

**Affective arousal associated with goal-directed thinking in Chronic Depression  
with Cluster C personality difficulties**

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## **Executive Summary**

### **Background**

Goals are cognitive representations of perceivably positive or negative outcomes thought to influence and motivate behaviour. Approach motivation is theorised to drive behaviour in pursuit of positive outcomes, whereas avoidance motivation is theorised to drive behaviour in prevention of negative outcomes. Having and working towards personally meaningful approach goals is associated with positive psychological well-being, whereas avoidance goal motivation is associated with negative psychological well-being.

Motivation is theorised to be driven by both cognitive and affective factors. Neuroaffective sensitivity towards reward and non-punishment, associated with hope and positive affect, is theorised to contribute to approach motivation. Conversely, neuroaffective sensitivity towards punishment, non-reward and unfamiliarity, is associated with negative emotions such as fear, anxiety, and sadness. Neuroaffective sensitivity has been associated with dispositional traits, which has indicated a possible relationship between neuroaffective response styles and personality in approach and avoidance motivation.

Individuals with depression are known to demonstrate disruptions in motivation and difficulty engaging in goal focused behaviours. Failure to engage in goal directed behaviour is a key therapeutic issue targeted by most third-wave psychological therapies. However, despite goal focused psychological therapies, those with chronic depression continue to demonstrate long-term impairments

in sustaining engagement in goal directed behaviours. Depressed individuals are theorised to experience “blunted” reward sensitivity that inhibits motivation to engage in approach goal directed behaviour. It is possible that some individuals with depression may also experience hypersensitivity to negative outcomes and negative affect, associated with personality or dispositional traits, which may precipitate avoidance behaviour and present additional barriers to goal engagement.

### **Aims**

The present study aimed to enhance the evolving evidence base on goal motivation in depression using two approaches. Firstly, a systematic review of the existing evidence base on goal motivation and depression was undertaken. Secondly, an empirical research study was conducted to explore relationships between depression, personality and anticipatory affect when goal focused cognition is manipulated. As a whole, the study aimed to consider the role of cognition, affect and personality, in order to enhance formulation of barriers to therapeutic goal engagement in chronic depression.

### **Systematic review**

#### **Introduction.**

The systematic review explored the existing evidence base on relationships of depression to approach and avoidance goal motivation.

#### **Method.**

To extract studies relevant to the exploration of relationship(s) of depression to approach and avoidance goal motivation, PsycINFO and PubMed electronic

databases were searched. Medical subject headings (MeSH) and key words relevant to depression, goals, approach, avoidance, motivation and engagement/disengagement were used. The search encompassed all articles ever published until October 2017, and additional hand searching was also used to identify relevant titles that were not identified via the database search. Extracted articles were; peer reviewed journal articles, written in English language, of quantitative empirical research (experimental, non-experimental and correlational design) with human samples aged 16 and above. N = 248 studies were identified and screened against stringent criteria of quality and relevance.

After screening for duplicates, specificity to approach / avoidance motivation and for having a direct measure of approach / avoidance motivation, N = 11 studies, all of cross-sectional design, were included in the review for assessment of methodological quality and bias. To evaluate risk of bias, the Appraisal Tool for Cross-Sectional Studies (AXIS) was selected due to its specific orientation to evaluating cross-sectional studies.

### **Findings.**

Heterogeneity in the application of measures of depression and in the use of approach and avoidance goal measures to infer goal motivation, presented substantial risk of bias. The reporting and application of outcome measures was also heterogeneous, which resulted that studies precluded meta-analysis. Instead, results were synthesised and presented thematically to reflect identified relationships between depression to approach and avoidance goal motivation,

along with variables considered to be associated with the onset and maintenance of such relationships.

Themes identified were: subjective importance of the goals, causal motivators of why the goal(s) would be accomplished or avoided, reported efficacy of achieving the goals and anticipated likelihood of goal attainment. Overall, depression was consistently found to relate to deficits in approach goal motivation, associated with pessimism, low self-efficacy and disengagement in perceivably unattainable goals. However, relationships between depression and heightened avoidance goal motivation were less consistent. Interestingly, studies included in the review explored cognitive factors only and neglected the role of affect in goal focused motivation. The importance of considering unexplored variables, whilst formulating relationships between depression and goal focused motivation was therefore emphasised.

## **Empirical study**

### **Introduction.**

The empirical study introduced the pertinence of anticipatory affect and personality to goal focused motivation when thinking about goals in outcome focused and process focused ways. Anticipatory affect referred to the affect that a person experiences in-the-moment when thinking about future goals. Of the two thinking styles, outcome thinking referred to mentally simulating what it would be like to have achieved a personally meaningful goal, whereas process

thinking referred to the mental simulation of the processes and steps that would be required or involved in order to attain a personal goal.

Outcome thinking is theorised to engage appetitive motivational systems via the consummatory nature of enabling individuals to pre-experience some of the positive affect that would be associated with goal attainment. Process thinking is theorised to facilitate goal engagement via the enhancement of preparatory skills such as planning and problem-solving, that supports self-regulation of affect and promotes sustained engagement in goal pursuit. Presently, lack of consensus exists in the literature as to whether outcome thinking or process thinking is more beneficial at facilitating goal directed behaviour.

Positive anticipatory affect is theorised to motivate approach goals, whereas efforts to regulate or avoid negative affect is theorised to underpin avoidance goals. When considering the potential role of affect on goal focused motivation, individuals with comorbid depression and Cluster C personality characteristics, a population known to experience particular chronicity in psychopathology, may present with complex disturbances in approach and avoidance motivation.

Individuals with depression are theorised to experience disruptions in positive affect, are thus likely to experience diminished approach motivation. Individuals with Cluster C personality psychopathology are theorised to experience hypersensitivity to negative affect, and are thus likely to demonstrate heightened avoidance motivation. The present study therefore aimed to explore whether relationship(s) exist between depression, Cluster C personality characteristics and approach and/or avoidance motivation behind goal pursuit.



Self-reported personality characteristics, depression, anxiety, and anticipatory affect, were measured before and after thinking in outcome focused and process focused ways, to explore relationships between the variables. It was expected that mood and personality variables would be interrelated and that depression, anxiety and higher self-reported levels of personality psychopathology would relate inversely to levels of baseline positive affect and positively with negative affect. Positive affect was expected to increase following outcome focused thinking, on the basis of consummatory mental simulation, whereas negative affect was expected to increase following process focused thinking, resulting from mental engagement in planning and problem solving. Those higher in self-reported levels of depression were expected to report lower scores on positive affect following outcome thinking (due to impairments in reward sensitivity), when compared to those with the low-to-no levels of depressive symptoms, and participants with higher frequencies of self-reported Cluster C traits were expected to report higher levels of negative affect than those with low Cluster C traits when engaging in process focused thinking, on the basis of heightened sensitivity to negative affect.

### **Method.**

The empirical study received ethical approval from the NHS Health Research Authority and Royal Holloway University Ethical committee prior to commencement.

A mix of student and community participants,  $N = 45$ , with ages ranging between 18 – 71 years, were recruited via opportunity sampling. The Patient Health Questionnaire-9 (PHQ-9), and the Generalised Anxiety Disorder (GAD-7) self-report questionnaires were used to measure levels of depressive and anxious psychopathology respectively. The International Personality Disorder Examination screening questionnaire (IPDE-SQ) was used to assess for the presence of self-reported personality characteristics. To measure self-reported positive and negative anticipatory affect, the “joviality” and “fears” subscales were taken from the Positive And Negative Affect Scale-X (PANAS-X).

After obtaining fully informed consent, participants completed the PHQ-9, GAD-7 and IPDE-SQ. Participants were given 75 seconds to generate as many personally meaningful goals as they could think of that they would like to achieve. Goals were ranked in order of importance to identify the four most important goals. A neutral word search was then administered for two minutes as a distractor task to regulate affect potentially roused by the goal generation task. Baseline anticipatory (positive and negative) affect was measured before participants were presented with one of their top four goals, selected via pre-randomised order, and asked to imagine and describe what it would be like to have achieved the goal. The task was then repeated immediately after with another of their goals. Anticipatory affect was subsequently recorded, followed by re-administration of the distractor task.

Anticipatory affect was recorded to provide a secondary baseline, before participants were re-presented with another of their goals but this time, asked to

imagine and describe all of the processes and steps that would be required to achieve the goal. This was repeated immediately after with their final goal, followed by another record of anticipatory affect. Participants were thanked and debriefed and those that had indicated distress via their baseline questionnaires and / or during the experimental task were signposted to relevant services.

### **Results.**

Results identified that depression, anxiety and personality Clusters A, B and C were correlated individually with the primary baseline measures of positive and negative affect. Despite correlations between mood and personality measures, only depression correlated significantly with baseline positive affect, whereby higher levels of depression related to lower levels of positive affect. Only Cluster C correlated significantly with baseline negative affect, whereby higher scores on Cluster C traits related to higher levels of negative affect. Mean scores on positive affect were significantly higher following outcome goal focused thinking, however negative affect did not significantly change under this condition. Conversely, mean scores on negative affect were significantly higher following process goal focused thinking, but positive affect did not significantly change. Between groups comparisons revealed that the highest third of scorers on depression reported significantly less positive affect before and after outcome thinking than the lowest scorers, however they illustrated a relative trend of increase in positive affect. The highest third of scorers on Cluster C traits reported significantly higher levels of negative affect after process thinking than

the lowest scorers, which illustrated a unique spike, or hypersensitivity in negative affect following this thinking style.

### **Conclusion.**

Limitations regarding the sample size, non-clinical sample demographic, style of recruitment and use of the IPDE-SQ, which has low specificity, may have biased statistical findings and overinflated inter-correlations that may have obstructed distinctions between personality variables. However, overall, outcome goal focused thinking appeared to induce positive anticipatory affect, whereas process thinking appeared to increase negative anticipatory affect. However, distinct affect response styles were evident in individuals with higher scores on depression and for those with the most Cluster C personality traits. Results do not wholly support the reward sensitivity theory, as the highest scorers on depression did demonstrate positive affect reactivity to outcome thinking, however their baseline positive affect was so low that the increase in positive affect after outcome thinking remained lower than the baseline of the low-to-no depression group. Outcome thinking alone may therefore be insufficient to shift affect to the extent of inducing approach motivation in depressed populations. Results also highlighted that those with Cluster C traits may experience heightened behavioural inhibition system (BIS) associated with hypersensitivity to negative affect which may amplify avoidance motivation.

### **Clinical implications.**

The study highlights the importance of considering personality and affect response styles when formulating and planning treatment approaches., as

individuals with comorbid depression and Cluster C personality psychopathology may experience a synthesis of inhibited sensitivity in positive affect and hypersensitivity in negative affect in response to thinking about future goals. Affect disruption is evident at the earliest stages of goal motivation (thinking about goals) and may present therapeutic barriers by inhibiting approach motivation and enhancing avoidance motivation. This study provides neuropsychological context of the mechanisms that may underpin more recent third-wave therapies such as Mindfulness-Based Cognitive Therapy, and Radically-Open Dialectical Behaviour Therapy. These approaches pay particular attention to the enhancement of meta-cognitive and affect awareness, along with tolerance and regulation of negative affect and have shown promising results at minimising relapse in chronic depression.

