 2006; Neff et al., 2007; Pullmer et al., 2019). An examination of mediating factors is also vital, to help assess mechanisms of change. Different illness perceptions were indicted by Zhu et al. (2020) to play a partially mediating role in the relationship between self-compassion and depression and anxiety. The cross-sectional nature of this study, however, limits the validity of these findings as temporal precedence of mediators before outcomes was not established. Nevertheless, these results add to previous

research highlighting the possible role of cognitive processes (e.g., rumination) as mechanisms in the relationship between self-compassion and psychological symptoms (Brown et al., 2020; Diedrich et al., 2017; Zhu et al., 2020). Increases in self-compassion are also linked to increases in positive affect and decreases in negative affect (Fredrickson et al., 2008; Hofmann et al., 2011); thus, state affect could be an important mediator in the latter relationship.

A lack of longitudinal and experimental evidence was found for this review. Thus, it is not possible to establish causality or possible direction of depicted relationships. Theoretically, higher levels of self-compassion could buffer against depression and anxiety symptoms (van der Donk et al., 2020). Indeed, such an effect has been suggested in intervention studies examining individuals with and without chronic health conditions (Kılıç et al., 2020; Wilson et al., 2019). The mechanisms of this are unclear but there are several possibilities, including an influential effect on a range of illness perceptions (e.g., perceptions about cancer diagnosis consequences; Zhu et al., 2020), the use of adaptive coping strategies (e.g., seeking social support; Allen & Leary, 2010) and a reduction in self-blame (Else-Quest et al., 2009; Phelan et al., 2013). Increased anxiety or depression may also reduce the ability to be compassionate towards oneself (MacBeth & Gumley, 2012), perhaps as negative attentional or interpretational biases (Everaert et al., 2012) may inhibit self-compassionate responding, or negative self-concepts may increase fears of self-compassion (Gilbert et al., 2014). The single longitudinal study indicated that once baseline anxiety and depression scores were controlled for, total self-compassion did not predict anxiety and depression scores after medical treatment, although positive self-compassion did (Zhu et al., 2019). This indicates a potential casual role of compassionate self-responding (although

see above criticism of SCS component scores and note poor methodology quality of Zhu et al., 2019).

Sherman et al. (2018) found that a self-compassion writing intervention did not result in greater reductions in depression and anxiety than a control intervention in the overall sample, but that such reductions were found for participants with lymphedema. Thus, it is possible that a self-compassion intervention's impact on anxiety and depression is moderated by pre-existing difficulties. Sherman et al.'s (2018) intervention focused on cultivating self-compassion in relation to body image following cancer treatment. Thus, the lack of impact in the wider sample could be explained by the fact that a self-compassionate frame of mind was cultivated towards a specific issue, rather than more broadly. Further longitudinal and experimental research is needed before conclusions regarding causality can be reached.

Limitations of Included Studies and Recommendations for Future Research

All studies measured self-compassion using either the SCS or the SCS-SF. Whilst this allows for increased consistency, it limits the applicability of findings to other definitions of self-compassion. For example, the SCS does not measure motivational or interpersonal aspects of self-compassion that are emphasised in Gilbert's (2009b) conceptualisation. None of the studies examined at the full-text review stage, however, used alternative measures such as the Self-Reassurance Scale (Gilbert et al., 2004). Thus, for broader conceptualisations of self-compassion to be examined, research in this field should use alternative measures.

The studies in this review also included an over-representation of females and were largely conducted in in English-speaking or Western

countries, limiting the generalisability of findings. Insufficient information was gathered to make conclusions around differences in different populations. Culture can influence beliefs about the causes and fatality of cancer, which may impact emotional responses to a diagnosis (Dein, 2004; Lannin et al., 2002). Some cultures may be less willing to discuss cancer or be more likely to try to suppress cancer related anxieties (You et al., 2017). Furthermore, cultures and countries differ in religious practices, parenting styles, and the extent to which they are collectivist or individualist (Neff et al., 2008). Such factors may impact attitudes towards self-compassion (Neff et al., 2008). Evidence has also found sex differences in cancer epidemiology (Kim et al., 2018). In light of existing health disparities, it is imperative that relationships between self-compassion and depression/anxiety in individuals with cancer are explored in more diverse cultures, ethnic groups and genders(Kagawa-Singer et al., 2010).

Future research should focus more on experimental methods that either include an intervention that focuses on self-compassion specifically (e.g., self-compassionate writing exercises), or that examines whether self-compassion mediates the effectiveness of broader interventions. The mean ages of the samples in this review ranged from 47.8 – 65.4 years; thus, additional research conducted with individuals outside this range is needed, particularly as incidence rates for cancer in the UK are highest for people aged ≥75 (Cancer Research, 2020).

All studies used self-report measures, presenting a methodological limitation due to the requirement for adequate self-awareness and the possibility of social desirability biases (Nederhof, 1985). Future research should incorporate differing measures (e.g., clinical interviews) to enhance validity. Furthermore, most studies used a self-selected sample, or excluded

participants who were not well enough to participate. This limits the applicability of findings. Future studies should recruit representative samples, by using stratified sampling techniques and hospital clinic lists.

It is possible that the relationship between self-compassion and anxiety and depression may be different for sub-groups of individuals with a cancer diagnosis, perhaps due to differing levels of self-blame linked to cancer type or stage at diagnosis (Siwik et al., 2021). All studies included participants who had experienced a range of different treatments and cancer stages upon diagnosis, and information such as experienced side effects or age at diagnosis were often not reported. The heterogeneity of the studies included in this review, both within and between studies, means it is difficult to make conclusions about possible moderating factors or group differences. There are some indications that the relationship between SC and depression may be stronger for individuals with a diagnosis of breast cancer than those using samples of heterogeneous cancer diagnoses; however, the latter studies often also included those with breast cancer in their samples. Furthermore, the samples of women with breast cancer had often finished active treatment, meaning that treatment status or gender could be confounding factors.

Further research is therefore required to investigate how different cancer characteristics influence the relationships between self-compassion and depression/anxiety. This research would help indicate at what time, and for whom, possible interventions could be most efficacious. It is possible that this relationship may be stronger in those with a cancer that is often associated with high levels of shame, such as lung cancer (Siwik et al., 2021). It would also be pertinent to explore any differences in this relationship at different points in the treatment journey. The relationship between self-compassion and

depression/anxiety could be strongest in the acute phases of diagnosis and treatment when individuals may be facing high levels of uncertainty and physical challenges (Niedzwiedz et al., 2019). Conversely, it is possible that the relationship is stronger after treatment, when intense schedules of appointments have eased, and individuals may be feeling more isolated or starting to consider the significance of their experiences (Pitman et al., 2018).

Methodological Appraisal of Review

Due to resource constraints, grey literature and qualitative studies were excluded from this review. This introduces the risk of publication bias (Sutton, 2009) and may omit the richness and complexity of individual experience (Jack, 2010). Furthermore, other reviews have often classified a broad range of interventions as self-compassion interventions (e.g., Mindfulness Based Cognitive Therapy, Kılıç et al., 2020; Wilson et al., 2019). Thus, the criteria for SC interventions in this review (e.g., to have been described as addressing the three aspects of self-compassion as defined by Neff [2003a]), could be overly restrictive. This may have contributed to the lack of experimental evidence included and limited conclusions about causality.

Whilst several interventions (e.g., MBCT) may have an indirect impact on self-compassion, there are notable differences in the theoretical backgrounds, physiological impacts and central targets of these interventions compared to more specific self-compassion focused interventions (Kirby & Gilbert, 2019). Furthermore, some interventions focus more broadly on the ability to give and receive compassion to and from others (e.g., Compassion Focused Therapy [Gilbert, 2009b]). Evidence suggests that the ability to receive compassion from others is influential on outcomes such as depression and self-criticism (Hermanto et al., 2016). Thus, if a broader range of ‘self-compassion

interventions' had been included in this review, the findings may have become influenced by the impact of other processes (e.g., the ability to receive compassion; Kirby & Gilbert, 2019).

Clinical Implications

It is important that factors which help to alleviate or prevent symptoms of depression and anxiety in individuals with a cancer diagnosis are better understood, along with the potential consequences of higher levels of these difficulties (Kılıç et al., 2020). Although it is not possible to establish causality from the results of this review, it is indicated that individuals with a cancer diagnosis who are showing low levels of self-compassion may also be experiencing some symptoms of anxiety or depression, and vice versa. Clinician awareness of this relationship could enhance the earlier detection of psychological difficulties or low levels of self-compassion. Several barriers exist to the early identification of depression and anxiety in this population, including lack of self-disclosure due to stigma and a focus on physical difficulties (Niedzwiedz et al., 2019). Thus, clinicians could screen for self-compassion at key points throughout the cancer trajectory (e.g., at diagnosis or when care-planning [Ziegler et al., 2011]), and consider the potential impact of depression and anxiety on a myriad of cancer related factors (e.g., health behaviours), and the potential influence of self-compassion on adaptive coping strategies. This detection could have a positive influence on outcomes and quality of life (Kılıç et al., 2020). Furthermore, clinicians could be encouraged to take care around potentially stigmatising discussions (e.g., about causal aetiology) that may foster uncompassionate responses or self-criticism, which could exacerbate symptoms of depression or anxiety (Else-Quest et al., 2009).

Future research, as indicated in this review, may result in the emergence of further evidence regarding causality, moderators, or mediators. This will help the development of interventions and their appropriate implementation. It is possible that interventions that increase self-compassion may help to reduce anxiety and depression in this population (Kılıç et al., 2020). Conversely, treatments for anxiety or depression may have a beneficial impact on self-compassion, which could then result in reciprocal effects or downstream influences on quality of life (Pinto-Gouveia et al., 2014) or medical adherence (Sirois & Hirch, 2018). Highly self-critical individuals may be less likely to benefit from other recommended therapies, such as Cognitive Behavioural Therapy (Kılıç et al., 2020). Thus, self-compassion therapies could be used as a preparatory step.

A fear of self-compassion can predict poorer responses to compassion interventions (Kelly et al., 2013). Thus, interventions would need to assess and address aversions to self-compassion (Boykin et al., 2018). Self-compassion interventions can be lengthy and require home practice (Barnard & Curry, 2011). This may create practical challenges for this population as individuals can experience debilitating side effects and many hospital appointments (Niedgiedz, 2019). It may be that lengthier interventions are more beneficial after the completion of active treatment. Self-compassion in individuals undergoing treatment could be encouraged through shorter interventions (e.g., self-compassionate writing exercises or self-soothing touch [Neff & Tirch, 2013]) and access to peer-support (which may increase feelings of common humanity [Neff, 2016]).

Conclusions

This is the first review to examine relationships between self-compassion and depression and anxiety in individuals who have received a cancer diagnosis. Higher levels of self-compassion were associated with lower levels of depression and anxiety, although conclusions around causality cannot be made. This fits the theoretical underpinning that self-compassion invokes calmness and kindness towards oneself, which may 'buffer' against anxiety and depression in the face of adverse experiences (Gilbert, 2009b, Neff, 2003a). Negative self-compassion was associated with depression, yet positive self-compassion was not. Research in populations with and without health conditions indicates that self-compassion interventions can decrease depression and anxiety (Kılıç et al., 2020; Wilson et al., 2019). It is hypothesised that similar results could be expected in this population, although further interventional research is required, with an examination of moderating and mediating factors. This would facilitate the appropriate design and administration of interventions.

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Appendices

Appendix A: Submission Guidance for Psycho-Oncology

PREPARING YOUR SUBMISSION

Manuscripts must be submitted as a Word or rtf file and should be written in English. The manuscript should be submitted in separate files: main text file; figures.

Main Text file

Manuscripts can be uploaded either as a single document (containing the main text, tables and figures), or with figures and tables provided as separate files. Should your manuscript reach revision stage, figures and tables must be provided as separate files. The main manuscript file can be submitted in Microsoft Word (.doc or .docx) format.

Your main document file should include:

Title

The title should be a short informative title that contains the major key words. The title should not contain abbreviations (see Wiley's best practice SEO tips)

Authorship

Please refer to the journal's authorship policy the Editorial Policies and Ethical Considerations section for details on eligibility for author listing.

Acknowledgements

Contributions from anyone who does not meet the criteria for authorship should be listed, with permission from the contributor, in an Acknowledgments section. Financial and material support should also be mentioned. Thanks to anonymous reviewers are not appropriate.

Conflict of Interest Statement

You will be asked to disclose conflicts of interest during the submission process. See the section 'Conflict of Interest' in the Editorial Policies and Ethical Considerations section for details on what to include in this section. Please ensure that you liaise with all co-authors to confirm agreement with the final statement. The Conflict of Interest statement should be included within the main text file of your submission.

Abstract

Please provide an abstract of no more than 250 words. Abstracts should be structured according to the following headings: objective, methods, results, conclusions.

Keywords

Please provide up to 10 keywords and list them in alphabetical order. Please ensure that the keywords, cancer and oncology, are used for indexing purposes. Keywords should be taken from those recommended by the US National Library of Medicine's Medical Subject Headings (MeSH) browser list at https://www.nlm.nih.gov/mesh/.

Main text

Where possible, the text should be divided into the following sections: Background, Methods (including statistical methods), Results and Discussion. All papers must include within the Discussion section a paragraph explaining

the study limitations (with subtitle “study limitations") and a paragraph explaining the clinical implications of the study (with subtitle “clinical implications") and a paragraph covering the Conclusions.

A statement explicitly describing the ethical background to this study and any institutional or national ethical committee approval (including approval number) must be included within the manuscript.

For clinical trial reports, the clinical trial registration number must be included within the manuscript.

References

All references should be numbered consecutively in order of appearance and should be as complete as possible. In text citations should be superscript numbers. Journal titles are abbreviated; abbreviations may be found in the following: MEDLINE, Index Medicus, or CalTech Library.

Submissions are not required to reflect the precise reference formatting of the journal (use of italics, bold etc.), however it is important that all key elements of each reference are included. Please see below for examples of reference content requirements.

For more information, please see the Vancouver Reference Style Guide

Sample references follow:

Journal Article

1. Wood WG, Eckert GP, Igbavboa U, Muller WE. Statins and neuroprotection: a prescription to move the field forward. Ann N Y Acad Sci 2010; 1199:69-76.

Book

2. Hoppert, M. Microscopic techniques in biotechnology. Weinheim: Wiley-VCH; 2003.

Electronic Material

3. Cancer-Pain.org [homepage on the internet]. New York: Association of Cancer Online Resources, Inc.; c2000–01 [Cited 2015 May 11]. Available from: http://www.cancer-pain.org/.

Tables

Tables should be self-contained and complement, but not duplicate, information contained in the text. They should be supplied as editable files, not pasted as images. Legends should be concise but comprehensive – the table, legend and footnotes must be understandable without reference to the text. All abbreviations must be defined in footnotes. Footnote symbols: †, ‡, §, ¶, should be used (in that order) and *, **, *** should be reserved for P-values. Statistical measures such as SD or SEM should be identified in the headings.

Figure Legends

Legends should be concise but comprehensive – the figure and its legend must be understandable without reference to the text. Include definitions of any symbols used and define/explain all abbreviations and units of measurement.

Preparing Figures

Although we encourage authors to send us the highest-quality figures possible, for peer-review purposes we are happy to accept a wide variety of formats, sizes, and resolutions.

Click here for the basic figure requirements for figures submitted with manuscripts for initial peer review, as well as the more detailed post-acceptance figure requirements.

Guidelines for Cover Submissions

If you would like to send suggestions for artwork related to your manuscript to be considered to appear on the cover of the journal, please follow these general guidelines.

Appendices

Appendices will be published after the references. For submission they should be supplied as separate files but referred to in the text. Supporting Information

Supporting Information

Supporting information is information that is not essential to the article but that provides greater depth and background. It is hosted online, and appears without editing or typesetting. It may include tables, figures, videos, datasets, etc. Click here for Wiley's FAQs on supporting information.

Note, if data, scripts or other artefacts used to generate the analyses presented in the paper are available via a publicly available data repository, authors should include a reference to the location of the material within their paper.

General Style Points

The following links provide general advice on formatting and style.

• Abbreviations: In general, terms should not be abbreviated unless they are used repeatedly and the abbreviation is helpful to the reader. Initially use the word in full, followed by the abbreviation in parentheses. Thereafter use the abbreviation only.
• Units of measurement: Measurements should be given in SI or SI-derived units. Visit the Bureau International des Poids et Mesures (BIPM) website at http://www.bipm.fr for more information about SI units.
• Trade Names: Chemical substances should be referred to by the generic name only. Trade names should not be used. Drugs should be referred to by their generic names. If proprietary drugs have been used in the study, refer to these by their generic name, mentioning the proprietary name, and the name and location of the manufacturer, in parentheses.

SCHOOL OF PSYCHOLOGY

DOCTORATE IN CLINICAL PSYCHOLOGY

EMPIRICAL PAPER

Does Self-Compassion Facilitate Disengagement from Unachievable Goals?

Trainee Name: **Lois Coy**

Primary Research Supervisor: **Dr Nick Moberly**

Senior Lecturer, University of Exeter

Secondary Research Supervisor: **Dr Alicia Smith**

Research Tutor, University of Exeter

Target Journal: Motivation and Emotion

Word Count: 7999 (excluding abstract, table of contents, list of figures, references, footnotes, appendices)

Submitted in partial fulfilment of requirements for the Doctorate Degree in Clinical Psychology, University of Exeter

Abstract

The ability to disengage from goals that can no longer be achieved is suggested to form an important part of self-regulation (Wrosch et al. 2003b). This study aimed to experimentally examine the influence of one potential facilitator of goal disengagement (GD): self-compassion. It was hypothesised that participants who had completed a self-compassion induction (loving-kindness meditation for self) would be less likely to non-optimally persist on both solvable and unsolvable anagrams, compared to a control group. 119 students completed the study using an online methodology. Results showed no differences between conditions on either task performance (number of correct anagrams) or non-optimal persistence on solvable or unsolvable anagrams. Thus, self-compassion was not found to have a facilitative effect on optimal GD. To produce more ecologically valid results, future longitudinal and experimental research should examine the role of self-compassion in optimal disengagement (both behavioral and cognitive) from more 'everyday' goals, using more extensive self-compassion interventions and more clinically relevant samples.

Keywords: *Self-compassion, goal disengagement, affect, self-regulation.*

Introduction

The pursuit of goals can provide meaning, purpose, and direction in life (Wrosch, 2011). Slow goal progress or failure, however, has been linked to poorer psychological wellbeing (Carver & Scheier, 1990; Moberly & Watkins, 2010). In situations where goal progress is slow, continued perseverance is often encouraged (Wrosch, 2011). However, an individual may have goals that are beyond their capabilities or are unachievable due to time or resource constraints (Wrosch et al., 2003a). For example, students attending university are often required to pursue both academic and social goals (Neely et al., 2009), which may leave less time for leisure goals. Furthermore, life events (e.g., illness) can require an individual to negotiate goal blockage (Haydon et al., 2019; Thompson et al., 2013; Wrosch, 2011).

The ability to 'give up' on goals, therefore, has been suggested to form an important part of self-regulation (Wrosch et al., 2003b). Wrosch et al. (2003a) proposed that when faced with an unattainable goal, adaptive adjustment entails two processes: goal disengagement (GD) and goal reengagement (GR). GD involves withdrawing effort and commitment from a goal (Wrosch et al., 2003a). By doing so, the distress associated with repeated failure experiences may be reduced, and time and resources can be freed to pursue alternative, more achievable goals (Wrosch et al., 2003a). Accordingly, GR involves identifying and committing to such goals (Wrosch et al., 2003a). This process is thought to increase engagement in personally meaningful activities and provide an alternative focus of attention (Wrosch et al., 2007). GD and GR are regarded to be largely independent processes (Wrosch, 2011).

Previous research has typically measured GD and GR abilities using self-reported scores on the Goal Adjustment Scale (GAS; Wrosch et al., 2003b).

Findings suggest that GD abilities are associated with reduced levels of mood disorder symptoms and increased well-being in both non-clinical and clinical populations (Barlow et al., 2019; Heckhausen et al., 2001; Thompson et al., 2011). However, little is known about the predictors, facilitators, or antecedents of GD. Given the potentially beneficial effects of GD, research should address this gap (Barlow et al., 2019; Wrosch, 2011).

This study aims to explore the role of one potential facilitator: self-compassion. Self-compassion has been defined as the ability to be kind and compassionate towards oneself in times of suffering or perceived self-failure (Neff, 2003). Three main components, each with two poles representing either compassionate or uncompassionate self-responding, are proposed to combine to create a self-compassionate frame of mind (Neff, 2016). Self-kindness, as opposed to self-judgement, describes being kind and accepting towards oneself, whilst common humanity (versus isolation) involves the ability to recognise and connect with the shared human experience of suffering (Neff, 2016). Finally, mindfulness (versus over-identification) involves noticing one's experience of suffering without getting 'caught up' in it (Neff, 2016). Increased self-compassion has been found to help negate the negative impact of poor goal progress (Hope et al., 2014) and difficult life events (Brion et al., 2014; Zeller et al., 2015). Furthermore, higher levels of self-compassion are related to increased wellbeing (Neff, 2003; Zessin et al., 2015) and reduced mood disorder symptoms (MacBeth & Gumley, 2012).

Individuals high in self-compassion are less likely to use maladaptive avoidant coping in response to stressors (Miyagawa et al., 2018; Neff et al., 2005), and are more likely to pay mindful, kind, and accepting attention to their suffering (Neff, 2003; 2016). Thus, it is possible that self-compassion enhances

the ability to recognise that a goal is unattainable, and that continued pursuit of such a goal is detrimental to wellbeing and should be ‘let go’ (Miyagawa et al., 2018; Wrosch et al., 2003a). Furthermore, it may be easier for an individual to disengage from goals if they perceive that others in their social comparison group also fail (Wrosch et al., 2003a). Therefore, the ‘common humanity’ aspect of self-compassion could support GD through facilitating awareness of the shared human experience of failure (Neff, 2003), which may increase acceptance of goal failure or decrease expectancies in relation to goal achievement. Finally, the ‘mindfulness’ aspect of self-compassion may mean that individuals are less likely to strive towards higher order goals (e.g., happiness) through the pursuit of any one goal, due to a shift to a more open mindset towards one’s experiences and the possibility of alternative sources of fulfillment (Crane et al., 2010).

Some preliminary evidence for a link between self-compassion and GD has been established by Neely et al. (2009), who detected a small positive relationship between measures of the two concepts. Furthermore, Miyagawa et al. (2018) concluded that the negative relationship between self-compassion and negative emotions in response to goal failure was partially explained by GD abilities. However, both Miyagawa et al. (2018) and Neely et al. (2009) used correlational designs, meaning further research is needed before causal inferences can be made. Furthermore, both studies used the GAS to measure self-reported GD. Validation of the GAS has mainly been achieved by relating scores on the scale to other self-report measures, rather than to more objective measures of goal adjustment (Messay & Marsland, 2015).

An alternative method for measuring GD is the use of an anagram task (Aspinwall & Richter, 1999). Participants are given a set time to solve,

unbeknown to them, a mixture of unsolvable and solvable anagrams. Those who persist on unsolvable anagrams are disadvantaged, as they have less time to complete the solvable anagrams (Lench & Levine, 2008). Therefore, continued persistence on unachievable anagrams is considered unproductive (Lench & Levine, 2008). Whilst solving anagrams is unlikely to be high on an individual's personal goal hierarchy, framing the task as a measure of verbal intelligence and providing monetary incentives for good performance has been suggested to increase goal commitment (Koppe & Rothermund, 2017). Using such a task allows the categorisation of goals as unachievable and their prolonged pursuit as unproductive, enhancing the objectivity of the study (Koppe & Rothermund, 2017). Furthermore, it is more feasible to investigate the impact of different experimental manipulations on disengagement in a controlled environment.

Several other variables may also be relevant to understanding the effects of a self-compassion manipulation. Previous research has suggested that compassion meditations are linked to increases in positive affect (PA; Fredrickson et al., 2008) and decreases in negative affect (NA; Hofmann et al., 2011). Affect has also been suggested to play a role in GD (Hill et al., 2014). It is possible that some NA is facilitative of GD, as it can signify an aversive situation and may trigger a re-evaluation of goals and adaptive GD (Wrosch & Miller, 2009). In line with this theory, PA may hinder GD (Hill et al., 2014). However, PA could be facilitative, as it may support flexible thinking and the ability to accept and pay mindful attention to negative feedback (Trope & Neter, 1994; Hill et al., 2014). Self-compassion has also been found to play a protective role against negative emotions in response to negative events (Leary et al., 2007). Anagram tasks in which part of the task is unsolvable can lead to

the experience of failure and emotional distress (Poncin et al., 2017). Therefore, the present study will additionally examine measures of state affect, self-compassion, self-criticism, and positive affiliative affect (PAA) before and after the task.

Positive associations have also been found between self-compassion and trait optimism (Neff et al., 2007), and a self-compassion intervention has been found to increase trait optimism (Smeets et al., 2014). Optimism has been suggested to play a facilitative role in GD (Aspinwall & Richter, 1999). Therefore, a measure of state optimism (task expectancy) will be used.

Aims and Hypotheses.

This research aims to experimentally investigate the role of self-compassion in the facilitation of GD in a sample of university students. To the researcher's knowledge, no other study of this nature has been conducted. Therefore, several variables will be examined that may be relevant to understanding the effects of the self-compassion manipulation.

Primary Hypotheses

1. Participants who receive a self-compassion induction will be significantly less likely to persist non-optimally on unsolvable anagrams, compared with people who receive a control induction. Non-optimal persistence on unsolved solvable anagrams will also be explored (see data analysis strategy).
2. Participants who received a SC induction are hypothesised to correctly solve significantly more anagrams than those who received a control induction.

Secondary Hypotheses

3a. There will be significant negative correlations between self-reported GD skills and time spent unproductively persisting on unsolvable anagrams and unsolved solvable anagrams.

3b. There will be significant positive correlations between self-reported GD skills and the number of anagrams correctly solved.

4. Participants who receive a self-compassion induction will experience a significantly lesser decrease in state PA and a significantly lesser increase in state NA (compared to people who receive a control induction) from before to after the anagram task.

Method

Design

A randomised between-subjects experimental design was used, with an independent variable of condition (self-compassion induction versus control induction). Several dependent variables were examined, including measures of behavioral GD and repeated measures of state affect.

Participants

132 University of Exeter students completed the study, although following data screening, the retained sample consisted of 119 students (see Data Screening and Sample Characteristics). Participants were recruited through the Psychology Research Participation Scheme. To thank them for their time and to incentivise them, participants were entered in a draw for two £20 Amazon vouchers and received course credits.

Inclusion and Exclusion Criteria

Participants were ≥18 years old, native English speakers, with normal or corrected to normal vision and hearing. Some individuals who are depressed have been suggested to find self-compassion unsafe (Gilbert & Procter, 2006; Pauley & McPherson, 2010). Furthermore, a challenging task may be particularly aversive for these individuals. Therefore, all participants were screened for depression using the Patient Health Questionnaire (PHQ)-8 (Kroenke & Spitzer, 2002). Those with scores of ≥10 (i.e., moderate/severe levels) were excluded.

Power Analysis

Little prior research has been conducted examining the effects of experimental manipulations on GD. van Randenborgh et al. (2010) found a small-medium effect size ($\eta p^2 = .06$) for a between subjects (rumination vs distracted) manipulation on the number of unsolvable anagrams skipped. Kirschner et al (2019) found large increases in self-compassion and PAA from before to after Loving-Kindness Meditation (LKM; $\eta p^2 = .47$ & $.51$ respectively), with medium decreases in self-criticism ($\eta p^2 = .21$). Furthermore, Hutcherson et al., (2008) found medium-large effects (d =.65-.70) for between-conditions (LKM vs Imagery) manipulations on mood and social responding, with large within-subject effects (d =.70 to .90) for pre- to post- LKM changes in affect (Seppala et al., 2014). This suggests that LKM has large within subject effects on self-compassion and PAA, along with the potential to have medium-large between subject effects on theoretically indicated constructs (e.g., social responding). Subsequently, it was felt reasonable to power this study to find medium-large effects. The exception to this is the correlation analyses, where large effects are expected. This is because both measures (GD as measured by the GAS and

anagram task) are designed to measure the same construct. All calculations were made using G*power (Faul et al., 2007) to provide 80% power to detect effects (with a two-tailed alpha of .05).

Hypotheses 1 and 2

39 participants in each condition would provide power to detect a medium-large between-subject effect size of *d* = .65, using a t-test.