### **Integration, impact and dissemination**

The empirical study initially planned to compare anticipatory affect between a clinical sample with comorbid chronic depression and Cluster C personality to non-clinical controls. Recruitment failure, attributed to delays in ethical approval and Trust confirmation of capacity and over-reliance on clinician engagement for the purpose of participant referrals resulted that the study design changed to a non-clinical correlational design. These changes resulted in compromised ecological validity, loss of statistical power and an adjustment in the application of the IPDE-SQ. Nevertheless, the impact of results identified in the systematic review and empirical study propose therapeutic implications for engaging this population in goal focused thinking, as effectiveness of goal focused engagement

may be optimised via the order of goal focused thinking (outcome before processed thinking) and preparatory work involving up-regulation of positive affect and awareness, tolerance and down-regulation of negative affect in advance of process thinking may be beneficial in supporting goal focused engagement. These results are to be disseminated via presentation to NHS clinicians and trainee psychologists and via academic journal publication.

# **The relationship of depression to approach and avoidance goal-directed behaviour; a systematic review**

## **Abstract**

Failure to engage in goal directed behaviour (GDB) is a key feature of emotional disorders targeted by most third-wave psychological therapies. However, despite theoretical and empirical inquiry into broad motivational deficits associated with depression, research into relationships between goal focused motivation and depression is presently emergent, and yet to have been systematically reviewed. The present systematic, evidence-based review employed a rigorous search strategy across PsycINFO and PubMed electronic databases. Medical subject headings (MeSH) and key words pertaining to depression, goals, approach, avoid and engagement disengagement, were applied to extract studies pertaining specifically to the exploration of relationship(s) of depression to approach and avoidance goal motivation.

The search yielded N = 11 studies, all of cross-sectional design, which were assessed for methodological quality and bias. Results were synthesised and presented thematically to reflect identified relationships between depression to approach and avoidance goal motivation, along with variables deemed to be associated with the onset and maintenance of such relationships. Themes associated with goal motivation were: subjective importance of the goals, causal motivators of why the goal(s) would be accomplished or avoided, reported efficacy of achieving the goals and anticipated likelihood of goal attainment. Overall, depression was consistently found to relate to deficits in approach goal

motivation, notably pessimism, low self-efficacy and premature disengagement in perceivably unattainable goals. Relationships between depression and heightened avoidance goal motivation were less consistent.

Though the studies reviewed predominantly reflect similar findings of wider studies pertaining to depression and motivation, heterogeneity in the application of measures of depression and in the use of approach and avoidance goal measures to infer goal motivation, present substantial risk of bias to consider. The present review highlights the emergent state of the evidence base in this particular context. It also emphasises the importance of considering variables yet to be researched when drawing conclusions on relationships between depression and motivating factors behind goal directed behaviour.

## **Introduction**

### **Rationale.**

Goals are cognitive representations of perceived positive or negative outcomes that influence and motivate behaviour (Elliot, & Thrash, 2002). Goal pursuit is integral to human psychosocial development, as goal attainment can foster a sense of mastery and achievement, which can be used to inform cognitive evaluations of oneself (Jennings, 2004) and can be used to scaffold expectations for the future. Amongst studies of predominantly non-clinical samples, subjective wellbeing (SWB) is known to be positively associated with engagement in goal directed behaviour (Klug & Maier, 2015), more so in the context of progressing towards goals, rather than goal attainment itself. Klug and Maier (2015) propose



that goal pursuit may be associated with higher levels of SWB than goal attainment itself, due to dynamic engagement in multiple intrinsic experiences of accomplishment as a person moves closer towards full attainment. It is theorised that such intrinsic experience may also contain positive anticipatory affect, for example, feelings of excitement, in anticipation of further success, which may further motivate behavioural goal pursuit.

It is reasonable, then, to assume that positive cognitive and affective experience associated with goal pursuit may be responsible for motivating and sustaining goal directed behaviour (GDB). However, it is not known to what extent clinically low levels of well-being, characterised by clinical symptoms of depression, for example, loss of interest or pleasure in activities, fatigue and depressed mood (WHO ICD-10, 2016), may relate to differences in engagement or motivation towards goal pursuit, particularly as cognitive and affective responses to external and internal stimuli are known to differ markedly to non-depressed individuals (Blysmá, Morris & Rottenberg, 2008).

Despite known associations between goal pursuit and positive SWB, current models of goal motivational systems remain theoretical in proposing cognitive and affective processes that may drive GDB. Gray (1982; 1987) postulated two distinct neuropsychological motivation systems, one oriented to avoiding or regulating exposure to aversive experiences, known as the Behavioural Inhibition System (BIS), the other oriented to the appetitive pursuit of approaching perceivably appealing stimuli, known as the Behavioural Activation System (BAS). The former, (BIS), motivates avoidance type behaviours as a result of affective sensitivity towards

punishment, non-reward and unfamiliarity, and is associated with negative emotions such as fear, anxiety, and sadness (Erdle & Rushton, 2010). The latter, (BAS), motivates behaviour towards approaching goals, due to sensitivity towards reward and non-punishment, which is associated with hope and positive affect (Erdle & Rushton, 2010; Gable, Reis, & Elliot, 2000). Fowles (1994) proposed clinically pertinent links between high BIS relating to both depression and anxiety, and disrupted or minimised BAS sensitivity being associated with depressive symptoms (Markarian, Pickett, Deveson & Kanona, 2013).

In line with Gray (1987), more recent neurobiological evidence has supported the theory that depressed individuals experience “blunted” reward sensitivity, via diminishments in motivation to pursue, and in reactivity to, reward (Alloy, Olino, Freed & Nusslock, 2016). As such, failure to experience positive affective reinforcement (reward) may consequentially inhibit approach motivation and GDB. Foti, Carlson, Sauder and Proudfit (2014) also identified neurobiological abnormalities in reward processing amongst individuals with Major Depressive Disorder (DSM-V), however such deficits were distinguished to exist in a specific subgroup of the depressed population. Reward processing deficits were evident amongst depressed individuals that presented with impaired mood reactivity to positive events, though were not evident amongst depressed samples where mood reactivity was intact (Foti et al., 2014). It is possible then, that disrupted affective reactivity and associated sensitivity to reward may be key psychopathological factors involved with approach motivation and associated GDB in depression.

Research conducted by Elliot & Thrash (2002) extended Gray's (1982) model to evidence and conceptualise approach and avoidance processes as a "net of neurobiological sensitivities" (p.867), that respond to both conditioned and unconditioned stimuli. A dispositional trait-based approach to understanding approach and avoidance processes has been explored, to the extent that approach and avoidance processes have been found to correlate with dispositional traits of extraversion and positive emotionality, and neuroticism and negative emotionality respectively (Elliot & Thrash, 2002; 2010). Similarly, these dispositional traits are also known to relate to the onset and chronicity of depression (Klein, Kotov & Bufferd, 2011; Kotov, Gamez, Schmidt & Watson, 2010).

Although theoretical variations in cognitive and affective motivational systems exist (e.g., BIS/ BAS Gray (1982; 1987); Self-regulation theory (Carver & Scheier, 2004); Regulatory Focus theory (Higgins, 1998); Approach/ avoidance temperament (Elliot & Thrash, 2002)), it is broadly accepted that approach motivation refers to pursuit of a positive outcome that is yet to exist, associated with hope and anticipation of positive reward, whereas avoidance motivation is driven by a preference to sustain a current state and thus prevent a potential negative outcome from occurring (Sherratt & MacLeod, 2013).

Current evidence pertaining to depression and motivational systems differ in their exploration of various theoretical aetiologies, though consistently illustrate evidence that motivational deficits exist in depressed samples when compared with non-clinical populations. Inevitably, broad motivational barriers also impact on an individual's ability to engage in specific goal focused behaviours, to the extent that

failure to engage in GDB is a key feature of emotional disorders targeted by most third-wave psychological therapies (Brown, et al., 2011).

Theoretical variation and understanding of such barriers, therefore warrants essential scientific enquiry to ascertain the true nature of relationship(s) that may exist between depression and both approach and avoidance GDBs, in order to fully inform clinical formulation of presenting psychopathology and support engagement in subsequent goal focused psychological interventions. Despite the long-standing theoretical basis of goal oriented motivation, empirical research into the nature of a relationship between approach and avoidance goal motivation and clinically depressive psychopathology is presently emergent and is yet to be systematically reviewed.

### **Objectives.**

The aim of the present systematic review was to review studies that examined the relationship between approach and avoidance motivation and depression. The review aimed to target empirical research on depression, whereby interventions and/ or assessment measures specifically focused on approach and/ or avoidance goal motivation.

The review aimed to clarify whether, and in what way, depression relates to approach and avoidance goal focused motivation.

## **Method**

The review followed the Preferred Reporting Items for Systematic Review and Meta-analysis protocols (PRISMA-P) (Moher, et al., 2015) statement in conjunction with PRISMA-P Elaboration and Explanation guidance (Shamseer, et al., 2015) for reporting, in order to ensure rigour and quality of review methodology.

### **Eligibility criteria.**

Studies were selected according to the following criteria:

#### ***Study designs.***

Due to the emergent stage of literature relevant to the subject of inquiry, study designs that were deemed acceptable for review consisted of: experimental design, (including both randomised and non-random assignment); semi-experimental (e.g. quasi-experimental, field experiments); and correlational design (including observational, cross-sectional studies). Only quantitative study designs were included. A prerequisite to study design was the inclusion of at least one specific measure of approach and/or avoidance goal motivation and a measure of depression.

#### ***Participants.***

Only human participant populations were included. Adult and adolescent samples were accepted, with minimum age of 16 and no upper age limit. Child and adolescent studies with participant samples younger than 16 years were excluded. Studies were selected on the basis that at least one participant population within each study represented a depressed sample and/or distinguishable levels of

depressive symptoms, verified by the application of at least one reliable measure of depression.

***Comparators.***

Given the early stage of progression from theoretical to empirical enquiry, several comparisons were deemed relevant to include: To review relationship(s) between depression and approach / avoidance goals, group comparison for correlational designs, where depression levels were correlated with the goal measures, were to be included. Comparisons of depressed populations with non-clinical/ non-depressed populations, and of depressed populations with other clinical populations were of particular interest. As also, were comparisons between depressed populations distinguished by varying degrees of symptom severity. Longitudinal follow-up comparisons were also of interest, should such studies exist.

***Setting.***

No restrictions were implemented regarding type of setting.

***Language.***

Only studies written in English were included. This requirement was included as part of the search criteria; therefore, potentially relevant non-English article titles were not reviewed.

***Time frame.***

The search was carried out in October 2017. All studies ever published up until October 2017 were therefore included in the search.

### ***Information sources.***

A search strategy using Medical subject headings (MeSH) and key words pertaining to depression, goals, and engagement/ disengagement, was employed to search PsycINFO (EBSCOhost interface, 2017) and PubMed (NCBI interface, 2017) electronic databases. Two electronic databases were searched in order to ensure that variability in database indexing was accounted for and thus provided a comprehensive search of the subject (Shamseer, et al., 2015). The database search was supplemented by additional hand searching to ensure full literature saturation. This involved reviewing the reference lists of relevant studies and reviewing the full personal publication lists of article authors. Personal publication lists of prominent authors cited within relevant studies were also accessed via database filtering and their professional online profiles and were reviewed for additional relevant articles.

### **Search strategy**

Key terms used in the search strategy were: “depression” OR “depress” OR “depressed” OR “depressive” OR “major depressive” OR “major depressi” in the title; AND “goal” OR “goals” OR “goal directed” OR “goal directed behaviour” OR “behaviour” OR “behaviours” in the title; AND “avoid” OR “avoidance” OR “approach” OR “engage” OR “engagement” OR “engaging” OR “disengage” OR “disengagement” OR “disengaging” OR “motivation” OR “motivators” inclusive within the title and/ or abstract. The search was limited to published, peer reviewed journal articles of human participants, published between 1997-2017, that were written in English language and excluded dissertations.