Hypotheses 3a and 3b

29 participants in each condition would allow the detection of large effects (ρ = .5) using correlations.

Hypothesis 4

For a medium effect size of f = .25 and a correlation among repeated measures of .7, a total sample of 18 would provide power to detect time x condition interaction effects using a 2x3 mixed analysis of variance (ANOVA).

Measures

See Appendices A to G for measures administered. The Life Orientation Test-Revised was not analysed in this thesis.

Demographics

Demographic information was gathered from participants, including age, ethnicity, gender, year and subject of study, and whether they have a diagnosis of dyslexia.

PHQ-8

The PHQ-8 (Kroenke & Spitzer, 2002) was used to screen for depression. Its total score (maximum 24) indicates how often, over the last two weeks, participants have been bothered by eight of the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013) criteria for depressive disorder. Item responses range from zero (not at all) to

three (nearly every day). All items from the PHQ-9 (Kroenke, et al., 2001) are included in the PHQ-8, bar item nine, which measures 'thoughts that you would be better off dead or of hurting yourself in some way'. The PHQ-8 has been recommended in studies when the immediate follow up of affirmative answers to item nine is not feasible (Kroenke & Spitzer, 2002). This includes the use of online surveys (Kroenke & Spitzer, 2002). A score of ≥10 is advised as a cut-off for depression (Kroenke et al., 2009), and when used to screen for major depression, the PHQ-8 has been found to have similar operating characteristics (including sensitivity and specificity) to the PHQ-9 (Kroenke & Spitzer, 2002). Cronbach's alpha for this sample was .55.

Goal Adjustment Scale (GAS)

The GAS (Wrosch et al., 2003b) was utilised to measure trait goal adjustment abilities. Participants reported how they usually react when they are required to pursue an important life goal by rating 10 items on a scale of one (almost never true) to five (almost always true). An average score of six items was computed to measure GR, and four items measured GD. Higher scores on each subscale represent greater levels of GR and GD skills, respectively. The subscales have been found to be largely independent from one another (Dunne et al., 2011), and to have high internal consistency (Cronbach's alpha of .84 for GD and .86 for GR; Wrosch et al., 2003a; Wrosch et al., 2003b). Cronbach's alpha for this sample was .78 for the GR subscale and .87 for the GD subscale.

Self-Compassion Scale (SCS)

Participants' trait self-compassion was measured using the widely used 26-item SCS (Neff, 2003). This scale measures six different aspects of self-compassion and can be used to produce six subscale scores (self-judgement, common humanity, isolation, mindfulness and over-identification) and a total

score. Participants use a five-point scale (1 = almost never, 5 = almost always) to indicate how often they behave in each stated manner (e.g., I try to be loving towards myself when I feel emotional pain). The SCS has been suggested to have adequate test re-test reliability, discriminant validity and convergent validity (Neff, 2003), along with an appropriate factor structure (Neff et al., 2018). A higher total score indicates greater levels of self-compassion. Cronbach's alpha for the SCS total score was .90.

Positive and Negative Affect Schedule Short Form (PANAS-SF)

The PANAS-SF (Mackinnon et al., 1999) consists of two five-item mood scales which were used to assess state PA and NA. Participants were instructed to rate the extent to which they were feeling a variety of ways (e.g., inspired, upset) 'right now, as in, in the present moment'. Responses ranged from one to five. Higher scores on each subscale represents higher levels of PA and NA (maximum score = 25). The scales have been found to have a good internal consistency (Cronbach's alpha, PA = .78; NA = .87; Mackinnon et al., 1999). Cronbach's alpha for this sample was high for both PA (T1 = .82, T2 = .85 & T3 = .89) and NA (T1 = .84, T2 = .85 & T3 = .83).

State Self-Compassion, Self-Criticism and PAA

A series of Visual Analogue Scales (VASs, 0-100) were used to assess state changes in self-compassion, PAA (e.g., feeling calm and loved) and self-criticism (Appendix F). These VASs were developed by Kirschner et al., (2019) using items from the State Adult Attachment Measure (Gillath et al., 2009), SCS (Neff, 2003) and Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (Gilbert et al., 2004).

Task Appraisals

State expectancy (optimism) was assessed by asking participants how well they expected to perform in the anagram task and what percentage of anagrams they expected to solve in the task. Commitment to the goal of solving anagrams was also assessed using a VAS.

Audio inductions (Appendices H & I)

Self-Compassion

An audio track developed for research conducted by Kirschner (2016) was used to induce self-compassion. The track consisted of an 11.5-minute LKM for self (LKM-S) narrated by a British female practitioner trained in Mindfulness-Based Cognitive Therapy. The participant was first guided to offer friendly/loving wishes towards a person whom they already feel warmth towards, before being invited to direct the same wishes to themselves.

Control

A further recording developed by Kirschner (2016) was used to control for the effects of listening to an audio meditation. Participants spent 11.37 minutes being guided through a supermarket scenario. This induction was matched to the LKM-S in word-density, and the same narrator was used.

Anagram Task

An anagram task was used to assess behavioural GD, as per methods used in prior research (Aspinwall & Richter, 1999; Koppe & Rothermund, 2017). Participants had 12 minutes to complete 30 anagrams (20 solvable, 10 unsolvable). Anagrams were five letters in length and presented individually in a pseudorandom sequence. To increase engagement, the first three anagrams presented were solvable (Messey & Marsland, 2015). The remaining anagrams

were randomised using www.randomiser.org in blocks, with every six anagrams consisting of two unsolvable and four solvable anagrams. Anagrams were chosen from those used in prior research (e.g., Aspinwall & Richter, 1999) and online sources (Appendix J). Piloting took place to select the number and difficulty of anagrams used (Appendix L). Most solvable anagrams were 'moderately difficult' (solved by 35-65% of pilot participants in 30 seconds), with two more challenging solvable anagrams (solved by 18% of pilot participants). Participants typed their answers and could click a 'skip' button at any time to proceed to the next anagram or press the enter key when they were happy with their answer. The time taken to enter their response to each anagram was recorded, and participants were not able to return to previous anagrams. Feedback about performance was not provided, and participants were not informed that any of the anagrams were unsolvable. Each presented anagram was numbered, but an on-screen clock was not displayed.

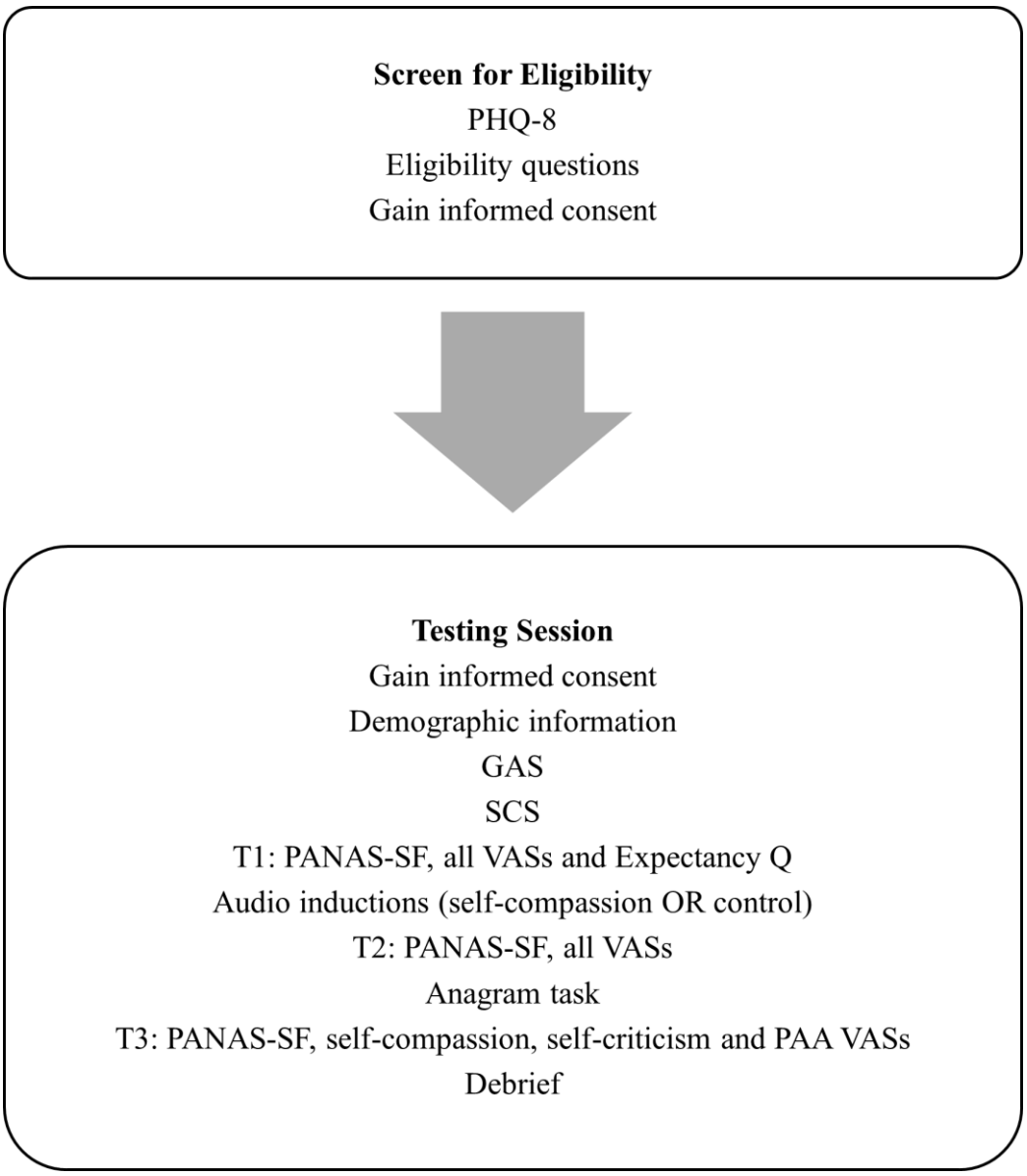
Procedure

See Figure 1. Informed consent was gained (Appendices M & N) and participants completed eligibility measures online via Qualtrics (2020; www.qualtrics.com). All other measures, along with the audio inductions and the anagram task, were presented using the Gorilla Experiment Builder (Anwyl-Irvine et al., 2019). Participants could access the experiment at their preferred time using their own devices. They were encouraged to complete the experiment in a quiet environment with no distractions. Participants were provided with further information about the study procedure and the anagram task (Appendix K). To increase commitment to the goal of correctly solving anagrams, participants were given information that the task measured verbal intelligence, and that if they correctly solved enough anagrams, they would be

entered into a draw to win an additional £20 voucher (Aspinwall & Richter, 1999; Koppe & Rothermund, 2017). Participants completed baseline measures, followed by state measures (T1). VASs remained on the screen until participants indicated their answer by moving the scale. Following this, participants were randomly assigned to condition using the Gorilla 'randomiser' experimental node (double blind). They listened to the relevant audio induction (either self-compassion or control) and completed subsequent state measures (T2). Following the anagram task, participants completed state measures for a final time (T3) and were asked about what they thought the research aims were. The latter question was used to discern if participants were aware that some anagrams were unsolvable (Koppe & Rothermund, 2017). Finally, participants were asked to spend three minutes writing about a time when they acted in line with their best possible selves (Loveday et al., 2018) to alleviate any residual negative feelings.

Figure 1

Procedure Outline



Analytic Strategy

SPSS Statistical Software version 26.0 (IBM Corporation, 2019) was used to analyse the data. All statistical tests were two-tailed, with an alpha level of .05. Following data cleaning, Levene's test was used to assess for homogeneity of variances; when significant, statistics for unequal variances were utilised using the Welch-Satterthwaite correction (Field, 2013). Mauchly's test of sphericity was used to find that the assumption of sphericity was violated for all relevant

interaction, main or simple main effects. Thus, Greenhouse Geiser corrected statistics are reported.

Manipulation Checks

2x3 mixed ANOVAs were conducted to examine any changes in state self-compassion, self-criticism and PAA during the experiment. A between-subjects factor of condition (self-compassion and control) and a within-subjects factor of time (T1, T2 & T3) was used. This allowed for the exploration of the effectiveness of the experimental induction, as well any potential differential impact of the task on these measures between groups. Significant correlations (*r*s ≥ .75) were found between scores on the 'kind' and 'tolerant' VAS'. Thus, scores were combined to create a 'kind/tolerant' VAS. Other correlations between VAS scores were in the expected direction but of a weaker strength; therefore, analyses were conducted separately for each other VAS (Appendix F).

Hypotheses 1 and 2

It was assumed that participants were initially not able to differentiate between the anagrams that were solvable and unsolvable (as indicated by pilot participants). Therefore, quick disengagement from anagrams in the task (even if unsolvable) may reflect 'non-optimal' GD or 'giving up', as to their knowledge, participants could have been able to solve the anagram if they had spent more time on it. Therefore, an 'optimum' time was calculated separately for each anagram, for each participant, by dividing the time that participants had left on the task by the number of anagrams remaining. This 'optimum' time for each anagram was then subtracted from the time that each participant took to respond to each anagram, to calculate the extent to which the participant's response time differed from the 'optimum' (e.g., non-optimal disengagement). A

negative number indicates that the participant spent less time on the anagram than was ‘optimum’ (e.g., premature disengagement), and a positive number indicates that the participant spent more time on the anagram than was ‘optimum’. These numbers were then combined to create average ‘non-optimum disengagement’ scores for the different anagram categories (e.g., unsolvable). The greater the number, the more the participant persisted, on average, on anagrams beyond the optimal disengagement time which was considered to maximise overall task performance.

This strategy was used for both solvable anagrams that participants had disengaged from (were either incorrectly solved or skipped) and unsolvable anagrams that participants had disengaged from (entered an incorrect answer or skipped). An incorrect answer was considered an act of disengagement, as correct answers were common words. The number of anagrams correctly solved was also examined.

A series of two-tailed independent *t*-tests were used to detect any significant differences between conditions (self-compassion or control induction) in mean non-optimal disengagement on unsolvable anagrams and unsolved solvable anagrams, along with the mean number of anagrams correctly solved.

Hypotheses 3a and 3b

The relationship between self-reported and behavioural measures of GD (non-optimal persistence on unsolvable and unsolved solvable anagrams, as well as the number of anagrams correctly answered) was explored using pearsons correlations (separately for each condition).

Hypothesis 4

2x3 mixed ANOVAs were conducted, with PA and NA as the dependent variables, condition (self-compassion and control) as the between-subjects factor and time (T1, T2 and T3) as the within-subjects factor.

Additional Analyses

2x2 ANOVAs were used to explore the effects of the manipulation on task appraisals. Condition (self-compassion and control) was used as the between-subjects factor and time (T1 and T2) as the within-subjects factor. Exploratory pearsons correlations were conducted to examine the relationships between self-reported trait self-compassion and GD skills (as measured by both the GAS and behavioural measures of GD as detailed above) and GR skills (GAS).

Results

Data Screening

132 participants initially provided data. After examination of PHQ scores, 11 participants were excluded as they had scored ≥10 and should not have completed the rest of the experiment. A further two participants were excluded: one indicated that they had cheated during the anagram task, and another had exited and restarted the anagram task. Therefore, data were examined for 119 participants. The percentage of missing items (questionnaire data only) was 0.35%. If a participant had completed ≥75% of the items used to calculate a questionnaire score, missing items were replaced with an average of the remaining items used to calculate that score. This method resulted in 30 imputations of item scores. When less than 75% of items had been completed, that total or subscale score was excluded pairwise from analyses. This was done for three scores from three separate participants.

The data were screened for univariate and multivariate outliers using boxplots, z-scores (>3.29) and Mahalanobis distances (Tabachnick et al., 2007). 16 univariate outliers were detected, which were deemed to originate from the population of interest and were retained in the analysis. No multivariate outliers were detected. An examination of histograms revealed some mild-moderate skewness for several variables, however due to the sample size, the normality of sample parameters was assumed under the central limit theorem (Field, 2013).

Sample Characteristics

Sample characteristics are displayed in Table 1. The average age of the sample was 19.50 (*SD* = 3.56, range = 18-45). Most participants were in their first year of study, and all participants studied psychology. The sample was mainly female (87%) and white (91%).

Table 1

Sample Characteristics

Variable *M(SD)*	Self-Compassion (*n* = 55)	Control (*n* = 64)
Age	19.62 (3.51)	19.41 (3.62)
Gender		
Female:Male	50:5	53:11
Diagnosis of Dyslexia		
Yes:No	4:51	3:61
Ethnicity		
Asian:Black:Mixed:White:Other	2:0:0:50:3	6:0:0:58:0
Year of Study		
1:2:3:Postgraduate	52:0:0:3	57:0:1:6
PHQ-8	4.58 (2.14)	4.34. (2.61)
GAS Disengage	10.69 (3.06)	10.55 (2.84)
GAS Reengage	22.73 (3.22)	22.27 (3.76)
SCS Total	2.85 (0.58)	2.81 (0.52)
PANAS-SF PA T1	12.60 (4.58)	12.54 (4.17)
PANAS-SF NA T1	8.66 (3.66)	8.58 (3.85)

Expectancy Q	54.86 (16.08)	54.58 (14.37)
Expectancy VAS	47.69 (21.02)	45.59 (18.63)
Commitment VAS	79.13 (16.69)	73.75 (16.44)
Kind/Tolerant VAS	52.17 (20.64)	60.20 (23.77)
Together VAS	69.46 (23.95)	63.41 (24.90)
Loved VAS	79.26 (24.00)	76.59 (21.80)
Calm VAS	61.67 (19.69)	61.55 (22.58)
Self-Criticism VAS	61.69 (24.60)	64.16 (22.33)

Note. PHQ-8 = Patient Health Questionnaire-8. GAS = Goal Adjustment Scale. SCS = Self-Compassion Scale. PANAS-SF = Positive and Negative Affect Schedule-Short Form. PA = Positive Affect. NA = Negative Affect. VAS = Visual Analogue Scale.

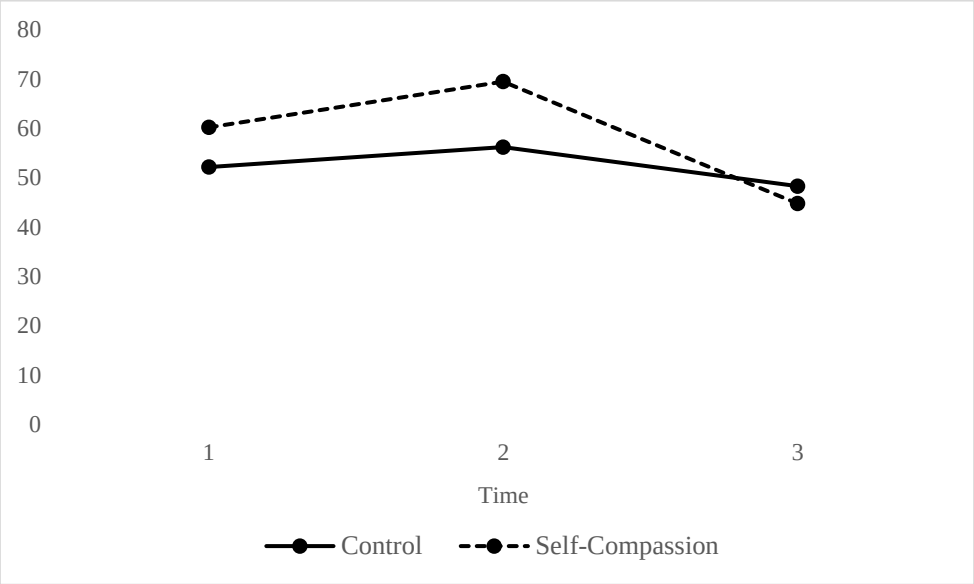
Changes in State Self-Compassion

Statistically significant interaction effects between time (T1, T2 & T3) and condition were found for participants' 'kind/tolerant' VAS ratings, $F(1.433, 167.705) = 6.591$, $p = .005$, $\eta p^2 = .053$ (Figure 2). Simple main effects revealed that at T1, there was no statistically significant difference between conditions for this measure, $F(1,117) = 3.890$, $p = .051$, $\eta p^2 = .032$. At T2, those in the self-compassion condition felt significantly more kind and tolerant than those in the control condition, $F(1, 117) = 14.430$, $p < .001$, $\eta p^2 = .110$, 95% CI [6.349, 20.182]. Differences between groups for this variable were not found to be significant at T3, $F(1,117) = .850$, $p = .358$, $\eta p^2 = .007$.

For participants in the control condition, there were no significant differences between scores on the 'kind/tolerant' VAS between any time point comparisons, ps >.099. Participants in the self-compassion group were statistically significantly more 'kind/tolerant' at T2 compared to T1, $p < .001$, 95% CI [3.692, 14.908], and less 'kind/tolerant' towards themselves at T3 compared to T2, $p < .001$, 95% CI [-33.138, -16.299].

Figure 2

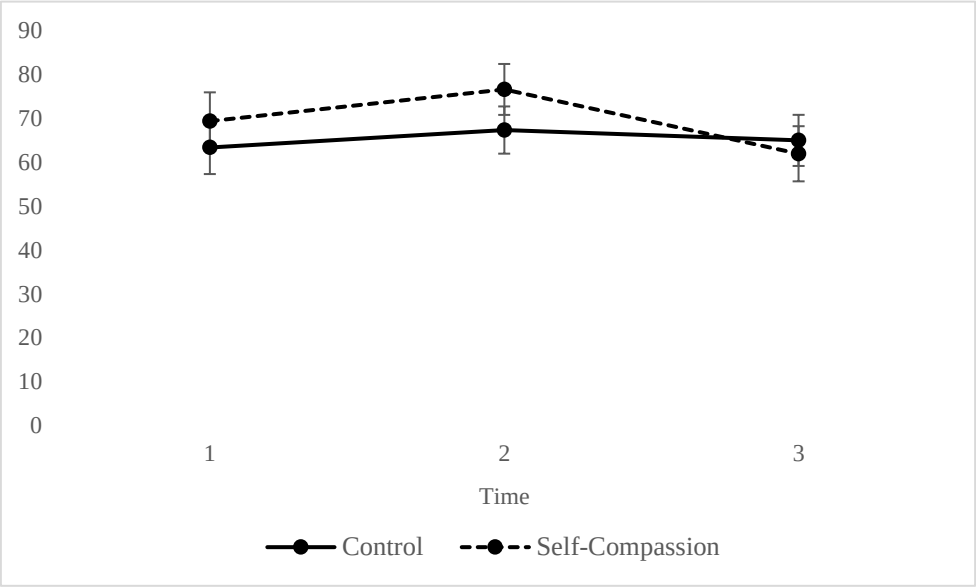
Scores on the 'Kind and Tolerant' VAS



There was no statistically significant interaction effect or main effect of condition for how much participants felt a sense of togetherness with others, *F*s < 2.685, *p*s >.092, ηp^2 < .022, Figure 3. Participants felt a significantly greater sense of togetherness with others at T2 compared to T1, *p* = .001, 95% CI [1.935, 9.250], but a lower sense of togetherness after the task compared to at T2, *p* = .020, 95% CI [= -16.021, -1.011].

Figure 3

Scores on the 'Together' VAS

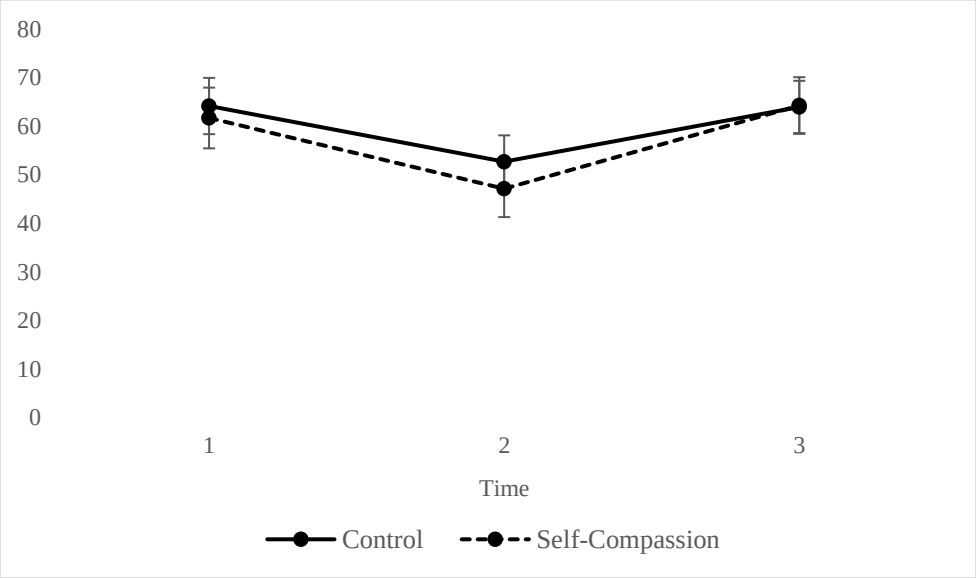


Changes in State Self-Criticism

The condition x time (T1, T2, & T3) interaction effect was not statistically significant for participants' scores on the 'self-criticism' VAS, nor was the main effect of condition, *F*s <.811, *p*s > .370, η*p*²s < .007, Figure 4. Participants reported feeling significantly less self-critical at T2 compared to T1, *p* <.001, 95% CI [-17.289, -8.727], but more self-critical at T3 compared to T2, *p* <.001, 95% CI [7.439, 20.954].

Figure 4

Scores on the 'Self-Criticism' VAS



Changes in State PAA

There were no significant condition x time (T1, T2 & T3) interaction effects, or significant main effects of condition, for participants' responses on the 'calm' and 'loved' VASs, *F*s < 1.928, *p*s > .168, η*p*²s < .016, Figures 5 & 6 respectively. Participants felt calmer, *p* <.001, 95% CI [11.582, 21.623], and more loved, *p* = .038, 95% CI [.126, 6.013] at T2 compared to T1, and less calm, *p* = .039, 95% CI [-13.436, -.252], and loved, *p* <.001, 95% CI [-36.237, -23.269], at T3 compared to T2.

Figure 5

Scores on the 'Calm' VAS

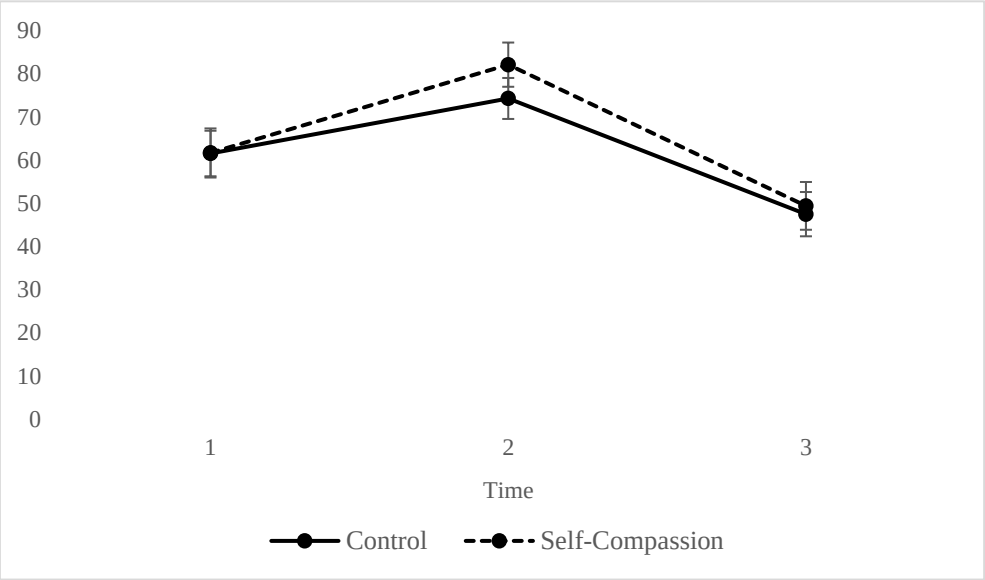
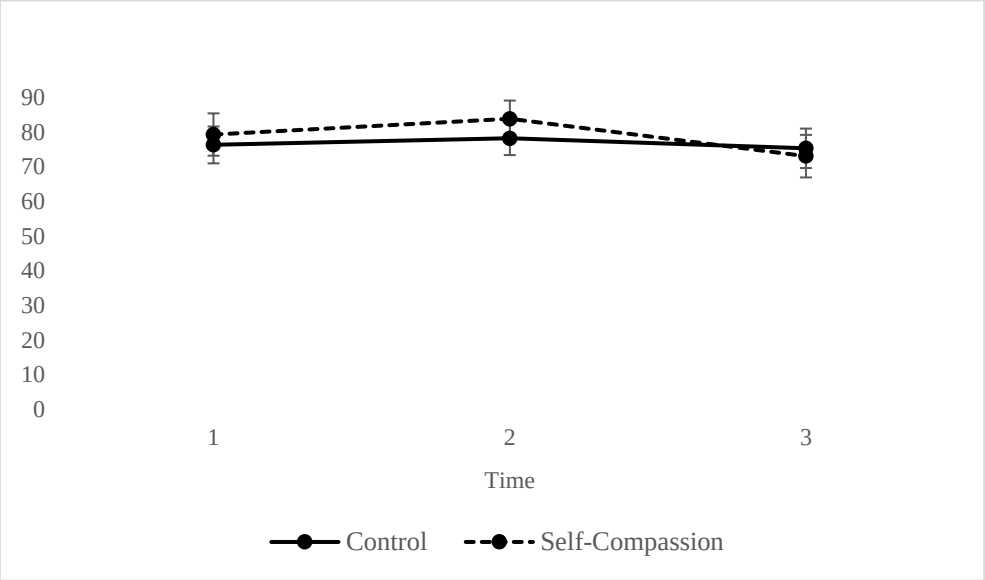


Figure 6

Scores on the 'Loved' VAS



Summary

These findings suggest that the self-compassion manipulation increased participants' ratings of how kind/tolerant they felt towards themselves,

compared to the control condition. There was no difference between the conditions in scores on this measure at T3. Changes in participants' PAA, self-criticism scores, and sense of togetherness were found to be similar for both conditions.