**Study records.*****Data management.***

Study titles ascertained from both PubMed and PsycINFO searches were exported to a Microsoft Excel database software package. They were sorted alphabetically by title and author to identify duplicate publications. These were subsequently removed to avoid double counting (Shamseer, et al., 2015). The software package was then used to record and summarise the further screening process, which was then embedded in tabular format to the main review documented using Microsoft Word.

***Selection process.***

Titles and abstracts identified by the search strategy were screened against the review inclusion criteria by one reviewer. Relevant articles were then discussed with a further independent reviewer to corroborate objectivity of the review process of the identified articles.

***Data collection process.***

A data extraction form was developed (see Tables 1& 2) in advance of data collection to display key details of each study deemed pertinent to review. Pertinence of data items for inclusion in the extraction form was corroborated by the independent reviewer to minimise bias of data extraction. Data extraction was then carried out by a single reviewer.

**Data items.**

Items sought for data extraction included: details of population characteristics such as; age bracket (adult/ adolescent), whether the depressed



sample was of a clinical/ non-clinical population (specifying further details of clinical and non-clinical recruitment context). The number of participants in each study was also extracted in order to consider statistical power, along with gender frequencies to review potential gender biases in study conclusions. To ensure that studies were compatible with eligibility criteria, study design and specific measures of depression were also reported. It was anticipated that measures of depression utilised by studies may vary in nature and in reliability, and also in thresholds of depression severity. Depression cut-off scores were therefore also included in the extraction form.

In the event that the desired data items were not available in the study text, it was planned that study authors would be approached via e-mail in accordance with reported contact details within the article and/or e-mail correspondence addresses outlined on professional online profiles e.g. linkedin, university profiles, Researchgate.

### **Outcomes and prioritisation.**

All goal-specific measures used by each study were extracted and reported in tabular format in conjunction with a qualitative description of each measure. Additional measures employed that were supplementary to the eligibility criteria that were deemed to add qualitative value to the interpretation of results were also reported. Methods of analysis were extracted to ensure scientific rigor, and findings pertaining to approach and avoidance goal motivation were summarised. Secondary outcomes ascertained via additional goal oriented outcome measures, (inclusive of goal measures non-specific to approach or avoidance), were also summarised.

### **Risk of bias individual studies.**

In order to assess potential risk of bias in methodologies and outcome reporting of individual studies, a critical appraisal tool was utilised. The tool was selected following preliminary review of the extracted data, whereby it transpired that all eligible studies selected were of cross-sectional design. As there remains wide variation and limited agreement in regard to the content and assessment methods amongst tools designed to assess quality and risk of bias (Shamseer et al., 2015; Sanderson, Tatt & Higgins, 2007), an assessment tool designed specifically to address prominent issues associated with cross-sectional studies was sought.

It has been argued that scale design assessment tools can be misleading and unreliable, as scores are not linear and are not always equally weighted in regard to varying domains assessed within, or across wider scales (Downes, Brennan, Williams, & Dean, 2016; Jüni, Witschi, Bloch, & Egger, 1999). Scale design tools were thus excluded due to the risk of being problematic at illustrating meaningful comparisons and presenting reporting bias. In efforts to adhere to guidelines proposed by Sanderson, Tatt and Higgins (2007), desirable requirements when selecting the assessment tool were: specificity to study design and subject area; address a small number of key areas; demonstrate careful development and of validity and reliability; be of checklist design rather than scale.

The Appraisal Tool for Cross-Sectional Studies; AXIS (Downes, et al., 2016) was selected due to its specific orientation to evaluating cross-sectional studies using a simple twenty item checklist of “yes”, “no” and “do not know/ comment” outcomes. The tool assesses methodological quality in terms of both design and

reporting, in addition to addressing risk of bias in both domains. AXIS was developed using the Delphi method of rigorous, systematic consultation and review by an expert panel of multidisciplinary professionals (Okoli, & Pawlowski, 2004) with agreement of >80% that all items were relevant and appropriate for use by non-expert users. Accompanying the AXIS tool exists supplementary material (Downes, et al., 2016) to ensure consistency in interpretation and utility of the tool. Risk of bias assessment for all eligible studies in the present review was completed by one, non-expert reviewer utilising the comprehensive AXIS guidance.

Studies were individually scrutinised for evidence of risk of bias at both the outcome and study level and reported qualitatively in the data synthesis. In the present review, studies were not wholly excluded on the basis of bias, however, potential for biases were described to highlight caution when drawing conclusions.

#### **Data synthesis.**

Reliability of findings were determined via consideration of statistical significance ( $p < 0.05$ ) and associated effect sizes where reported. Study results were synthesised based on review of comparable significant and non-significant results, though heterogeneity in study aims and measures existed across studies. Though homogeneity was apparent in the utility of some goal measures across a number of studies in the review, studies precluded meta-analysis on the basis of heterogeneity in reporting of these outcome measures. This was primarily due to diversity in the intended purpose of the measure(s) across the varying studies.

Diversity in the multiple variables explored across the study yield also resulted that relationships between depression and approach and avoidance

motivation would not adequately be reflected via meta-analysis at this stage. As such, in accordance with guidance produced by The Centre for Reviews and Dissemination (Tacconelli, 2010) narrative synthesis was selected in the first instance, to collate and synthesise the findings in this subject domain using textual description in order to “tell the story” (Popay, et al., 2006) of the emergent evidence and inform on appropriateness of future methods (Tacconelli, 2010). Guidance from Popay, et al., (2006) in addition to PRISMA-P reporting guidance (Shamseer, et al., 2015) was adhered to, in order to ensure transparency and minimise risk of reporting bias.

In addition to narrative description, summary data detailing sample size and characteristics, methods, outcome measures, main findings significant to  $p < 0.05$  level of confidence relevant to depression and motivation measures, and effect sizes (where sufficient data was available), were presented in tabular format (see Table 3). Relevant non-significant findings were also reported in order to prevent reporting bias influencing confidence in conclusions drawn.

#### **Meta-bias(es).**

To address potential meta-bias(es) the following action was taken: For publication bias (Ahmed, Sutton & Riley, 2012), journal sources of included studies were scrutinised to identify any trends in journal prerequisites and potential motivation to prioritise literature detailing evidence that is statistically significant or presenting clinically favourable outcomes deemed more likely to be cited by others (Ahmed, Sutton & Riley, 2012). Publication bias such as this, risks failure to publish studies of

non-significant findings, which may also be relevant to balancing the strength and direction of conclusions drawn across the evidence base.

In reviewing potential for selective outcome reporting bias, outcomes were compared with methodology and study protocols (where available) and were recorded within the AXIS tool. Other biases reviewed in accordance with the AXIS tool included; consideration of data availability bias, resultant from reporting and management of participant non-response/unavailable participant data (Ahmed, Sutton & Riley, 2012), risk of methodological biases, and potential impact of funding sources or conflicts of interest that may influence interpretation of results (see Appendix I).

#### **Confidence in cumulative evidence.**

All studies included in the review were cross-sectional, quasi-experimental design, therefore, in accordance with the Joanna Briggs Institute Levels of Evidence scale (Briggs, 2014), the strength of the evidence included in the present review was assessed as being of level four out of five, with one being strongest and five being the weakest form of empirical research.

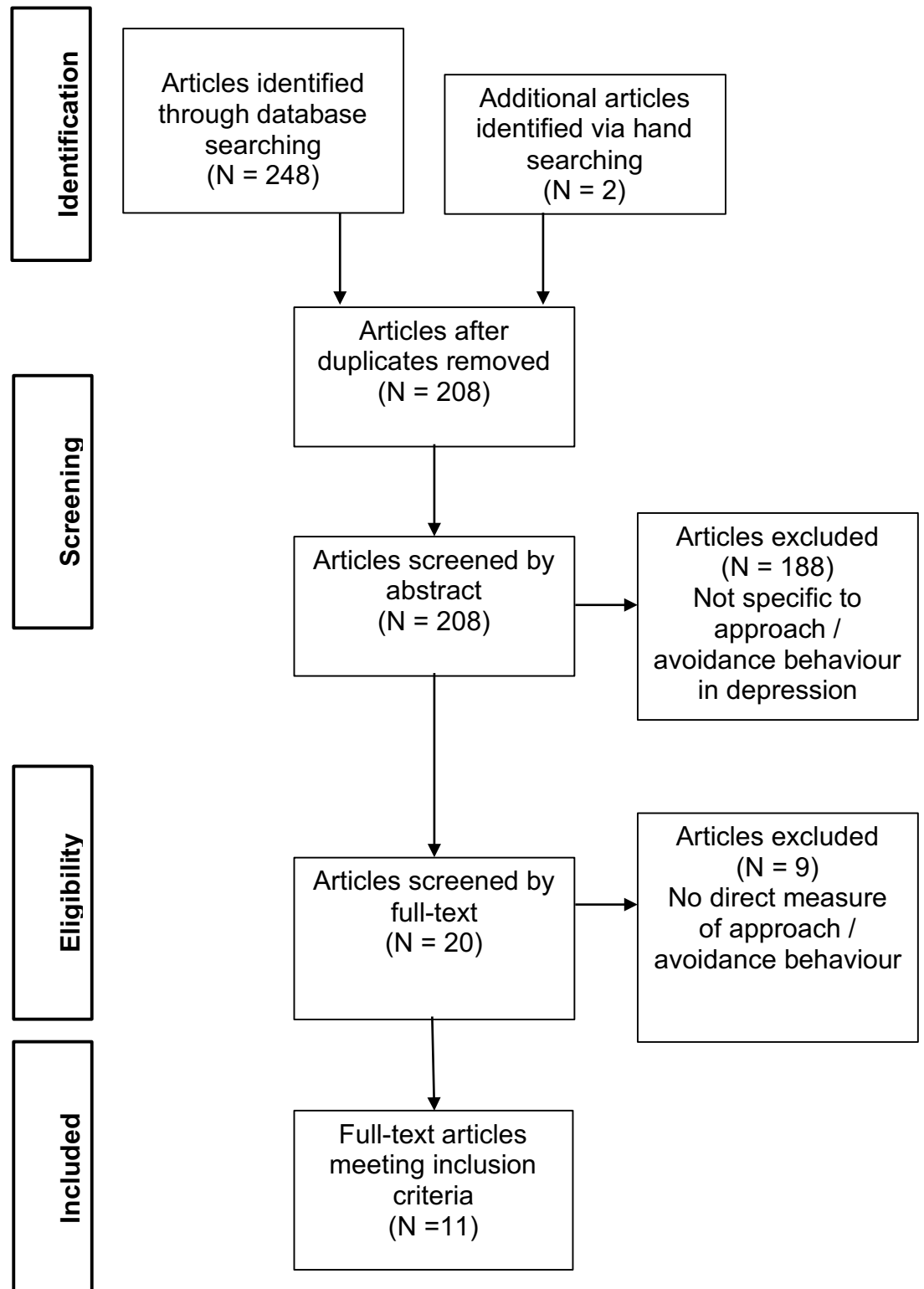
### **Results**

#### **Identification.**

The database searches yielded a combined total of 207 studies, following removal of duplicates, of which, 188 were excluded following abstract screening due to absence of study aims and methodologies pertaining specifically to approach and avoidance motivation/ behaviour and depression. Two additional articles were included via hand searching resulting that 20 articles were screened by full text. Nine

articles were then further removed following absence of a direct measure of approach/ avoidance motivation/ behaviour, resulting that eleven articles were identified as meeting inclusion criteria. These articles were subsequently included in the review (See Fig. 1).

**Fig. 1** Summary of literature search results based on PRISMA guidelines.



### **Study characteristics.**

Of the eleven studies included, four studies took place in Australia, five were undertaken in the United Kingdom and two were conducted in the United States of America. All eleven studies used cross-sectional designs, with participant sample sizes ranging from 44 to 136, median 81, IQR 112-56. Sample ages spanned between 16 years to 81 years with only four studies comprising of clinically depressed participants in the depression group. The remaining seven samples were recruited from university (N = 3), high school (N = 3), and community (N = 1) populations. Recruitment methods included self-selected samples and convenience sampling, however four studies failed to state the sampling methodology. Three further studies were also not explicit on sampling methodology, though sampling was inferable via wider sample context. Seven screening measures of depression were employed across studies, which included both self-report and structured interview methods.

One study compared non-depressed with previously depressed samples (Vergara & Roberts, 2011). This was included in the present review on the basis that, in addition to a screening measure for prior episode(s) of depression, a measure of current depression was also utilised, which adequately distinguished current differences in levels of depressive symptoms between the two groups that both approach and avoidance variables were statistically compared with; despite being deemed as in remission, the previously depressed group reported significantly higher mean severity in depressive symptoms (falling within the “mild depression” range) than the never depressed group (scoring within the “minimal range”).



Nineteen goal-related measures were applied across the study yield, all of which were self-report measures. In order to correlate or compare individual variables hypothesised to relate approach / avoidance goal motivation with symptoms of depression, separate measures were applied. These were predominantly used in conjunction with a preliminary measure that had specifically elicited approach and avoidance goals. The majority of studies conducted between groups comparisons of depressed samples with not depressed (control) groups, however three studies used single sample correlational designs (see Table 1).

**Table 1.**

Summary table of study characteristics for reviewed evidence of relationship of depression to approach and avoidance goal-directed behaviour

Ref no.	Name, country and date	Design	Sample	Sampling method	Clinical sample	Group comparisons	Depression measure, threshold for depression	Goals measure(s)
1	Belcher & Kangas, Australia, 2014	CS	Adult (age 18-60)	Self-selecting	N	Two groups n=60 <i>Depressed</i> n=30 <i>Not depressed</i> n=30	SCID-I depression module, structured interview BDI, n/a (covariate)	Goals task Perceived skills task
2	Coats, Janoff-Bulman & Alpert, America, 1996	CS	Adult university students (age unspecified)	Self-selecting	N	Single group ( <i>undergraduate students</i> ) N = 81	Zung self-rating depression scale	Personal strivings task Global evaluations of goals
3	Dickson & MacLeod, Australia, 2004a	CS	Adolescents (age 16-18)	Not reported	N	Single group ( <i>High school students</i> ) N = 144	HADS, n/a	Goals task The achievement goals questionnaire Consequence task
4	Dickson & MacLeod, Australia, 2004b	CS	Adolescents (age 16-18)	Not reported	N	Four groups N =112; <i>High anxiety</i> N = 27 <i>High depression</i> N = 25 <i>mixed</i> N = 30 <i>Not depressed or anxious</i> N = 30	BDI, $\geq 14$	Goals task Plans task
5	Dickson & MacLeod, Australia, 2006	CS	Adolescents (Age 16-18)	Convenience	N	Two groups N = 56 <i>Dysphoric</i> N = 28 <i>Not dysphoric</i> N = 28	BDI, $>21$	Goals task Goals explanation task Personal control task Goals likelihood scale
6	Dickson & Moberly, UK, 2013	CS	Adult (age 18-81)	Self-selecting	Y	Two groups N = 44 <i>Depressed</i> N = 21 ( <i>Primary care teams &amp; mental health Trusts</i> ) <i>Not depressed</i> N = 23	SCID-I, structured interview BDI-II, $>13$	Goals task Goal explanation task
7	Dickson, Moberly & Kinderman, UK, 2011	CS	Adult (age 18-81)	Self-selecting	Y	Two groups N = 46 <i>Depressed</i> N = 23 ( <i>Primary care teams &amp; mental health Trusts</i> ) <i>Not depressed</i> N = 26	SCID-I, structured interview BDI-II, $>13$	Goals task Goal importance Goal explanation task Personal control task Goals likelihood scale
8	Dickson, Moberly, O'Dea & Field, UK, 2016	CS	Adolescent & Adult (age 16-67)	Self-selecting	Y	Two groups, N = 93; <i>Depressed</i> N = 42, ( <i>engaged in low intensity IAPT interventions</i> ) <i>Not depressed</i> N = 51, <i>matched community sample</i>	PHQ-9, $\geq 9$ Structured interview	Goals task Goal importance Goals likelihood Goal adjustment scale
9	Sherratt & MacLeod, UK, 2013	CS	Adult (age 20-60)	Self-selecting	Y	Two groups N = 59 <i>Depressed</i> N = 26, ( <i>outpatient psychological treatment service</i> ) <i>Not depressed</i> N = 33, <i>community sample</i>	PHQ-9, $\geq 10$	Goals task Underlying motivation task
10	Vergara & Roberts, US, 2011	CS	Adult (age 18-27)	Not reported	N	Two groups ( <i>undergraduate students</i> ) N = 83 <i>Previously depressed</i> N = 43 <i>Never depressed</i> N = 40	PHQ-9 current and lifetime version, $\geq 5$ items "more than half the days" + either item 1 or 2 endorsed BDI-II, n/a (covariate) The MINI, structured interview	Goals task The revised Goal Commitment scale Spontaneous implementation intention scale
11	Winch, Moberly, & Dickson, UK, 2015	CS	Adult (age 18-51)	Not reported	N	Single group ( <i>undergraduate students</i> ) N = 136	PHQ-9, n/a	<i>All measures completed online</i> Goals task Goal importance task Goal motives task

### **Methodological quality.**

Application of the AXIS tool (Downes, et al., 2016) resulted that thorough evaluation of methodological quality and biases was undertaken. Studies were reviewed individually to determine biases pertaining to methodological rigour, reporting omissions, power, and confounds (see Appendix I).

In order to minimise risk of bias in the outcome reporting and data synthesis in the present review, significant methodological issues identified amongst studies were firstly exposed and attended to.

### **Measures.**

There was diversity in the use and interpretation of measures, to the extent that where studies had employed the same measure, the cut off scores and interpretations were incongruent.

### ***Depression.***

All self report measures of depression had established validity, with internal consistencies of  $\alpha \geq .79$  (Biggs, Wylie & Ziegler, 1978). However, where the same screening measure was employed across more than one study, thresholds for classification of the depressed samples were discrepant. For example, Dickson and MacLeod (2004b) used Beck Depression Inventory (Beck & Steer, 1987) cut-off scores of  $> 14$ , representative of “mild to moderate” depression (Beck, Steer and Carbin, 1988), whereas Dickson and MacLeod (2006) used scores of  $> 21$  (within the “moderate to severe” range) to define their depressed sample. BDI scores across both studies also differed in range of severity of their depressed populations, as BDI scores within Dickson & MacLeod (2004b) study spanned across three levels of

severity, from “mild to moderate” to “extremely severe” depression, whereas Dickson and MacLeod (2006), scores fell within “moderate to severe” and “extremely severe” levels of depression only. Both studies used scores of 7 or less to represent their non-depressed control group, indicating good specificity of the non-depressed population, however, discrepancies in cut-off scores and range of severity within the depressed samples mean that studies may have illustrated less sensitive or inconsistent representations of depression when compared to controls and have potentially obstructed the validity of between-study comparisons. It is also noteworthy, that the adolescent sample used in Dickson and MacLeod (2004b) were screened for depression using the BDI against adult norms which, although has been extensively used amongst adolescent samples, has been found to result in inflated false positive rates (Young, Miller & Khan, 2010) and may have over-estimated the self-reported levels of depression.

The PHQ-9 has been found to be a sensitive and specific measure for detecting the presence of diagnostic properties of major depressive disorder with cut-off scores between 8-11 (Manea, Gilbody & McMillan, 2012). Dickson, Moberly, O’Dea and Field (2016) and Sherrat and MacLeod (2013) both appropriately applied cut-off scores within this range (9 and 10 respectively), to identify their depressed samples. However, non-depressed control groups were distinguished by scores falling only  $\geq 1$  point below each specified threshold for depression. Individuals included within the control group in each study may therefore have also scored within a margin of error that potentially diminishes the validity of the distinction between groups. This is pertinent also when making comparisons between studies,

as participants within Sherratt and MacLeod (2014) study that scored 9 would have been allocated to the non-clinical control group, whereas the equivalent score constituted a clinical group allocation within Dickson, et al., (2016). Manea, Gilbody and McMillan (2012) recommend a score of 10 as optimal cut-off for distinguishing depression. This score represents “moderate” depression (Kroenke, Spitzer & Williams, 2001) and may serve as a more reliable distinction between groups, particularly when compared with sub-clinical scores of  $< 8$ , as this would present a more reliable between-group difference of  $\geq 3$ .

One study utilised the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) to screen for symptoms of depression. Despite high reported Cronbach’s alpha reliability at detecting depressive symptoms the measure was specifically designed for use within hospital context and was therefore acknowledged by the authors as an “unusual” measure of depression to utilise (Dickson & MacLeod, 2004a). Psychometric comparison of HADS to the PHQ-9 for measuring depression concluded that both measures demonstrate “acceptable reliability, convergent and discriminant validity, and responsiveness to change” (Cameron, Crawford, Lawton & Reid, 2008, p.33), however measures diverge significantly in regard to measurement of symptom severity, with PHQ-9 categorising a greater range of severity of depressive symptoms. Depression severity measured by the PHQ-9, has been found to correlate highly with the BDI (Martin, Rief, Klaiberg & Braehler, 2006), indicating that the PHQ-9 may be a more sensitive and valid measure of symptom severity than HADS. Consistent use of the PHQ-9 across

research, including shared consensus on cut off scores may therefore serve to distinguish a more reliably homogeneous sample.

One study that pre-dates the development of all other aforementioned depression measures, used the Zung Self-rating Depression Scale (SDS; Zung, 1965). Despite the age of this measure, recent comparisons have demonstrated that the SDS remains an acceptable predictor of PHQ diagnoses and demonstrates high sensitivity to the detection of clinical symptoms of depression. Relationships to depression identified in this study therefore remain valid.

Clinical interview methods were also utilised in five studies, with three using the SCID-I (First, 1997) to determine the presence of depression. The SCID-I is a reliable measure of depression, with high sensitivity and specificity of 95% and 84% respectively (Pettersson, Boström, Gustavsson, & Ekselius, 2015), however it requires specialist training to reliably administer. Two out of three studies reported that researchers were specially trained in SCID-I administration, however, Belcher and Kangas (2014) failure to report on prior interview administration training results that reliability of their sample screening is unclear.

### ***Goals.***

Across the eleven studies, nineteen different goal measures were used to explore relationships between depression and future goals, with five measures being utilised across more than one study. One goal measure, “goals task” (Dickson & MacLeod, 2004a) was used consistently across ten out of eleven studies, however the purpose behind the application of this measure was inconsistent. For example, some studies used the goals task to report comparisons between the number of

goals that participants generated for approach and avoidance conditions with the presence/ absence of depressive symptoms (see Table 2), however most studies utilised this task as a precursor to simply elicit goals for further exploration into possible motivating factors behind them. Heterogeneity in the application of this measure resulted that meta-analysis of goal frequency was not possible, as frequency data were not always reported.