Hypotheses 1 and 2

Table 2 displays descriptive statistics for the anagram task.

Table 2

Anagram Task Descriptive Statistics

Variable *M(SD) in seconds*	Control (*n* = 55)	Self-Compassion (*n* = 64)
Non-optimal disengagement unsolvable anagrams	10.06 (29.96)	12.18 (26.76)
Non-optimal disengagement unsolved solvable anagrams	-2.34 (29.23)	-0.26 (31.71)
RT unsolvable anagrams	36.19 (20.94)	37.80 (17.82)
RT unsolved solvable anagrams	25.75 (14.65)	28.15 (17.08)
RT correct solvable anagrams	18.95 (11.26)	20.04 (10.09)
No. of anagrams correctly solved	9.03 (4.53)	9.02 (4.28)
Total time on task	635.92 (141.32)	645.91 (124.84)

Note. RT = Reaction Time. For non-optimal disengagement values, a negative number indicates that the participant spent less time on anagrams than was 'optimum' (e.g., premature disengagement). A positive number indicates that the participant spent more time on anagrams than was 'optimum'.

There were no significant differences between groups in non-optimal time spent on unsolvable anagrams, $t(117) = -.404$, $p = .687$, $d = .075$, and unsolved solvable anagrams, $t(114) = -.366$, $p = .715$, $d = .068$, or for number of anagrams correctly solved, $t(117) = .016$, $p = .987$, $d = .002$, (Table 2). Therefore, these results do not support hypotheses 1 and 2. For participants in both the control and self-compassion groups, one-sample *t* tests showed that the mean time of non-optimal disengagement was statistically significantly later than the point of optimal disengagement, $t(63) = 2.687$, $p = .009$, $d = .336$ and $t(54) = 3.376$, $p = .001$, $d = .466$, respectively, for unsolvable anagrams. Mean non-optimal disengagement times for unsolved solvable anagrams were not

significantly different from a score of zero (i.e., optimal disengagement) for both groups, *t*s < -.640, *p*s > .525, *d*s <.080.

Hypotheses 3a and 3b

For both control and self-compassion conditions, scores on the GAS GD subscale were not found to significantly correlate with any of the measures of behavioural disengagement, *r*s < |.103|, *p*s > .414 and *r*s < |.244|, *p*s > .072 respectively. Thus, hypotheses 3a and 3b were not supported.

Hypothesis 4

There were no statistically significant condition x time (T1, T2 & T3) interaction effects for participants' PA or NA scores, *F*s < 2.199, *p*s > .119, ηp^2s < .019, Figures 7 & 8 respectively, thus the results fail to support hypothesis 4. There was also no significant main effect of condition for either variable, *F*s < 0.665, *p*s > .416, ηp^2s < .006.

PA significantly decreased from T1 to T2, *p* =.002, 95% CI [-1.974, -.353], and from T2 to T3, *p* <.001, 95% CI [-2.299, -.662]. NA significantly decreased from T1 to T2, *p* <.001, 95% CI [-2.588, -1.510], but significantly increased from T2 to T3, *p* <.001, 95% CI [1.899, 3.472].

Figure 7

PA Scores at each Time Point

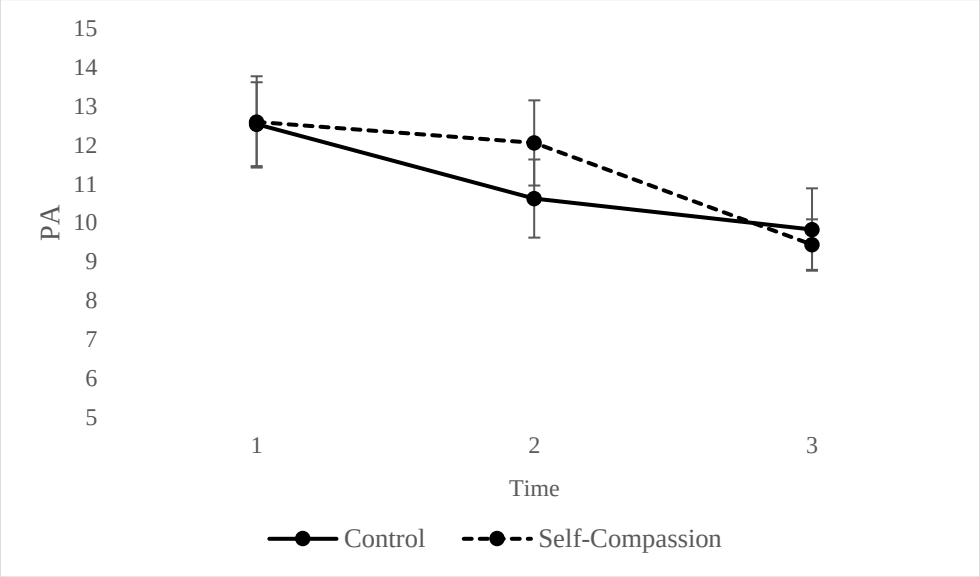
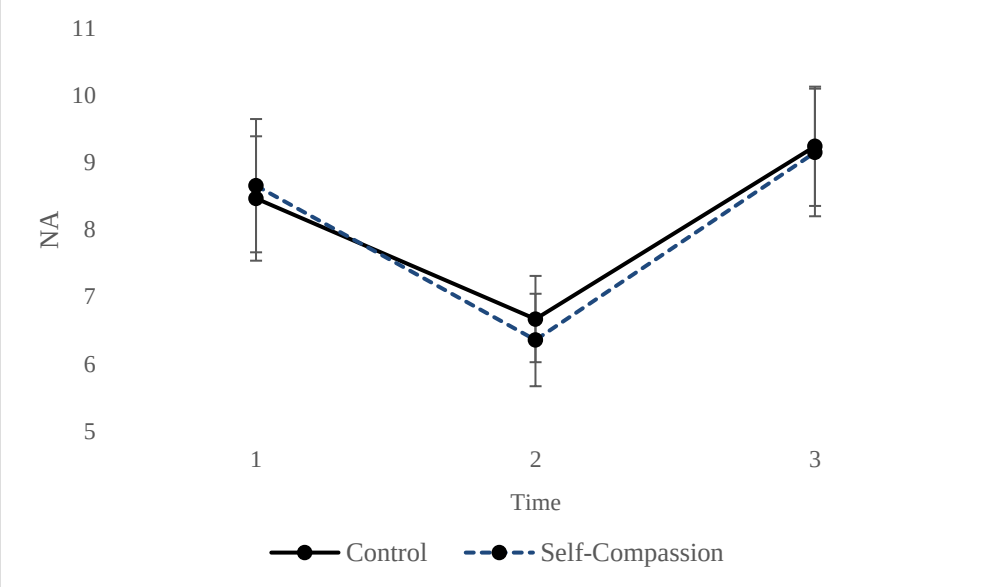


Figure 8

NA Scores at each Time Point



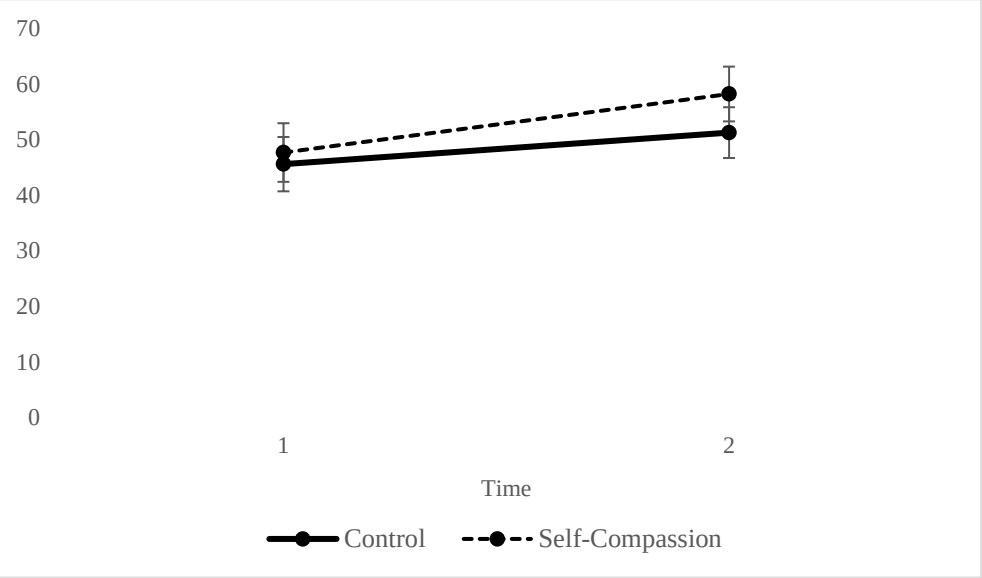
Additional Analyses

Changes in task expectancy and commitment

There was a statistically significant condition x time (T1 & T2) interaction for how well participants expected to perform on the anagram test, $F(1, 117) = 4.136$, $p = .044$, $\eta p^2 = .034$, Figure 9. Simple main effects showed that at T1, there was no statistically significant difference between the two groups, $F(1, 117) = 0.333$, $p = .565$, $\eta p^2 = .003$. However, at T2, participants in the self-compassion condition felt they would perform better on the anagram task than those in the control condition, $F(1, 117) = 4.193$), $p = .043$, $\eta p^2 = .035$.

Figure 9

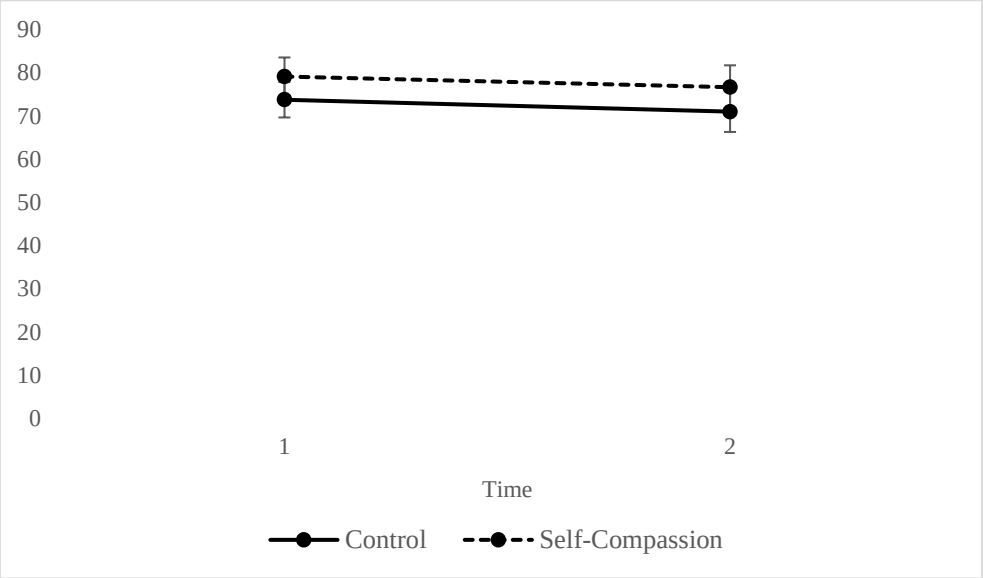
Scores on the 'Expectancy' VAS



There was no statistically significant condition x time (T1 & T2) interaction effect or statistically significant main effect of condition for how committed participants were to the goal of solving anagrams in the task, *F*s < 3.180, *p*s > .077, ηp^2s < .026, Figure 10. Participants were significantly less committed to the task at T2 than at T1, *F*(1,117) = 5.814, *p* = .017, ηp^2 = .047.

Figure 10

Scores on the 'Commitment' VAS



Associations between SCS and GD

The SCS was not significantly correlated with the GAS disengagement subscale, *r* = .084, *p* = .366, but was significantly positively correlated with the reengagement subscale, *r* = .248, *p* = .007. For participants in both conditions, there were no significant correlations between the SCS total score and any of the measures of behavioural disengagement, *r*s < |.200|, *p*s > .113.

Discussion

This study is the first to experimentally explore the role of self-compassion in the facilitation of GD in a student sample. Contrary to the

hypotheses, there were no significant differences between conditions in non-optimal disengagement from unsolvable and unsolved solvable anagrams. Optimal disengagement reflects the time at which continued persistence would be non-optimal, as it would take up disproportionate time that could be spent on other anagrams. There was also no significant difference in the number of anagrams that each group correctly solved. To solve a high number of anagrams correctly, participants would have to disengage from unsolvable anagrams. Thus, it is suggested that in this experiment, a self-compassion induction did not facilitate productive GD.