Twelve of the nineteen measures used (63%) were novel, based on theoretical exploration of goal motives. Of these, five were simple likert-type scales that did not report inquiry to construct validity, though were transparently constructed to reflect high face validity. Seven studies elicited qualitative self-report data that were subsequently coded to reflect approach or avoidance motivations. Studies that coded qualitative data all reported good blind inter-rater agreement and thus demonstrated high internal consistency ranging from  $K \geq .73$  to  $K=1$ . Four measures including The Achievement Goals Questionnaire (AGQ, Elliot & Sheldon, 1997), The revised Goal Commitment scale (Klein, Wesson, Hollenbeck, Wright, & DeShon, 2001), the Spontaneous implementation intention scale (Brickell, Chatzisarantis, & Pretty, 2006), and the Goal Adjustment Scale (Wrosch, Scheier, Miller, Schulz, & Carver, 2003) were reported to have adequate to good internal consistency, with Cronbach's alpha reliability ranging from  $\alpha = .66 - .92$  ( $M=.83$ ,  $SD=.09$ ) for approach and avoidance motivations. Studies that used three further measures, which had prior applications (Perceived skills task (Crane, Goddard & Pring, 2009), Goal motives task (Ryan & Connell, 1989) and Personal strivings task

(Emmons, 1991)) failed to report alpha reliabilities, though these measures also demonstrated high face validity based on their transparent and simple design.

Goal measures were synthesised thematically to reflect their intended purpose of inquiry. Themes identified were: subjective importance of the goals, causal motivators of why the goal(s) would be accomplished or avoided, reported efficacy of achieving the goals and anticipated likelihood of goal attainment (see Table 2).



**Table 2.**  
Themed summary table of goal measures employed across studies

		Study reference no.											
	Measure	Description	1	2	3	4	5	6	7	8	9	10	11
Elicit goals	Goals task (Dickson & MacLeod, 2004a)	Participants given an example of an approach and an avoidance goal, then asked to list four desirable goals that they would like to achieve and four undesirable goals they would want to avoid. Goal conditions were prefixed with “it will be important for me to try to” and “it will be important for me to try to avoid”. Goals were instructed to be personally meaningful and relate to any time in the future.	✓		✓	✓	✓	✓	✓	✓			✓
	Modified Goals task (Dickson & MacLeod, 2004a)	Goals task (Dickson & MacLeod, 2004a) instructions were modified to elicit current approach and avoidance goals that participants typically engage in.										✓	
	Personal strivings task (Emmons, 1991)	Participants instructed to think of objectives they typically try to accomplish in their everyday behaviour and write down as many strivings as they can. Participants able to write up to 20 goals, encouraged to choose from approach and avoidance prompts (“it will be important for me to.. / avoid..”) to begin each sentence.		✓									
	The Achievement Goals Questionnaire (AGQ, Elliot & Sheldon, 1997)	Participants rate the extent to which listed approach goals (N = 29), and avoidance goals (N = 22) are representative of their typical daily behaviour, on a likert scale from one (not at all) to nine (perfectly).			✓								
Subjective importance	Past happiness derived from success	Participants asked to rate on a 9 point likert scale how satisfied or happy they have felt when they were able to achieve success in the past.		✓									
	Consequence task	Participants asked to identify and describe the one most personally meaningful consequence of either achieving and not achieving each goal (elicited via goals task). Consequences were coded as either approach or avoidance motivation driving goal pursuit.			✓								
	Underlying Motivation task	Participants asked to list as many reasons as possible to justify why each goal (identified via goals task) was important to them. Instructions were “write down as many reasons as you can think of why this goal matters, that is, why you want this goal to happen. Responses were coded for whether they reflected approach/ avoidance motivation.									✓		
	Goal importance task	a) Participants asked to rate the subjective importance of each approach and avoidance goal (identified via goals task). Goal importance was rated from 1 (not very important) to 7 (extremely important), or on likert from 1 (not very important) - 9 (extremely important).		✓					✓	✓			✓
	The revised Goal Commitment scale (Klein, Wesson, Hollenbeck, Wright, & DeShon, 2001)	Participants asked to rate their commitment to their most important approach and avoidance goals (identified via goals task, N = 2), via the extent to which they agree with five statements using a five point likert scale anchored by strongly agree/strongly disagree.											✓

**Table 2.**  
*Themed summary table of goal measures employed across studies*

	Measure	Description	Study reference no.										
			1	2	3	4	5	6	7	8	9	10	11
Causal motivators	Goal explanation task (Dickson & MacLeod, 2006)	Participants asked to generate plausible, causal reasons why the two most important approach and avoidance goals (identified via goals task, N = 4) would or would not be achieved. Prompts for each condition included "reasons why this would be accomplished?"; "reasons why this would not be accomplished?" for approach goals and "reasons why this would be avoided?"; "reasons why this would not be avoided?" for avoidance goals.						✓	✓				
	Goals explanation task	Participants list reasons why each of their two most important approach and avoidance goals (elicited via goals task, N = 4) would and would not be achieved. Prompts for approach condition were: "Reasons why this would be accomplished?" and "Reasons why this would not be accomplished?"; avoidance prompts were: "Reasons why this would be avoided?" and "Reasons why this would not be avoided?".					✓						
	Goal motives task (Ryan & Connell, 1989)	Participants rate the extent to which their reasons for pursuing each goal (identified via goals task) align with four statements, each reflecting four different motivation domains (external regulation, introjected regulation, identified regulation, intrinsic motivation). Ratings scored via likert scale from 1 ("not at all for this reason") to 7 ("completely for this reason").											✓
	Plans Task	Participants are asked to devise strategies or ways to achieve their two most important approach goals and avoidance goals (N = 4 goals). Prompts included "how can I accomplish this?" and "how can I avoid this?". Plan steps for each condition are coded as either approach or avoidance-motivated plans.				✓							
Implementation efficacy	Past difficulty in attainment	Participants asked to rate how much past difficulty they had encountered in attempting to achieve the goal on a likert scale from 1 to 9.		✓									
	Perceived skills task (Crane, Goddard & Pring, 2009)	Participants rate approach and avoidance goals (elicited via goals task) according to their perceived self-efficacy regarding the skills and resources required to achieve each goal. Ratings are scored on a nine point likert scale ranging from 1 ("I have none of the necessary skills and resources") to 9 ("I have all of the necessary skills and resources") for each goal.	✓										
	Personal Control task	Participants rate their anticipated personal control over being able to attain each goal (identified via goals task) on likert scale ranging from 1 (no control) to 7 (complete control).					✓		✓				
	Spontaneous implementation intention scale (Brickell, Chatzisarantis, & Pretty, 2006)	Participants asked to rate the extent to which they intend to implement their most important approach and avoidance goals (identified via goals task, n=2), via the extent to which they agree with five statements using a five point likert scale from 1 ("not at all"), to 5 ("very much").										✓	

**Table 2.**  
*Themed summary table of goal measures employed across studies*

	Measure	Description	Study reference no.										
			1	2	3	4	5	6	7	8	9	10	11
Anticipated attainment/ nonattainment	Goals likelihood/expectancy scale (Dickson & MacLeod, 2006)	Participants rate the likelihood of their approach and avoidance goals (identified via goals task) occurring, on a likert scale ranging from 1 (not at all likely to happen) to 7 (extremely likely to happen), or from 1 (not at all likely to happen) to 9 (extremely likely to happen). Mean likelihood expectancies are calculated in each goal condition.		✓			✓		✓	✓			
	Goal Adjustment Scale (Wrosch, Scheier, Miller, Schulz, & Carver, 2003)	Participants asked to rate the extent to which they engage in various behaviours reflecting either disengagement in important goals and re-engagement with alternative new goals, in response to important goals being deemed unattainable. Ratings are scored on a five-point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree).								✓			

## Findings

Where studies reported effect sizes, they were reported in Table 3. Dickson & MacLeod (2004b, 2006) failed to report effect sizes, though Dickson and MacLeod (2006) acknowledge that their study was only powered to detect large effect sizes with power of .80.

**Table 3.**

*Summary table of results for evidence of relationship of depression to approach and avoidance goal-directed behaviour*

Ref no.	Name, country and date	Analysis method	Goal frequency	Subjective importance	Causal motivators	Implementation efficacy	Anticipated attainment/nonattainment
1	Belcher & Kangas, Australia, 2014	Mixed design ANOVAS	Not reported			Depressed = perceived having ↓skills and resources to achieve both approach and avoidance goals than controls, $F(1, 57) = 11.36, p < .001, \eta^2 p = .17$	
2	Coats, Janoff-Bulman & Alpert, USA, 1996	Correlational	<p>↑Depression ↓approach goals, <math>r(79) = -.28, p &lt; .01</math></p> <p>↑Depression ↑avoidance goals, <math>r(79) = .28, p &lt; .01</math></p>	Not statistically reported		Not statistically reported	Not statistically reported
3	Dickson & MacLeod, Australia, 2004a	Correlational	<p>↑Depression ↓approach goals, <math>r(141) = -.17, p &lt; .05</math></p>	<p>↑Depression ↓approach goal engagement, <math>r(141) = -.21, p &lt; .05</math></p> <p>↑Depression ↓approach goal consequences, <math>r(141) = -.30, p &lt; .05</math></p> <p>No significant relationship between avoidance goal consequences</p>			
4	Dickson & MacLeod, Australia, 2004b	Mixed design ANOVAS Scheffe post-hoc comparisons	<p>Depression = ↓approach goals than controls, <math>F(3, 108) = 7.84, p &lt; .001</math></p> <p>No significant difference in avoidance goal frequencies</p>			<p>↑Depression = ↓ specificity in approach plans than controls, <math>F(3, 105) = 57.26, p &lt; .001</math></p> <p>↑Depression = ↓ specificity in avoidance plans than controls, <math>F(3, 94) = 14.33, p &lt; .001</math></p>	
5	Dickson & MacLeod, Australia, 2006	Mixed design ANOVAS Fisher's protected t-test post-hoc comparisons ANCOVA	<p>Dysphoric = ↓approach goals + ↑ avoidance goals than controls, <math>F(1, 54) = 4.68, p &lt; .05</math></p>		<p>Dysphoric = ↑reasons for goal non-achievement and ↓ reasons for goal achievement than controls, <math>F(1, 51) = 29.96, p &lt; .001</math></p>	<p>Dysphoric = perceived ↓personal control in goal attainment than controls <math>F(1, 54) = 28.65, p &lt; .001</math></p>	<p>Dysphoric = anticipated approach goal outcomes ↓likely and aversive outcomes ↑likely to happen than controls, <math>t(54) = 2.85, p &lt; .01</math></p>

**Table 3.**  
Summary table of results for evidence of relationship of depression to approach and avoidance goal-directed behaviour

Ref no.	Name, country and date	Analysis method	Goal frequency	Subjective importance	Causal motivators	Implementation efficacy	Anticipated attainment/nonattainment
6	Dickson & Moberly, UK, 2013	Mixed design ANOVA Mann-Whitney U	No significant effects of Group x Goal frequencies.		Depressed = ↓ specific pro reasons for approach goals than controls, $F(1, 71) = 16.29$ , $p < .001$ , $\eta^2 p = .13$  Depressed = ↓ specific con reasons for both approach and avoidance goals $F(1, 43) = 5.52$ , $p < .02$ , $\eta^2 p = .11$		
7	Dickson, Moberly & Kinderman, UK, 2011	Mixed design ANOVAs	No significant effects of Group x Goal frequencies.	No significant effects of goal importance	Controls but not depressed = ↑ pro reasons than con reasons, $F(1, 25) = 12.92$ , $p < .001$ , $\eta^2 p = .12$	Depressed = perceived ↓ personal control over goal outcomes than controls, $F(1, 46) = 16.29$ , $p < .001$ , $\eta^2 p = .26$	Depressed = anticipated desirable approach goal outcomes as ↓ likely than controls, $F(1, 85) = 4.16$ , $p = .04$ , $\eta^2 p = .12$  Depressed = anticipated undesired avoidance goal outcomes as ↑ likely than controls, $F(1, 84.87) = 3.92$ , $p = .05$ , $\eta^2 p = .12$
8	Dickson, Moberly, O'Dea & Field, UK, 2016	Mixed design ANOVAs	Depressed = ↓ approach goals than controls $F(1, 148) = 16.43$ , $p < .001$ , $d = .72$	No significant effects of goal importance			Depressed = anticipated desirable approach goal outcomes as ↓ likely than controls, $F(1, 180) = 10.09$ , $p = .002$ , $d = 1.00$  Depressed = anticipated undesired avoidance goal outcomes as ↑ likely than controls, $F(1, 180) = 29.69$ , $p < .001$ , $d = .96$  Depressed = ↑ inclination to disengage from unattainable goals than controls, $t(91) = 3.56$ , $p < .001$ , $d = .83$  Depressed = ↓ ability to re-engage with new goals after barriers than controls, $t(91) = 4.64$ , $p < .001$ , $d = 1.06$

**Table 3.**

*Summary table of results for evidence of relationship of depression to approach and avoidance goal-directed behaviour*

Ref no.	Name, country and date	Analysis method	Goal frequency	Subjective importance	Causal motivators	Implementation efficacy	Anticipated attainment/nonattainment
9	Sherratt & MacLeod, UK, 2013	Mixed design ANOVAs	No significant effects of Group x Goal frequencies.	Depressed = ↓ approach reasons than controls, $t(57) = 2.54, p < .01, d = .67$ Depressed = ↑ avoidance reasons than controls, $t(57) = 3.96, p < .001, d = 1.02$			
10	Vergara & Roberts, USA, 2011	ANCOVA	Previously depressed = ↑ avoidance goals than controls, $F(1, 81) = 6.42, p < .01, \eta^2 p = .07$ No significant effects of Group x approach goal frequencies	No significant differences in goal commitment		No significant differences in strength of implementation intentions	
11	Winch, Moberly, & Dickson, UK, 2015	Heigherarchical multiple regression Simple slope tests	Not reported	Not reported	↑ Depressive symptoms ↓ intrinsic motivation for approach goals (women only), $\theta = -.50, t = 3.60, p < .001$ No significant association between depressive symptoms and intrinsic or identified motives for avoidance goals		

### **Goal frequency.**

Of the studies that reported relationships between depression and the number of approach and avoidance goals generated by participants, findings were somewhat heterogeneous. Three studies reported significant relationships between depression and having fewer approach goals, but not more avoidance goals than controls (Dickson & MacLeod, 2004a; Dickson & MacLeod, 2004b; Dickson, Moberly, O'Dea & Field, 2016), whereas, Coats, Janoff-Bulman & Alpert (1996) reported that higher levels of depression were associated with fewer approach goals and more avoidance goals. Dickson and MacLeod (2006) findings aligned with Coats, Janoff-Bullman & Alpert (1996) in their sample of dysphoric adolescents. In contrast to this, Vergara and Roberts (2011) reported no significant differences in number of approach goals between previously depressed and never depressed participants, though, in agreement with Coats, Janoff-Bullman & Alpert (1996) and Dickson and MacLeod (2006), previously depressed participants did generate significantly more avoidance goals. Three further studies however, did not identify any significant differences between number of approach or avoidance goals generated between depressed and non-depressed samples (Dickson & Moberly, 2013; Dickson, Moberly & Kinderman, 2011; Sherratt & MacLeod, 2013).

It is noteworthy that the three studies which failed to identify significant differences between groups in both approach or avoidance goals, were all studies with the highest ecological validity, as the depressed sample was of a clinical population, yet also consisted of the smallest sample sizes (total combined clinical



and control participants within each study  $N = \leq 59$ ). Dickson, Moberly and O'Dea and Field (2016) also utilised a clinical sample, however, their total participant sample was larger ( $N = 93$ ) and was thus more highly powered to detect smaller (medium-sized) between-groups effects ( $d = .50$ ). It is possible that the three studies which failed to identify significant between-groups differences in approach or avoidance goals may have been under-powered to detect small-medium effects, however, it is also possible that the inclusion of adolescents within the clinical sample of Dickson, Moberly and O'Dea and Field (2016), may have affected the findings of that particular study, to the extent that results aligned more closely with the studies that used adolescent samples. Dickson and MacLeod (2006) highlight that transitory and heightened intensity of mood states evident in adolescence, may have inflated mean scores of depressive symptoms amongst their sample. Factors such as these, in addition to wider differences in social and environmental circumstances, may distinguish and minimise generalisability of results involving adolescent and/or mixed adult and adolescent samples.

Heterogeneity in the application of the "Goals Task" (Dickson & MacLeod, 2004), and across studies that compared goal frequencies therefore infer that, although the task is a reliable and widely accepted method of eliciting future goals, the validity of using goal frequencies a stand-alone measure of approach and avoidance goal orientation is empirically insufficient.

Sherratt and MacLeod (2013) assessed the nature of participants' motivation for adopting their goals and identified that, despite generating the same number of approach and avoidance goals, the underlying rationales differed between groups. In

the depressed sample, rationales for approach goals were less driven by approach motivation but were instead more highly driven by avoidance motivation. Sherratt and MacLeod (2013) findings threaten the face validity of using the goals task a direct stand-alone measure of approach and avoidance goal orientation, as rationales behind the goals may reveal alternative motivation behind the type of goal that has been elicited. It is possible that participants may have reframed their personal goals in order to adhere to the task instruction and thus confounded the distinction between approach and avoidance goals. It is therefore important that the goals task is utilised in conjunction with a secondary measure to examine the validity of goal motivation. Interestingly, in Coats, Janoff-Bullman & Alpert (1996) study, participants were given the choice to select between goal framing prompts oriented to either approach and avoidance goal motivation when generating their goals. Participants with higher levels of depression opted to report a higher proportion their goals using the avoidance frame, supporting a possible relationship between avoidance goal orientation and depression, however as results were correlational, causality remains undetermined.

### **Subjective importance.**

In the present review “subjective importance” encompassed results from measures that primarily elicited why the goal matters to the participant, their typical engagement with such goals and the anticipated consequence (subjective intent) behind pursuing such goals. It also reflected to what extent the participant considered the goal to be personally important to pursue.

Depressed and control groups did not differ significantly on the ratings of importance that they placed on their goals (Dickson, Moberly & Kinderman, 2011, Dickson, et al., 2016), nor did previously depressed and non-depressed groups differ in their commitment to pursuing their goals (Vergara & Roberts, 2011). However, a significant relationship was identified between levels of depression and the extent to which participants typically engaged in approach GDB, such that higher levels of depression were associated with having fewer approach goals and fewer approach-related goal consequences when asked to identify the most salient consequence of achieving or not achieving each goal (Dickson & MacLeod, 200a). These findings indicate that individuals with depression may be significantly less motivated by approach reasons to engage in GDB than non-depressed, supporting commonly theorised deficits in approach motivation (Trew, 2011). In this study, avoidance reasons for goal pursuit were not found to significantly relate to measures of depression (Dickson & MacLeod, 2004a). Similarly, Sherratt and MacLeod (2013) found that depressed participants generated fewer approach-related reasons motivating goal pursuit, however contrary to Dickson and MacLeod (2004a), the depressed sample also generated more underlying avoidance-related reasons than controls. The medium and large effect sizes of Sherratt and MacLeod's (2013) findings ( $d = .67$ ,  $d = 1.02$ ) respectively, infer a more reliable depiction of distinguishable differences in subjective motivation behind goal pursuit in the context of depression, however methodological disparity in eliciting and assessing subjective rationales threatens the reliability of conclusions drawn. Amongst the studies reviewed here, depression is therefore seemingly characterised by

diminished approach motivation behind goal pursuit and may also be associated with heightened subjective avoidance motivation.

### **Causal motivators.**

Intrinsic motivation (pursuit of inherent fun and enjoyment) behind reported goals was found to be lesser for women who reported higher levels of depressive symptoms (Winch, Moberly & Dickson, 2015). However, this finding was not significantly evident amongst males. The small population of males in this study may have resulted in type II error of failing to identify deficits in pursuit of intrinsic motivation across both genders and as such, requires further investigation with a larger sample size.

A general trend for participant reasons why goals would and would not be achieved was apparent across studies. Depressed and dysphoric participants reported significantly more reasons for goal non-attainment and less reasons for goal attainment than controls (Dickson & MacLeod, 2006) and thus demonstrated a more pessimistic outlook on the prospect of goal attainment. Conversely, controls reported significantly more reasons for attaining their goals than not attaining them (Dickson, Moberly and Kinderman, 2011). When coded for specificity, depressed participants were less specific in their reasons for pursuing approach goals than controls, but were also less specific in their reasons against achieving both approach and avoidance goals (Dickson & Moberly, 2013). It is important to acknowledge here, that the distinction between approach and avoidance goals however, was based on the “Goals task” (Dickson & MacLeod, 2004a), which Sherratt and MacLeod’s (2013)

findings suggest may not adequately distinguish true approach or avoidance motivation.

### **Implementation-efficacy.**

Similar to Dickson and Moberly (2013), Dickson and MacLeod (2004b) also identified that depressed individuals were less specific in both their approach plans and avoidance plans than controls. Although Vergara and Roberts (2011) study identified that participants did not differ significantly in the strength of their intent to implement their plans, dysphoric and depressed participants reportedly perceived themselves as having significantly less personal control over attaining their goal outcomes than controls (Dickson & MacLeod, 2006; Dickson, Moberly and Kinderman, 2011). Depressed participants also perceived themselves as having significantly fewer skills and resources to achieve both approach and avoidance goals than controls (Belcher & Kangas, 2014).

### **Anticipated likelihood.**

All studies that assessed participant expectancies of goal attainment or non-attainment identified that depressed participants anticipated that desirable, approach goal outcomes were less likely to be attained and that aversive, avoidance-related goal outcomes were more likely to happen than controls (Dickson et al., 2006; 2011; 2016)

## Discussion

The present study aimed to elucidate whether relationship(s) exist between depression and approach and/or avoidance motivation behind goal pursuit. Results of the present review have exposed multiple relationships of depression to approach and avoidance goal-directed behaviour. However, it has also highlighted major discrepancies in the methodological application of screening measures to distinguish depressed from control groups along with confounds and heterogeneity in the selection and development of measures that are deemed to determine (and distinguish) approach and avoidance motivation. The use of Dickson and MacLeod (2004a) Goals task to distinguish approach and avoidance goals has been somewhat undermined by Sherratt and MacLeod (2013) findings, which may contribute to discrepancies in conclusions across studies in their attempts to differentiate and compare variables associated with indistinct constructs.

The use of correlational and more broadly, cross sectional designs across the search yield, result that the strength of the evidence appears somewhat weak. Conclusions around causality are not reliably inferable, however, results inferring causality were not entirely anticipated at this stage, despite being sought amongst searches. Multiple risks of biases were evident across studies, which the present review has endeavoured to expose, though acknowledged biases and limitations may not be exhaustive. It is also necessary to acknowledge that whilst taking efforts to review the risk of external publication bias by journal editorials, stringencies within the search criteria of the present study, such as including only published studies of English language, may have contributed to publication bias in the findings

hereby reported on. It is also possible that whilst synthesising main findings of the literature, inadvertent reporting bias may exist within the present review, for the purpose of presenting a coherent narrative (Popay, et al., 2006). However, the application of of comprehensive, rigorous reporting protocol and assessment tool was employed in order to minimise reporting bias.