Significant correlations were not found between self-reported GD and the above measures of behavioural disengagement, which is consistent with Messay & Marshland's findings (2015). This casts doubt upon the validity of the GAS, which has previously been validated largely through relating scores to other self-report measures (Messay & Marsland, 2015). Self-report measures such as the GAS are susceptible to several biases, including social desirability and retrospective bias (Nederhof, 1985). Thus, it is possible that participant's answers on the GAS do not reflect responses to actual goal blockage, as measured by the experimental task. Future research should aim to incorporate additional measures of GD when studying this construct.

Following the manipulations, participants in the self-compassion condition reported feeling significantly more kind and understanding towards themselves, and more tolerant of their flaws, than the control condition. Participants' self-criticism ratings and PAA ratings, along with how together they felt with others, did not differ significantly between the conditions after the manipulation. The latter finding contrasts with previous research, which found that LKM-S increased state PAA and decreased state self-criticism in a healthy

student population, as compared to a control condition (Kirschner et al., 2019). Thus, whilst the manipulation appeared to have some impact on state self-compassion, it did not have all expected effects. Individuals' may differ in their initial responses to LKM, and repeated practice can be required for benefits to accrue (Crane et al., 2010; Fredrickson et al., 2008). Thus, greater exposure to the practice may have resulted in stronger subsequent effects.

In this study, a self-compassion induction did not influence optimal GD. It is theorised that before GD, a series of goal set-backs can trigger an 'action crisis' (Herrmann et al., 2019), where an open-minded re-evaluation of expectancy (e.g., the likelihood of achievement) and value (e.g., importance) information related to the current goal takes place (Herrmann et al., 2019). If the goal is evaluated as not as desirable or achievable as alternatives, GD may occur (Wrosch, 2011). It is possible that NA may support a devaluation of the goal (Jostmann & Koole, 2009), and thus facilitate GD. Indeed, depressed individuals' have been found to disengage more rapidly from unsolvable anagrams and to self-report greater levels of GD than healthy controls (Dickson et al., 2016; Koppe & Rothermund, 2017). Self-compassion has previously been linked to decreases in NA (Hofmann et al., 2011), thus, it is possible that any facilitative effect of self-compassion on GD may have been counteracted by a reduction in NA. This suggestion is not supported by the present results however, as NA from before to after the audio inductions was not differentially impacted by the self-compassion manipulation.

Participants in the self-compassion condition expected to perform significantly better in the anagram task than the control condition. This is concordant with Smeets et al.'s (2014) research, which showed that a self-compassion intervention increased optimism. Those with favourable

expectations may fail to recognise or admit when goals are unachievable, thus resulting in greater unproductive goal persistence (Jostmann & Koole, 2009). It is possible that an increased goal achievement expectancy counteracted any GD-facilitative effects of self-compassion. Research regarding the influence of optimism on GD, however, is conflicting. Aspinwall and Richter (1999) found that participants with high optimistic beliefs disengaged quicker from unsolvable anagrams. The present study did not replicate this finding. One possible explanation is that participants' goal expectancy may have altered as the task progressed.

A general decrease in PA and increase in NA was found from before to after the anagram task. This is consistent with research suggesting that participation in a task which is partly impossible may result in emotional distress (Poncin et al., 2017). Furthermore, task performance was framed as a reflection of intelligence, thus, failure may have induced ego threat (Leary et al., 2009). Changes in affect from before to after the task did not significantly differ between conditions. This suggests that the LKM-S manipulation did not 'protect' participants from aversive emotional changes following a challenging task. This contrasts with previous findings showing that self-compassion is associated with lower NA in response to real-life and hypothetical negative events and goal setbacks (Miyagawa et al., 2018; Leary et al., 2007). This divergent finding could reinforce the suggestion that, in this study, the experimental manipulation did not sufficiently strongly influence all relevant elements of self-compassion.

Significant correlations were also not found between scores on the SCS and either self-reported or behavioural GD. This contrasts with previous research, which has found significant positive associations between self-reported GD in a student sample (Neely et al., 2009), although this study only

had 59% power to detect Neely et al.'s (2009) observed correlation of r = .20. Significant small positive associations were found, however, between total SCS scores and the GR subscale. This is consistent with Neely et al.'s (2009) findings.

One question that must be considered when assessing GD is: at what point is GD more beneficial for wellbeing or task performance than continued goal persistence? In contrast to other research using an anagram task (e.g., Koppe & Rothermund, 2017; Aspinwall & Richter, 1999), which have used time working on unsolvable anagrams as a measure of unproductive GD, this study accounted for nuances in the balance between detrimental 'giving up' and beneficial GD. It was assumed that participants were not immediately aware that unsolvable anagrams were unachievable. Thus, a quick disengagement response, as measured by reaction time, could be a sign of 'giving up' as opposed to beneficial GD. Thus, an 'optimal' disengagement time (based on time and anagrams remaining) was used. Participants who persisted beyond the 'optimal' time would have reduced time for other anagrams in the task, whereas those who disengaged earlier may not have given themselves long enough to potentially solve the anagram.

There are limitations to this strategy. One factor which could be particularly influential is the time that participants took to correctly solve previous anagrams. Participants who are consistently slower at correctly solving anagrams may benefit from a slower disengagement time. If these individuals disengage at the 'optimal' time as calculated, their overall task performance could be poorer; although they attempt more anagrams, they may not spend long enough on each one to be able to solve them correctly. Nevertheless, the anagrams in this task were presented in a sequence with different difficulties

randomly interspersed. Furthermore, the time taken to correctly solve the different anagrams varied greatly for each person; the average within person SD for the time taken to solve anagrams was 14.8 and 12.0 seconds for self-compassion and control conditions respectively. Thus, it would be difficult to determine the best disengagement time based on prior performance, as there is a large variability in solution times and anagram difficulty. Thus, whilst the method utilised in this study has some limitations, it was believed to be the more parsimonious and valid option.

A limitation of this study is the lack of control that resulted from the online methodology. It is possible that participants' performance may have been influenced by external factors (e.g., noisy environment). Moreover, it is unknown whether participants listened fully to the audio inductions. This lack of control limits the internal validity of findings and may explain the limited effects of the self-compassion manipulation. Furthermore, the sample consisted of self-selected psychology students who were predominantly young white females. Individuals who scored ≥10 on the PHQ were also excluded. Therefore, the generalisability of these findings is limited. It is possible that the effects of the manipulation may have been restricted, as pre-intervention levels of mood and self-compassion could have resulted in ceiling effects (Kirschner, 2016). Self-compassion interventions may have more of a beneficial effect on GD in populations of individuals' who find disengagement more challenging or who are more self-critical.

'Real-life' goals can vary in several ways, including whether they are approach/avoidance and importance (Wrosch et al., 2003a). These elements may influence the extent to which self-compassion facilitates GD. Mindful and compassionate attention to one's own suffering could be particularly necessary

to recognise when striving towards an important goal is no longer beneficial, compared to where a lack of achievement does not invoke such a sense of failure (Wrosch et al., 2003a). Giving up on an anagram requires an acceptance of failure and a loss of time investment like in ‘real life’ (Koppe & Rothermund, 2017), and the commitment of participants to the task was moderately high. Thus, the goal of solving anagrams was, to some extent, meaningful. However, it is unlikely that it was as important and complex as some everyday goals. Thus, whilst the experimental control that is possible using such a task makes it useful to study such processes (Koppe & Rothermund, 2017), more ecologically valid research is required.

Clinical Implications and Future Research

These results suggest that previously found positive associations between GD and self-compassion (Miyagawa et al., 2018) could be explained by associations with a third variable, and that a LKM-S intervention does not protect against the negative impact of unattainable goals or difficult events on affect in a healthy student population. This sheds some doubt on previous findings based on self-reported self-compassion and goal failure in a similar sample (Miyagawa et al., 2018; Leary et al., 2007). Thus, further research and caution is required before self-compassion interventions are conceived as beneficial for facilitating productive GD.

The aforementioned methodological limitations of this study, however, means that self-compassion should not be entirely discounted as a possible facilitator of GD, or as a factor that helps negate the negative impact of goal setbacks. GD abilities have been suggested to be positively associated with subjective wellbeing and health outcomes (Barlow et al., 2019). Thus, a better

understanding of how to facilitate adaptive GD could have important clinical implications (Barlow et al., 2019).

A priority for future research should therefore be the exploration of this relationship using more ecologically valid methods, in clinical populations. Prospective longitudinal or experimental (using a longer self-compassion intervention) research could examine everyday life adjustment to unachievable personal goals over time, although care would need to be taken when distinguishing between beneficial GD and avoidance or 'giving up'. Qualitative data may support the ability to make this distinction. Giving up on unattainable goals in the absence of engagement in alternatives can result in continued distress or lack of purpose (Wrosch et al., 2003a). The positive association found between self-compassion and GR in this study indicates that self-compassion could have a positive influence on GR skills. Thus, the influence of GR and availability of alternative goals should be considered, along with any links with and between self-compassion, GD and wellbeing.

If self-compassion is found to be influential on productive GD in clinical populations, it is possible that self-compassion interventions could support individuals in 'letting go' of unachievable goals (Wrosch et al., 2003a). Attention to such processes may be particularly important in health settings, as symptoms or treatments for health conditions can render some previously held goals unattainable (Scobbie et al., 2020b). and GD could support the transference of efforts to other, achievable goals (Scobbie et al., 2020a). Such a transference of effort means that a focus on facilitating GD (potentially through self-compassion interventions) could be an important addition to therapies like Behavioural Activation (Veale, 2008), where engagement in rewarding activities is encouraged. Any such interventions would need to assess for and address any

fears about self-compassion (e.g., that self-compassion results in poor goal achievement; Boykin et al., 2018).

Future research could also examine potential mediating or moderating variables. One variable of interest is the extent to which individuals regard the attainment of higher order, self-defining goals (e.g., happiness) as contingent on the achievement of lower order goals (e.g., gaining a promotion), a concept named conditional goal setting (CGS; Street, 2002). Interventions which increase mindful awareness (such as self-compassion interventions) may support individuals to attend to maladaptive consequences of conditional goals and remain accepting to alternatives (Crane et al., 2010). Those who set conditional goals may find GD challenging, as lower order goals are viewed as the only way to achieve higher order goals (Crane et al., 2010). Thus, future research could examine links between self-compassion, CGS, and GD.

If an individual gives up effort (e.g., behavioural disengagement), yet remains committed to a goal (cognitive engagement), then they can exist in a distressing ‘bind of not trying yet being unable to turn away psychologically’ (Wrosch et al., 2003a, pp. 4-5). This is particularly relevant as depressed individuals can have pessimistic beliefs about goal attainment whilst still viewing such goals as important, and thus may behaviourally disengage whilst remaining cognitively engaged (Dickson et al., 2011; Hadley & MacLeod, 2010). In the present study, it is not known whether the self-compassion manipulation beneficially influenced cognitive disengagement. A lack of cognitive disengagement may result in continued goal-related reflections that can hinder engagement in alternative goals, a process that is intricately linked to rumination (Di Paula & Campbell 2002; van Randenborgh et al., 2010). Self-compassion is negatively correlated with rumination (Neff & Vonk, 2009); thus, it

is a viable facilitator of cognitive GD. As rumination is a risk factor for depression (Nolen-Hoeksema et al., 2008), future research should examine the factors that influence cognitive disengagement from unachievable goals.

Conclusions

This study examined whether a self-compassion induction facilitated optimal behavioural disengagement from the goal of solving anagrams in a healthy student sample. No differences in optimal disengagement were found between students who had listened to an LKM-S and those in the control condition. Affect from before to after the task was also not significantly different between conditions. Therefore, this study suggests that self-compassion may not facilitate productive GD or protect healthy individuals from aversive affective responses to a challenging task. Future research could explore any impact of self-compassion on behavioural and cognitive GD in a more ecologically valid manner, using clinical populations and more extensive self-compassion interventions.

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Appendices

Appendix A: Patient Health Questionnaire-8

Over the **last 2 weeks**, how often have you been bothered by any of the following problems?
*(circle **one** number on each line)*

How often during the past 2 weeks were you bothered by...	**Not at all**	**Several days**	**More than half the days**	**Nearly every day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself, or that you are a failure, or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3

Appendix B: Goal Adjustment Scale

During their lives people cannot always attain what they want and are sometimes forced to stop pursuing the goals they have set. We are interested in understanding how you usually react when this happens to you. Please indicate the extent to which you agree or disagree with each of the following statements, as it usually applies to you.

If I have to stop pursuing an important goal in my life…	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
1. It's easy for me to reduce my effort towards the goal.					
2. I convince myself that I have other meaningful goals to pursue.					
3. I stay committed to the goal for a long time; I can't let it go.					
4. I start working on other new goals.					
5. I think about other new goals to pursue					
6. I find it difficult to stop trying to achieve the goal.					
7. I seek other meaningful goals.					
8. It's easy for me to stop thinking about the goal and let it go.					
9. I tell myself that I have a number of other new goals to draw upon.					
10. I put effort toward other meaningful goals.					

Appendix C: Self-Compassion Scale

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never				Almost always
1	2	3	4	5

_____ 1. I'm disapproving and judgmental about my own flaws and inadequacies.

_____ 2. When I'm feeling down I tend to obsess and fixate on everything that's wrong.

_____ 3. When things are going badly for me, I see the difficulties as part of life that everyone goes through.

_____ 4. When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world.

_____ 5. I try to be loving towards myself when I'm feeling emotional pain.

_____ 6. When I fail at something important to me I become consumed by feelings of inadequacy.

_____ 7. When I'm down and out, I remind myself that there are lots of other people in the world feeling like I am.

_____ 8. When times are really difficult, I tend to be tough on myself.

_____ 9. When something upsets me I try to keep my emotions in balance.

_____ 10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

_____ 11. I'm intolerant and impatient towards those aspects of my personality I don't like.

_____ 12. When I'm going through a very hard time, I give myself the caring and tenderness I need.

_____ 13. When I'm feeling down, I tend to feel like most other people are probably happier than I am.

_____ 14. When something painful happens I try to take a balanced view of the situation.

_____ 15. I try to see my failings as part of the human condition.

_____ 16. When I see aspects of myself that I don't like, I get down on myself.

_____ 17. When I fail at something important to me I try to keep things in perspective.

_____ 18. When I'm really struggling, I tend to feel like other people must be having an easier time of it.

_____ 19. I'm kind to myself when I'm experiencing suffering.

_____ 20. When something upsets me I get carried away with my feelings.

_____ 21. I can be a bit cold-hearted towards myself when I'm experiencing suffering.

_____ 22. When I'm feeling down I try to approach my feelings with curiosity and openness.

_____ 23. I'm tolerant of my own flaws and inadequacies.

_____ 24. When something painful happens I tend to blow the incident out of proportion.

_____ 25. When I fail at something that's important to me, I tend to feel alone in my failure.

_____ 26. I try to be understanding and patient towards those aspects of my personality I don't like.

Appendix D: Life Orientation Test-Revised

Please be as honest and accurate as you can throughout. Try not to let your response to one statement influence your responses to other statements. There are no “correct” or “incorrect” answers. Answer according to your own feelings, rather than how you think “most people” would answer.