Additionally, it is important to acknowledge that multiple confounds across studies were not controlled for, which may have further obscured possible associations deemed to exist between depression and avoidance/ approach goal motivation. For example, comorbidities such as anxiety are common amongst individuals with depression (Coplan, Aaronson, Panthangi & Kim, 2015). However, only three studies distinguished and/ or controlled for possible effects of anxiety (Dickson & MacLeod, 2004a; Dickson & MacLeod, 2004b, Winch, Moberly & Dickson, 2015) herein which, distinct differences in the approach/avoidance motivational patterns were identified to exist between individuals with anxiety to those with depression. Depression in these studies was uniquely associated with deficits in approach goals, whereas anxiety was characterised by heightened avoidance goal motivation. Three further studies that assessed, but did not control for anxiety identified that 29-35% of their depressed samples presented with comorbid anxiety disorders (Dickson & Moberly, 2013; Dickson, Moberly & Kinderman, 2011; Sherratt & MacLeod, 2013). Despite this, all studies demonstrated significant deficits in approach motivation associated with depression, though heightened avoidance motivation was also evident amongst the depressed sample in Sherratt & MacLeod (2013).

As aforementioned, only four out of eleven studies utilised clinically depressed samples, and as such, presented with higher ecological validity. Of which, two were sufficiently powered to detect medium to large effect sizes (Dickson, Moberly, O'Dea & Field, 2016; Sherratt & MacLeod, 2013) though Dickson, Moberly, O'Dea and Field (2016) risk possible confounds of using a mixed adolescent and adult sample. Results and conclusions of the remaining two clinical studies (Dickson & Moberly, 2013; Dickson, Moberly & Kinderman, 2011) present risk of type II error due to limitations on sufficient sample sizes.

Limitations in statistical reporting of Coats, Janoff-Bulman and Alpert (1996), resulted that a number of the the reported associations identified between frequencies of avoidance goals and variables such as, heightened negative self-evaluations of perceived efficacy, perceptions of difficulty and derived happiness from past goal attainment, perceived goal importance, and pessimism in anticipated success, could not be reliably synthesised into the main body of the findings, despite being highly relevant. Coats, Janoff-Bulman and Alpert (1996) also reported that higher frequencies of approach goals were associated with positive self-evaluation, perceived efficacy and optimism towards attainment.

Despite study limitations, the current evidence base presents a broad picture of some of the multifaceted and complex mechanisms that may drive approach and avoidance motivation (though not entirely reliably distinguished) and subsequent pursuit of future goals. Subtle, yet significant differences have been identified to exist between the goal motivation of individuals presenting with higher levels of depression. Pessimism, subjective orientation to avoidance motivation and



perceived limited self-efficacy appear to present possible barriers to evident deficits in approach goal motivation and engagement in approach GDB for individuals with depressive symptoms. Such factors may also motivate avoidance goal related behaviour, aimed at sustaining a current state in efforts to prevent perceivably negative outcomes. Deficits in approach goal motivation with or without heightened avoidance motivation may therefore be suggestive of significant barriers to goal engagement and thus associated with impoverished subjective wellbeing, namely depression.

Heterogeneity across studies regarding the variables thought to represent or relate to approach and avoidance motivation, result that no clear nor exhaustive synthesis of such variables has been developed. Despite this, it is likely that the variables explored across studies will be interrelated due to their common pertinence to approach and avoidance motivation. In efforts to theoretically synthesise results of the current studies, it is possible that for individuals with higher levels of depression, cognitive biases identified across the studies reviewed, such as perceiving more obstacles to attaining goals, and perceiving oneself as having fewer skills to attain the goals, may contribute towards an overarching sense of pessimism and perception that such goals are less attainable. In accordance with Dickson, Moberly and O'Dea and Field (2016), it is likely then, that such individuals may disengage from active goal pursuit, make fewer and/ or less specific plans to attain the goals, which may heighten and perpetuate their self-perception as having fewer skills and diminished efficacy to attain the goals. As such, they may present with

fewer approach reasons why the goals would be attained and thus perceive goal attainment as less likely, fuelling further disengagement and so on.

The cognitive and behavioural tendencies identified are unsurprising, when considered in relation to known evidence that individuals with depression are more likely to demonstrate negative problem orientation and associated cognitive distortions (Wilson, Bushnell, Rickwood, Caputi, & Thomas, 2011), possibly contributing to diminishment in self-esteem and perceived self-efficacy (Luxton, Ingram, & Wenzlaff, 2006). Dickson and Moberly (2013) inferred that limited specificity of goals may represent motivational dysfunction, “underpinned by impoverished cognitive representations of goals” (p.4). However, Sanna (2000), proposes that some individuals may functionally engage in “defensive pessimism” when engaging in prospective mental simulation (imagining future events), which may also serve to minimise specificity in goal planning. Defensive pessimism involves a cognitive process of anticipating the least desirable outcome e.g. anticipating failure, in order to prepare and protect oneself from the associated negative affect. This may also present barriers to engagement in approach goal motivation, in addition to contributing to goal disengagement. Approach deficits are theorised to contribute to the onset and perpetuation of depression by limiting exposure to positive experiences, success and positive reinforcement (i.e. reward) (Trew, 2011) that may in turn, motivate further approach motivation and goal engagement. Avoidance motivation may further limit exposure to engaging in positive experiences and positive reinforcement associated with success and may thus compound the effects of approach deficits (Trew, 2011).

It has been theorised that disengagement in perceivably unattainable goals is indeed also an emotionally defensive and adaptive process, as it has been found to be beneficial on subjective well-being (Wrosch, Scheier, Miller, Schulz, & Carver, 2003), to the extent that Wrosch, Miller, Scheier, and De Pontet (2007), found that failure to disengage from unattainable goals was associated with heightened depressive symptoms and perceived stress, along with increased emotional distress. However, in proposing a self-protective value in disengagement from unattainable goal pursuit, both Dickson, Moberly, O'Dea and Field (2016) and Wrosch et al., (2007), highlight the importance of goal flexibility and subsequent reengagement with alternative goal pursuit, as this was found to “buffer” (p.1506) negative effects of disengagement. Depressed individuals demonstrated significantly greater difficulty in reengaging with alternative goals, which may result in heightened exposure to negative affect and serve to perpetuate global negative self-evaluations (Coats, Janoff-Bulman & Alpert, 1996) associated with future goal attainment.

It is possible then, that cognitive biases that contribute to diminished self-efficacy may relate to emotionally defensive pessimistic expectations, inhibition of approach motivation followed by premature disengagement from goal pursuit, which may perpetuate negative self-evaluations. However, despite theorised negative affect associated with failure to reengage in goal pursuit, active premature disengagement may also functionally serve to minimise a person's risk of exposure to perceivably negative emotions. Active disengagement may enable depressed individuals to sustain a sense of control over the level of negative affect that they experience and thus experientially avoid exposure to unanticipated negative affect

associated with more effortful goal pursuit. Tull and Gratz (2008) identified that fear of cognitive dyscontrol, more broadly referred to as “fear of loss of control over negative emotions” (Cox, Taylor & Enns, 1999, pp.303), was a significant predictor of depressive symptom severity and may therefore be pertinent to goal motivation. Experiential avoidance has been found to mediate the relationship between fear of cognitive dyscontrol and depression levels (Tull & Gratz, 2008), which indicates that a person’s relationship with their own exposure to affective experiences may also play a significant role in their motivation to engage in approach or avoidance GDBs.

Results from Shahar and Herr (2011) study suggest that depression is associated with high levels of inflexible, avoidant emotion regulation. It is possible that such inflexibility and avoidant emotion regulation orientation may negatively impact on approach goal motivation and present a contributory factor towards the aforementioned deficits, though this is not known to have been researched. Depression has also been associated with personality constructs such as neuroticism, positive and negative emotionality and approach and avoidance temperaments (Elliott & Thrash, 2010), the latter of which have been identified as underlying core constructs of the former temperament variables (Elliott & Thrash, 2010). Approach and avoidance temperaments are known predictors of performance attainment via their role as antecedents to the adoption of achievement (approach) goals (Elliott & Thrash, 2010) and may therefore also be pertinent to explore when considering relationships between depression and approach/ avoidance motivation.

None of the studies included in the present review explored the potential role of affect, and only one study (Coats, Janoff-Bullman & Alpert, 1996), considered

the potential role of disposition when exploring relationships between depression and approach/ avoidance goal motivation. This lends scrutiny to the multitude of wider factors yet to be researched, that may also contribute to the evident, yet presently inconclusive relationships between depression and approach/ avoidance motivation. The present body of research draws attention to evident differences in motivational styles between depressed and non-depressed individuals, however, in efforts to minimise bias, it is important to consider not only the evidence yielded, but also what is yet to have been studied in relation to goal motivation. For example, possible influences of affect on motivation, additional cognitive biases and possible relationships between dispositional traits or personality constructs.

## **Empirical Study**

### **Abstract**

Chronic depression is associated with disruptions in cognition and affect, and a failure to sustain goal directed behaviour (GDB). Comorbidity of depression with Cluster C personality psychopathology is high, which may present unique complexity when formulating and engaging such individuals in goal focused therapies. Thinking about goals in different ways, such as focusing on either the outcome or the processes, of goal attainment, can motivate subsequent GDB. However, there is also an affective component that contributes to motivation to engage in GDB, namely, anticipatory affect. Positive and negative anticipatory affect are deemed to influence goal motivation either towards perceivably positive experience, or away from perceivably negative outcomes respectively. Disruptions in anticipatory affect associated with depression and Cluster C psychopathology, likely contribute to barriers in engagement in GDB.

The present study explored whether relationships exist between mood, personality characteristics, and anticipatory affect, when thinking about goals in different ways. A non-clinical adult sample (N = 45) completed self-report measures of depression, anxiety, personality and positive and negative affect, before and immediately after thinking about their future goals in an outcome-focused and a process-focused way. Overall, outcome thinking resulted in higher levels of positive affect, whereas process thinking resulted in higher levels of negative affect. All mood and personality variables were inter-correlated, however only depression correlated negatively with positive affect, and only Cluster C personality correlated

positively with negative affect at baseline. Only Cluster B related negatively to positive affect following outcome thinking. A number of variables, including Cluster C related to increased negative affect following process thinking. The present study identified distinct affect response styles in individuals with scores on depression and for those with Cluster C personality traits to be considered in the context of comorbidity.

## **Introduction**

### **Goals and well-being.**

Goals are cognitive representations of desired internal or external states or outcomes (Siegert, O'Connell & Levack, 2014) that are known to influence and motivate behaviour (Elliot, & Thrash, 2002). Goals may also represent desired prevention of perceivably aversive internal or external states (Gray 1982; 1987). Gray (1982; 1987) distinguished distinct neuropsychological mechanisms behind these two areas of goal motivation. One mechanism, related to approach goal motivation, the Behavioural Activation System (BAS), whereby affective sensitivity to reward and non-punishment (associated with hope and positive affect) promotes heightened motivation and behavioural pursuit of desired and perceivably positive goals (Erdle & Rushton, 2010; Gable, Reis, & Elliot, 2000). The second mechanism, refers to avoidance goal motivation associated with the Behavioural Inhibition system (BIS), whereby affective sensitivity to punishment, non-reward and unfamiliarity, is associated with heightened negative affect. The BIS is thought to

motivate engagement in avoidance-type behaviours that serve to minimise and regulate exposure to the perceivably aversive experience (Erdle & Rushton, 2010).