	I agree a lot	I agree a little	I neither agree nor disagree	I disagree a little	I disagree a lot
In uncertain times, I usually expect the best					
It’s easy for me to relax					
If something can go wrong for me, it will					
I’m always optimistic about my future					
I enjoy my friends a lot					
It’s important for me to keep busy					
I hardly ever expect things to go my way					
I don’t get upset too easily					

I rarely count on good things happening to me					
Overall, I expect more good things to happen to me than bad					

Appendix E: Positive and Negative Affect Schedule-Short Form

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at the present moment.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

Distressed	1	2	3	4	5
Excited	1	2	3	4	5
Upset	1	2	3	4	5
Scared	1	2	3	4	5
Enthusiastic	1	2	3	4	5
Alert	1	2	3	4	5
Inspired	1	2	3	4	5

Nervous	1	2	3	4	5
Determined	1	2	3	4	5
Afraid	1	2	3	4	5

Appendix F: Visual Analogue Scales (Self-Compassion, Self-Criticism and Positive Affiliative Affect)

Right now:

0----------100

I feel like not being very kind and understanding towards myself at all — **I feel like being very kind and understanding towards myself**

0----------100

I am not tolerant of my flaws and inadequacies at all — **I am very tolerant of my flaws and inadequacies**

0----------100

I don't feel a sense of togetherness with others at all — **I very much feel a sense of togetherness with others**

U----------100

I don't feel at all self-critical — **I feel very self-critical**

0----------100

I don't feel calm at all — **I feel very calm**

0----------100

I don't feel calm at all — **I feel very calm**

0----------100

I don't feel loved and safe at all — **I feel very loved and safe**

Appendix G: Visual Analogue Scales (Expectancy & Commitment)

How well do you expect to perform on the anagram task?

0----------100

Not well at all **Very well**

How committed are you to the goal of solving the anagrams in this task?

0----------100

Not at all committed **Very committed**

Appendix H: Script for Loving-Kindness Meditation

Sit in a comfortable position, reasonably upright and relaxed. (Pause) Close your eyes fully or partly. (Pause) You will now be guided through a few minutes exercise.

Bring to mind a person with whom you have a positive relationship, someone who you feel naturally warmly towards. This could be a child, a grandparent, a former teacher or mentor your cat or dog - whoever naturally brings happiness to your heart. Allowing yourself to feel what it's like to be in that being's presence (pause for 2 sec).

(Pause)

Holding this person in mind now extending best wishes towards them. Repeat softly with this person in mind:

May you be safe.

May you be peaceful.

May you be healthy.

May you live with ease.

(Pause)

May you be safe.

May you be peaceful.

May you be healthy.

May you live with ease.

(Pause)

When you notice that your mind has wandered, return to the words and the image of the loved one you have in mind. Savour any warm feelings that may arise. Go slow.

(Pause)

Now add yourself to your circle of good will. Put your hand over your heart and feel the warmth and gentle pressure of your hand (for just a moment or for the rest of the exercise), saying:

May I be safe.

May I be peaceful.

May I be healthy.

May I live with ease.

(Pause)

May I be safe.

May I be peaceful.

May I be healthy.

May I live with ease.

(Pause)

Holding your body in awareness, notice any stress or uneasiness that may be lingering within you, and offer kindness to yourself.

May I be safe.

May I be peaceful.

May I be healthy.

May I live with ease.

Repeat the phrases inwardly with enough space between them so that they are pleasing you. As best you can, gather all your attention behind one phrase at a time. (Pause)

If you find your attention wandering, don't worry, that's what minds do. You can simply let go of distractions and begin from here you are.

May I be safe.

May I be peaceful.

May I be healthy.

May I live with ease. (Pause)

Feelings, thoughts, or memories may come and go; allow them to arise and pass away. Let the anchor be the repetition of these phrases:

May I be safe.

May I be peaceful.

May I be healthy.

May I live with ease. (Pause)

Just rest and sit quietly in your own body, savouring the good will and compassion that flows naturally from your own heart. Know that you can return to the phrases anytime you wish.

(Pause for 15 sec)

(Pause, then end) Now, in your own time, slowly open eyes. The exercise is over.

Appendix I: Script for Control Supermarket Induction

Sit in a comfortable position, reasonably upright and relaxed. (Pause) Close your eyes fully or partly. (Pause) You will now be guided through a few minutes exercise.

We would like you to think about a normal or routine supermarket scenario. Try to think of a particular time that you visit a supermarket to do a large or weekly shopping. (Pause)

Think about arriving at the supermarket (Pause for 2 sec). What time in the day is it (Pause).

Is it in the late morning or early afternoon? How does the supermarket look like? (Pause for 2 sec)

Think about why you are at the supermarket. (Pause)

How does it feels like being at the supermarket (Pause)

Try to feel the weather of that day. Is it could or warm? (Pause)

Feel the temperature (Pause)

Do you have plenty of time to do the shopping or are you in a rush (Pause)?

You may select a trolley to store your items or a shopping basket? (Pause for 3 sec)

See if it's possible to think about what the trolley or shopping basket looks like. (Pause for 3 sec)

Feel the texture of the trolley or the shopping basket (Pause)

Now think about entering the shop (Pause for 3 sec).

Try to remember if you noticed anything special? (Pause for 3 sec)

Is the shop quiet and empty or is it crowded? (Pause)

Do you hear or see anything special (Pause for 3 sec) maybe a special offer (Pause for 3 sec).

What sounds do you hear? (Pause)

And now try to imagine which goods you come across first (Pause for 3 sec)

Think about walking down the first aisle (Pause for 3 sec).

Are there particular items you are looking for (Pause for 3 sec).

Play back what you were thinking in the situation. (Pause)

Now think about putting the items you need to buy into your trolley or shopping basket. (Pause for 3 sec)

Think about going through the shop aisle by aisle … (Pause for 8 sec)

.....see if it is possible to imagine the shopping as much detailed as possible (Pause for 5sec).

You might come across the fruit and vegetable section (Pause).

Is there any particular smell that you notice (Pause) .....try to focus on them (Pause)

Do you have problems to reach an item? (Pause for 3 sec)

Do you have to reach up to a top shelf? (Pause for 3 sec)

Do you have to weight an item (Pause for 3 sec)

Try to feel the items (Pause)

Do you notice something special (Pause for 3 sec) .....or do you hear something special (Pause for 3 sec)

And now, think about going to the check-out/till to pay (Pause for 3 sec).

Think about putting your items out of the trolley or shopping basket (Pause for 3 sec).

Think about paying your purchases (Pause for 3 sec).

Are you paying by card or cash? (Pause for 3 sec)

Do you get some cash back (Pause for 3 sec).

Now think about putting your purchases back in the trolley or did you use a bag to carry them home? (Pause for 3 sec)

Think about taking your purchases home (Pause for 3 sec)

(Pause, then end) Now, in your own time, slowly open eyes. The exercise is over.

Appendix J: Anagrams

Anagrams used in present study. Unsolvable anagrams are presented in italics.

price
tooth
beach
afnac
salad
Lebfi
union
filru
faint
wrist
tweak
amoos
groin
ghost
sheep
lelmo
pecit
frame
agile
water
oneci
eagle
acelo
model
glory
haacl
patio
rtean
vivid
giant

Appendix K: Instructions for Anagram Task

Please read the following instructions carefully

During this experiment, you will be required to solve anagrams. Anagrams are groups of letters that can be rearranged to make a word (e.g., APLCE => PLACE). Research has shown that performance on anagram tasks can predict a person's level of intelligence and that people with high levels of IQ are fast and accurate in their performance.

Each anagram will be presented on the screen, and you will be asked to type the solution into the computer using the keyboard. You will be able to use the backspace to change to your answer if you make any mistakes as you type. You will also have the option to skip to the next anagram if you would like. You will not be able to go back to anagrams that you have chosen to skip.

Before you begin the anagram task, you will be asked a number of questions and will listen to an audio track. Please answer the following questions to the best of your ability

You will have **12 minutes** to correctly solve as many anagrams as you can, out of a possible total of **30 anagrams**. If you correctly solve enough anagrams, you will be entered into an additional draw where you will have an additional chance to win a £20 amazon voucher.

Appendix L: Piloting Information

Two phases of piloting took place. In phase 1, 11 pilot participants were presented with 35 anagrams to solve, with 35 seconds on each anagram before the next was presented. Response times and answers were recorded for each anagram. On average, anagrams that were correctly solved in 30 seconds were done so in 10.6 seconds. 18 anagrams were correctly solved by 35-65% of people. These anagrams were selected for the study, along with two anagrams that were correctly solved by 18% of pilot participants. This level of anagram difficulty was chosen to minimise the ability of participants to distinguish between solvable and unsolvable anagrams, but also to provide some anagrams that were likely to be solved (and thus maintain task motivation). The second phase of piloting was completed for the whole experiment with 4 pilot participants. Participants were provided with 10 minutes for the anagram task (with 20 solvable and 10 unsolvable anagrams). On average, the participants progressed through 23 of the anagrams in the 10 minutes, therefore, the time for the experiment was increased to 12 minutes. This was done to increase the amount of data collected whilst maintaining an adequate time pressure.

Appendix M: Participant Information Sheet

Participant Information Sheet

Title of Project: Attitudes to the self and puzzle solving

Researcher name: Lois Coy

We would like to invite you to take part in a study which aims to examine how the way in which you think about yourself is related to how you solve verbal puzzles.

Before you decide if you want to take part, we would like you to understand why the research is taking place and what it would involve. Please take the time to consider the below information carefully and to discuss it with family or friends if you wish. If you would like to ask any further questions to the researcher, please use the contact details on the last page of this information sheet.

Thank you for taking the time to read this

What is the purpose of the study?

This study aims to examine how the way in which you think about yourself is related to how you solve some puzzles. We are interested to learn more about any links between these factors, which may have some important implications for improving well-being. This project is part of a Doctorate in Clinical Psychology thesis that is being undertaken by the Principle Investigator, Lois Coy.

Why have I been invited?

We are inviting students at Exeter University to take part in this study. In order to participate, you will need to:

- Be over the age of 18.
- Be native English speakers.
- Have normal or corrected to normal vision and hearing.
- Be a student at the University of Exeter.
- Complete a screening questionnaire prior to participation.

What would taking part involve?

Your participation in this study is voluntary. The experiment will take approximately 1 hour for you to complete both parts of the experiment. If you chose to take part in this study, the following steps will take place:

1. You will be asked to complete an online screening questionnaire. This is part 1 of the experiment. Depending on your answers to some of these questions, you may not be considered suitable for this study. You will be informed of this at the end of the screening stage. If you are not considered suitable, you will still gain 0.5 course credit for your time and have the opportunity to be entered into a prize draw for a £20 amazon voucher. You will not, however, be able to continue to complete part 2 of the experiment and gain the full amount of course credits.
2. During the screening stage of the study, you will be asked to enter a six-character 'participant' code, based on the first and last letters of your first name, the date of your birthday, and the last two letters of your postcode. This information will be used to link your responses to part 1 and part 2 of the experiment. It will also be used for if you wish to withdraw from the experiment.
3. If you meet the inclusion criteria, you will be asked to click the link to complete part 2 of the experiment online (using a website called Gorilla).
4. At the start of the experiment on Gorilla (part 2), you will have the chance to read this information again.
5. It is recommended that you complete the experiment in a quiet room with no distractions, if possible.
6. You will then be asked to answer some basic demographic questions (e.g. age, gender, ethnicity), and some questions about your view of yourself and your recent mood. You will also be asked if you have a diagnosis of dyslexia.
7. Following these baseline questions, you will be asked to complete some more questions about how you are feeling and how you think you will perform on a task. Some of these questions will be repeated throughout the testing session.
8. You will listen to an approximately 11-minute recording. If you have headphones and are able to use them, we recommend for you to use them to listen to the recording. In this recording you will listen to some instructions which will invite you to imagine yourself in a certain way.
9. You will complete a task which involves trying to solve some verbal puzzles.
10. Finally, you will be invited to complete a brief positive mood induction task.
11. Following completion of this experimental session, you will be provided with a debrief sheet, along with the researchers contact details for if you have any questions.

What will happen if I don't want to carry on with the study?
You are free to withdraw from this study, without any reason or explanation. If you do so, any data provided by you will be destroyed. You can withdraw from the study during the experiment. If you wish to do so during part 2 of the experiment, please click either the appropriate checklist or button on the experimental page (as opposed to exiting the browser). This will ensure that you are provided with debrief information about the study. If you wish to withdraw from the study after completion of the experimental task, you can do so up until the end of January 2021. To do so, please contact the researcher (contact details below). You will be required to provide your six-character participant code. You may also be asked to provide your SONA ID from the SONA participant recruitment system.

What are the possible benefits of taking part?
By taking part in this research, you will help us to add to an evidence base which might have some important implications for improving wellbeing.

What are the possible disadvantages and risks of taking part?
In order to take part in this study, you are required to give up approximately an hour of your time. You may find some of the tasks in the testing session frustrating or boring. This may lead to some feelings of mild distress. You will be free to withdraw from the study during the experimental task. If you wish to do so during part 2 of the study, please click either the appropriate checklist or button on the experimental page (as opposed to exiting the browser). This will ensure that you are provided with debrief information about the study. You will be debriefed and provided with information about where you can access further support.

Will my information be kept confidential?

Your information will be kept confidentially. In compliance with BPS (The British Psychological Society) requirements, identifying data, demographic information and performance data are all stored separately in Gorilla. Any experimental data downloaded from Gorilla will be anonymised and stored securely on a password protected computer. All experimental data (including your responses to screening measures and the participant code that you entered) will be stored in a secure, password protected database. All information will only be accessed by the researcher and members of the Exeter Doctorate in Clinical Psychology research team. The participant code that you entered will kept until the end of January 2021, after which it will be deleted.

If you wish to be entered for a prize draw, we will be invited to provide the researcher with your contact details and a code that you will be presented with on the debrief sheet. We will retain these details to contact you if you win. These details will be kept separately from the rest of the data and will only be used to contact you if you win. It will be stored securely on a password protected computer and will only be accessed by the researcher. After the prize draw and completion of data collection, your contact details will be deleted, unless you have won the prize and are in receipt of an amazon voucher. If you receive an amazon voucher, your name, contact details and value of the voucher you received will be kept for 7 years, to comply with HMRC regulations. The anonymised data set will be retained indefinitely in the interest of open science and possible sharing with other researchers.

The University of Exeter processes personal data for the purposes of carrying out research in the public interest. The University will endeavour to be transparent about its processing of your personal data and this information sheet should provide a clear explanation of this. If you do have any queries about the University's processing of your personal data that cannot be resolved by the research team, further information may be obtained from the University's Data Protection Officer by emailing dataprotection@exeter.ac.uk or at www.exeter.ac.uk/dataprotection

Who has reviewed this study?
This project has been reviewed by the Research Ethics Committee at the University of Exeter (Reference Number eCLESPsy001818), who feel that the research is ethical and safe.

What will happen to the results of this study?
The results of this study will be written up and submitted as part of the Doctorate in Clinical Psychology at the University of Exeter. It is also hoped that the results will be published in an academic journal. As mentioned previously, information will be removed to ensure that you will not be able to be identified in any presentations, reports or posters. If you would like to receive a dissemination of the results, please contact the researcher.

Cost, reimbursement and compensation
Your participation in this research is voluntary. However, everyone who participates in this study will be entered into a prize draw to win a £20 amazon voucher, if they contact the researcher to inform them that they would like to be entered. Psychology students who complete the study will also receive course 1.5 credits for taking part. Psychology students who only complete the screening stage (part 1) of the research will receive 0.5 course credits. If you find out at the screening stage of this study that you are not eligible to participate in this research, you will be provided with a debrief sheet where you will receive information about entering your name for the prize draw, if you wish to do so.

Further information and contact details
If you would like to take part in this study or have any questions, please contact the researcher using the information below.

Lois Coy, Trainee Clinical Psychologist
Number: 07917 048758
Email: lc708@exeter.ac.uk

If you are not happy with any aspect of this project and wish to complain, please contact:

Gail Seymour
Number: 01392 726621
Email: G.M.Seymour@exeter.ac.uk

Dr Nicholas Moberly

Email: N.J.Moberly@exeter.ac.uk

Thank you for your interest in this project

Appendix N: Participant Consent Form

CONSENT FORM

Title of Project: Attitudes to the self and puzzle solving

Name of Researcher: Lois Coy

1. I confirm that I have read the information sheet dated 24.09.2020 for the above project. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.
2. I understand that relevant sections of the data collected during the study (part 1 and 2) may be looked at by members of the University of Exeter research team (including the Research Supervisors) and University of Exeter regulatory bodies (e.g., members of the University of Exeter ethics Research Ethics and Governance team where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.
3. I understand that my participation is voluntary and that I am free to withdraw up data collection has been completed and the prize draw has taken place. I can do this without giving any reason and without my legal rights being affected.
4. I understand that if I provide them to the researcher, my contact details will be kept securely until the end of January 2021. I understand that after this time point, my contact details will be deleted, unless I receive the prize voucher. I understand that if I receive the prize voucher, my contact details and name will be kept for 7 years, in line with HMRC regulations.
5. I understand that no identifiable details will be included in or linked to the research results.
6. I understand that taking part involves anonymised questionnaire responses and experimental task data to be used for the purposes of:
   - A report submitted as part of the University of Exeter Doctorate in Clinical Psychology
   - Academic publications (including possible journal articles, reports, posters and presentations)
   - Sharing with other researchers
7. I understand that the anonymised data set will be retained indefinitely in the interest of open science and possible sharing with other researchers.

I agree to take part in the above project and consent to items 1-7 above ☐

Appendix O: Participant Debrief Form

DEBRIEF FORM

Title of Project: Attitudes to the self and puzzle solving

Name of Researcher: Lois Coy

Debrief Form

Please read the information below, and then press 'next' at the bottom of the screen to complete the experiment and gain your course credits.

Thank you very much for participating in this research. If you would a copy of this debrief form to keep, please inform the researcher using the contact details below.

The purpose of this research was to examine the role of self-compassion in goal-disengagement. It is important that you know that some of the anagrams that you were asked to complete were unsolvable. Furthermore, you were told that the anagram task measures verbal intelligence. However, there is no evidence that this task is related to verbal intelligence and your performance on this task does not reflect your verbal intelligence. Please read on for further important information.

The pursuit of goals can provide meaning, purpose, and direction in life. Low goal progress or failure, however, can negatively impact psychological wellbeing. There are many times in which an individual may have goals that are beyond their capabilities or are unachievable due to time or resource constraints. The ability to 'give up' on goals, therefore, has been suggested to form part of self-regulation. Goal disengagement involves withdrawing effort and commitment from a goal.

This study aims to explore the role of one factor that may facilitate disengagement from unachievable goals: self-compassion. Self-compassion has been defined as the ability to be kind and compassionate towards oneself in times of suffering or perceived self-failure.

Goal disengagement abilities have been found to be positively associated with subjective wellbeing and health outcomes. Therefore, a better understanding of how to facilitate adaptive goal-disengagement could have important clinical implications, including supporting individuals to adjust to a change in life circumstances and treating clinical depression. There has been little research conducted on the possible facilitators of goal-disengagement and the motivational effects of self-compassion; therefore, this study will add to the knowledge base by investigating the role of self-compassion.

If you would like to receive the overall results of this study upon its completion, please contact me using the email address I have provided below. If you would like to withdraw from the experiment, you can contact the researcher to do so, until the end of January 2021 when you will no longer be able to withdraw.

If you would like to be entered into the prize draw (where you will have the opportunity to win two £20 amazon vouchers), please inform the

researcher (Lois Coy) using the contact details below. Please quote the code 'SCOMPASSION20' when doing so.

Please note some important information about this study. Please keep this information confidential, and do not share it with anyone else you know who is going to participate in this research.

• Some of the anagrams in this task were unsolvable.

• During the experiment, you were told that you will be entered into a draw for a £20 amazon voucher if you correctly answered enough anagrams. If you wish, you will be entered into this draw, regardless of the number of anagrams that you have correctly answered. Please let the experimenter know if you would like to be entered into this additional draw.

• During the experiment, you were told that the anagram task measures verbal intelligence. This was done to see how people would cope to a threat to their self-esteem. There is no evidence that this task is related to verbal intelligence and your performance on this task does not reflect your verbal intelligence.

If you have any further questions about this study or would like to speak about the above information, please contact Lois Coy or Dr Nick Moberly on the contact details below:

Lois Coy, Trainee Clinical Psychologist, Email: lc708@exeter.ac.uk
Dr Nick Moberly, Senior Lecturer, Email: N.J.Moberly@exeter.ac.uk

If you are not happy with any aspect of this project and wish to complain, please contact:

Gail Seymour
Number: 01392 726621
Email: G.M.Seymour@exeter.ac.uk

If participation in this study has caused concern about your health or well-being then please contact your GP in the usual way. Contact details of support organisations are provided below.

Your GP

If you have been experiencing low mood most of the day for several days or weeks, you should consider consulting your GP, who can provide professional guidance and help. If you are a student at the University of Exeter, you should be able to access a GP via registration with the Student Health Centre:
http://www.exeterstudenthealthcentre.co.uk/

UNIVERSITY OF EXETER WELLBEING SERVICE

The Wellbeing Service is available free of charge to all students, full-time, part-time, undergraduate and postgraduate. Because student life can be stressful, the Wellbeing Service is there to provide confidential help and support. We aim to help students cope more effectively with any personal problems or emotional difficulties that may arise during their time at University.
Telephone: (01392) 724381

Or book an appointment via the website:
https://www.exeter.ac.uk/wellbeing/contact/makeanappointment/
Student Wellbeing Service
Reed Mews Wellbeing Centre
Streatham Drive
Exeter EX4 4QP

EXETER STUDENT NIGHTLINE

Exeter Student Nightline is a confidential and anonymous listening service, run by trained student volunteers for students at the University of Exeter. We are here to listen to anything you might want to talk about; housing problems, relationship issues, course stresses, even if you just want someone on the end of the phone walking home from a night out. Whatever you want to talk about – Exeter Student Nightline is here.

Telephone (08:00-20:00): (01392) 724000
Email: exeternightline@gmail.com
Website: https://exeter.nightline.ac.uk/

EXETER SAMARITANS

Samaritans provides confidential emotional support, 24 hours a day for people who are experiencing feelings of distress or despair. Samaritans are there if you're worried about something, feel upset or confused, or you just want to talk to someone.

10 Richmond Road
Exeter
Devon EX4 4JA (open every day from 10:30-21:30)
24 hour telephone helpline: 01392 411711 (Exeter branch) / 116123 (free)
Email: jo@samaritans.org
Website: http://www.samaritans.org/branches/samaritans-exeter-mid-east-devon

https://www.nhs.uk/conditions/stress-anxiety-depression/

Appendix P: Ethics Documentation

CLES – Psychology
Psychology
College of Life and Environmental Sciences
University of Exeter
Washington Singer Building
Perry Road
Exeter
EX4 4QG
Web: www.exeter.ac.uk

CLES – Psychology Ethics Committee

Dear Lois Coy

Ethics application - eCLESPsy001818
The Role of Self-Compassion in Facilitating Goal Disengagement

Your project has been reviewed by the CLES – Psychology Ethics Committee and has received a Favourable with conditions opinion.

The Committee has made the following comments about your application:
MJ: I would only suggest reminding participants of how long they have (end of Jan 2021) to withdraw their data in the completed debrief form.

- Please view your application at https://eethics.exeter.ac.uk/CLESPsy/ to see comments in full.
If you have received a Favourable with conditions, Provisional or unfavourable outcome you are required to re-submit for full review and/or confirm that committee comments have been addressed before you begin your research.

If you have any further queries, please contact your Ethics Officer.

Yours sincerely

Date: 14/04/2021

CLES – Psychology Ethics Committee

Appendix Q: Motivation and Emotion Journal Guidelines

Scope

Motivation and Emotion publishes articles that focus on motivational and emotional phenomenon. The journal seeks to publish articles that make a theoretical advance by linking empirical findings to underlying processes. Submissions to the journal should speak to an important problem in motivation and emotion study, and they should offer theory-based directional hypotheses. Published articles are almost always explanatory rather than merely descriptive, as they provide the data necessary to understand the origins of motivation and emotion, to explicate why, how, and under what conditions motivational and emotional states change, and to document that motivational and emotional processes are important to human functioning. Essentially, articles that are excellent candidates for the pages of Motivation and Emotion are those that use and develop theory to explain the field's core concepts—human needs, cognitive and neural states capable of energizing and directing action, emotion, affect, and mood. Submissions in which motivational or emotional states are only incidental are not good candidates for publication.

A range of methodological approaches are welcomed, but methodological rigor generally speaking is the key criterion.

Manuscripts that rely exclusively on self-report data from questionnaires and surveys are welcome, but published articles tend to be those that rely on objective measures (e.g., behavioral observations, psychophysiological responses, reaction times, brain activity, and performance or achievement indicators) either singly or combination with self-report data.

The journal generally does not publish scale development and validation articles. The journal is, however, open to articles that focus on the post-validation contribution that a new measure can make. Scale development and validation work therefore may be submitted if it is used as a necessary prerequisite to follow-up studies that show how the new scale is instrumental in making a theoretical advance (such that the purpose of the article is to make a theoretical advance rather than to develop and validate a new measure per se).

The focus should be on human motivation and emotion. Any submission that utilizes non-human participants should be able to contribute to understanding human motivation and emotion.

Manuscript Style

Submissions are to be formatted according to APA style, as detailed in:

APA (2010). Publication manual of the American Psychological Association, 6th edition. American Psychological Association: Washington, DC.

Submissions should be structured as follows:

A Title Page lists the title of the manuscript but omits the authors' names, affiliations, and author notes.

An Abstract of 120 to 160 words offers information about the purpose of the paper, the sample and procedures, key results, and a clear statement of the implications of the findings. Below the Abstract, supply 4 or 5 keywords or brief phrases.

An Introduction introduces the research problem and explains why it is important. It describes relevant theory and past research, and provides testable, directional hypotheses.

A Method appears in subsections. A Participants section identifies the research participants and their demographic characteristics. A Procedures or Research Design section provides the timeline of events within the conduct of the study and states the experimental conditions or data analysis plan. A Measures section provides the measures used in the collection of the data and offers evidence of the psychometric properties of those measures.

The Results reports the analyses performed and the result of the statistic tests, especially those related to the hypotheses. Generally speaking, descriptive statistics are provided in tables or figures whereas the report of the statistical tests appears in the text.

The Discussion evaluates and interprets the findings and states their implications. The section should not simply reiterate the findings. Instead, it interprets the findings, integrates them into both theory and the existing empirical literature, offers suggestions for future research, acknowledges the limitations of the research, and addresses alternative interpretations.

A Conclusion section is optional. If provided, it should be a brief (usually a single paragraph) section that explicitly states the contribution of the study and it move the research literature significantly forward.

Many papers will feature multiple experiments. For these submissions, the arrangement of sections reflects the above structure but includes additional headings such as “Study 1”, “Study 2”, and “Study 3”. Each study is to include its own Introduction, Method, Results, and Discussion sections.

For References, Footnotes, Tables, and Figures, follow the guidelines of the APA Publication manual. An Appendix may be an appropriate final section to provide stimulus materials or the items within a newly-developed questionnaire.

Appendix R: Dissemination Statement

These study results will be disseminated predominantly through journal publication, presentation, and feedback.

Journal Publication

Expected journals for publication include Psycho-oncology (Systematic Review) and Motivation and Emotion (Empirical Paper). Instructions for manuscript presentations can be found in Appendix A (Systematic Review) and Appendix Q (Empirical Paper).

Presentation

Study results will not be disseminated to all participants in this research. However, participants are invited to contact the researcher if they wish to be informed about the results of the study.

Presentation

The findings of this study will be presented to peers and staff members of the University of Exeter on the 7th of June 2021.