Engagement in the pursuit of attaining desired and personally meaningful approach goals has been associated with positive subjective well-being (Klug & Maier, 2015) and is a central feature in positive psychology and self-help literature (Seligman & Csikszentmihalyi, 2014). Well-being interventions centred on goal setting and planning, have been found to increase well-being, raise levels of positive affect and reduce levels of negative affect amongst clinical (Farquharson & MacLeod, 2014) and non-clinical adult populations (Coote & MacLeod, 2012; MacLeod, Coates & Hetherton, 2008). Approach goal pursuit is theorised to pose benefits on both a cognitive level and affective level, as approach goal pursuit contributes to the development of positive self-schemas (Garcia & Pintrich 1994) relating to efficacy, mastery and esteem that contribute to positive future expectations (Jennings, 2004) and may regulate future behaviour (Garcia & Pintrich 1994). Progress during approach goal pursuit is also considered to be psychologically and motivationally beneficial, as, goal progress has been associated with dynamic engagement in multiple intrinsic experiences of accomplishment as a person moves closer towards full attainment (Klug & Maier, 2015). Such experiences are thought to be compounded and further motivated, by positive anticipatory affect, such as excitement, in anticipation of further success.



### **Goals and chronic depression.**

Inversely to the psychological benefits of goal pursuit on subjective well-being, difficulties in engaging in goal directed behaviour(s) (GDB), commonly characterised as motivational deficits, have been widely associated with presenting psychopathology such as depression (Silvia, Nusbaum, Eddington, Beaty & Kwapil, 2014). It is widely accepted that individuals with higher levels of depression have demonstrated diminishments in approach motivation when compared amongst clinical (Dickson & MacLeod, 2006; Dickson, Moberly & Kinderman, 2011; Dickson et al., 2016) and non-clinical (Dickson & MacLeod, 2004a) populations. In some areas of goal motivation, depression has also been associated with heightened avoidance motivation (Sherratt & MacLeod, 2013), a known therapeutic barrier in third wave interventions (Moore & Garland, 2004).

Contrary to the benefits of approach motivation, avoidance motivation has been found to relate to negative life stressors and impaired longitudinal change in subjective well-being, which is partially mediated by avoidance coping (Elliot, Thrash and Murayama 2011). Failure to initiate and/ or sustain goal focused engagement is commonplace in chronic depression and has been attributed at least in part, to cognitive, affective and behavioural avoidance motivation (Moore & Garland, 2004). Avoidance motivation is theorised to perpetuate chronicity of a current state in the context of psychological distress, in order to minimise exposure to additional perceived stressors that may be required and/or associated with therapeutic change (Ottenbreit & Dobson, 2004). Avoidance motivation is theorised to deprive individuals from experiencing the intrinsic sense of reward and satisfaction thought

to result from goal engagement and preclude disconfirmation of negative self-schemas (Moore & Garland, 2004).

Multi-directional relationships between cognition, affect and behaviour have been widely researched and acknowledged, to the extent that targeting influences on these relationships is an integral feature of most third-wave psychological therapies (Brown et al., 2011), and form the core theoretical and empirical basis of Cognitive Behavioural Therapy (Greenberger & Padesky, 2015). Goal focused research has therefore endeavoured to explore relationships between goal focused thinking, affect and subsequent GDB in order to expose associated influences on successful engagement with goals.

### **Goals and cognition.**

Cognitive and affective responses to external and internal stimuli are known to differ markedly in non-depressed individuals (Blyma, Morris & Rottenberg, 2008) and as such, may contribute to significant differences in goal orientation and motivation. Cognitive factors known to be associated with deficits in goal motivation, such as pessimism (Dickson, Moberly & Kinderman, 2011) limited perceptions of self-efficacy (Belcher & Kangas, 2014) and a subjective orientation to avoidance motivation (Sherratt and MacLeod, 2013) have also been found to relate to heightened levels of self-reported depression. Additional cognitive biases such as, over-estimation of perceived effort, and impairments in perceiving the costs and benefits have also been theorised to negatively impact on motivation (Treadway, & Zald, 2011) and are commonly addressed therapeutically during cognitive-

behavioural psychotherapy interventions (Claspell, 2010). Despite such interventions however, a certain population of individuals with depression, approximately 30% (Murphy & Byrne, 2012), continue to experience difficulties in attaining and/or sustaining meaningful change in their clinical presentation and engagement in GDB, to the extent that their symptoms of depression are chronic and enduring. Seligman (2012) has referred to the limited success rate of psychotherapeutic and psychopharmacological treatment as the “65% barrier” (p.47), due to the commonality in irrespective treatment success rate being typically no greater than 65%.

### **Outcome and process focused thinking.**

One way of thinking about goals is to contemplate the anticipated experience in an outcome focused way, whereby a person mentally simulates what it would be like to have achieved their goal. Outcome focused thinking such as this, is typically promoted by self-help literature with a view to entice motivation towards a person’s desired goal (Taylor, Pham, Rivkin and Armor, 1998). In non-clinical community samples, fMRI data has illustrated activation in the medial prefrontal cortex and amygdala (associated with reward processing), demonstrating a positive emotional response when thinking in an outcome focused way (Gerlach, Spreng, Madore & Schacter, 2014). However, it has been argued that although outcome focused thinking may increase momentary positive anticipatory affect whilst thinking in this way, it may be less effective at motivating subsequent behavioural pursuit and goal attainment (Oettingen, 2012). In fact, mental simulation of exam attainment prior to

mid-term examination, was found to have a negative impact on aspiration levels and grade actually achieved in a student population (Pham & Taylor, 1999). One explanation for this outcome, was that anticipatory consummation of positive affect associated with success, sufficed to diminish further drive to engaging in behavioural processes to actualise it (Pham and Taylor, 1999). Outcome focused thinking has also been associated with self-regulation failure (deviations from GDB), deemed to have occurred as a result of experienced discrepancy between envisaged outcome compared with the current state inciting negative affect (Freund & Hennecke, 2012).

Outcome focused thinking has also been criticised on the basis that it does not aid individuals to regulate stress or problem solving ability when faced with potential challenges that arise during goal pursuit (Taylor & Pham, 1999). Instead, a research summary by Taylor et al., (1998) presents a wealth of evidence in support of the theory that thinking about goals in a process focused way is superior to focusing on the outcome. Process focused thinking refers to consideration and cognitive conceptualisation of the necessary steps and processes required to actualise a goal (MacLeod, 2017). Oettingen (2012) proposes that future outcomes (both outcome focused and process focused) can be mentally simulated in an idealistic way that overlooks potential barriers to attainment, termed “positive fantasies” (p.12). However contrary to this, process simulations more commonly refer to the consideration of the realistic and potentially challenging steps in the pursuit of goal attainment.

A review by Taylor et al., (1998) emphasised the relevance of process simulation to motivation and effective goal pursuit, as they theorise that process

simulation enables people to anticipate and problem solve obstacles, which is also thought to facilitate self-regulation of their emotional responses to stress. Taylor et al., (1998) also propose that process focused thinking may minimise effects of the “planning fallacy”, a common overestimation of task simplicity and underestimation of required resources to complete it. Students who employed process focused thinking (to envisage undertaking the steps required for successful exam attainment prior to mid-term examinations) achieved significantly higher than those who employed outcome focused thinking and than controls (Pham and Taylor, 1999). The process focused group also reported significantly lower levels of anxiety throughout the preparation and examination process. Engaging in process focused thinking enhanced self-regulation of stress in this context, and may have enhanced examination performance via minimising the affective obstruction of anxiety.

Despite emphasis on the superiority of process focused thinking over outcome focused thinking (Taylor et al., 1998), Greitemeyer and Wurz (2006) found that outcome focused thinking was equally beneficial as process focused thinking at enhancing the attainment of difficult health-related goals after one week of engaging in daily future oriented thinking (Greitemeyer and Wurz, 2006). Presently, literature on process versus outcome focused thinking remains emergent and inconclusive as to whether one, or either orientation of thinking style may be beneficial in promoting goal motivation. The applicability of evidence to populations with chronic depression is also open to question, as present literature is yet to research relationships between depressive symptoms and aforementioned cognitive and affective influences that may be associated with thinking in either way.

### **Goals and affect.**

Affective deficits typical to depression, such as anhedonia, have also been considered possible factors related to impaired goal motivation, as anhedonia is linked to diminishment in a person's ability to experience or consume, pleasure and reward in-the-moment (Der-Avakian & Markou 2012), which is theorised to impact negatively on a person's ability to anticipate future pleasure. However, studies have shown that in depressed samples, diminished anticipatory pleasure has a significant impact on motivation for reward (Sherdell, Waugh & Gotlib, 2012) and hedonic response (Chentsova-Dutton & Hanley, 2010) that is independent from consummatory pleasure. The ability to anticipate and pre-experience positive affect in-the-moment when envisaging goal pursuit (anticipatory affect) has therefore been theorised to incite the motivating "spark" thought to prompt subsequent behaviour towards or away from desired or undesired states respectively (Macleod, 2017, p.263), and is essential in supporting goal focused engagement.

Individuals with depression have been found to demonstrate a unique hyposensitivity, or "blunted" sensitivity to reward (Alloy, Olino, Freed & Nusslock, 2016). In line with Gray, (1987) and Fowles (1994), such neuropsychological and affective deficits in reward sensitivity (BAS system) are likely to obstruct positive cognitive and affective anticipatory experience of reward associated with goal attainment. Diminished reward sensitivity may therefore contribute to impoverished approach motivation, known to relate to depression (Dickson & MacLeod, 2004a; Trew, 2011) by failure to entice appetitive and consummatory systems (Gard, Gard, Kring & John, 2006). Foti, Carlson, Sauder and Proudfoot (2014) also identified

neurobiological abnormalities in reward processing amongst individuals with clinical levels of depression, however such deficits were distinguished to exist in a specific subgroup of the depressed population. Reward processing deficits were only evident amongst depressed individuals that presented with impaired mood reactivity to positive events (Foti et al., 2014). It is possible therefore that disrupted affective reactivity and associated sensitivity to reward may be key psychopathological factors involved with approach motivation and associated engagement in GDB in depressed populations.

Two cognitive-affective systems, associated with neurophysiology, behaviour and motivation, distinguish affect into higher order dimensions of positive affect and negative affect (MacLeod, 1996). Factors including anxiety, pessimistic expectations and depression, load onto negative affect, whereas the inverse factors (positive expectations, negative loadings for depression and hopelessness) load onto positive affect (MacLeod, 1996). Negative affect encompasses multiple negative emotional states (Watson & Clark, 1992) and has been found to relate to pessimistic attributional style, that is independent to depression (Luten, Ralph & Mineka, 1997). Negative affect has been widely accepted as a dispositional construct associated with experience of aversive emotional states (Luten, Ralph & Mineka, 1997) and has been found to correlate with trait neuroticism (Miller, Vachon & Lynam, 2009).

Individuals with higher levels of negative affect are known to experience heightened levels of affective discomfort that is chronic, persistent and pervasive across contexts, irrespective of apparent stress, and are more ruminative and introspective (Watson & Clark, 1984). Unsurprisingly, negative affect has also been

found to relate to the BIS (Erdle & Rushton, 2010). Elliot and Thrash (2002) propose that certain dispositional traits and behavioural styles share defining characteristics that can be conceptualised as core constructs of either approach or avoidance temperaments, which motivate GDB accordingly. Dispositional traits of extraversion and positive emotionality, and neuroticism and negative emotionality, have been found to correlate with aforementioned approach and avoidance processes respectively (Elliot & Thrash, 2002; 2010). Similarly, the latter traits (neuroticism and negative emotionality) are also known to relate to the onset and chronicity of depression (Klein, Kotov & Bufferd, 2011; Kotov, Gamez, Schmidt & Watson, 2010).

#### **Cluster C disposition, depression and goal motivation.**

Comorbidities with personality psychopathology are highly prevalent amongst depressed populations (Svartberg, Stiles & Seltzer, 2004) and as such, are likely to have an integral and compounding influence on the presentation and perpetuation (chronicity) of depressive symptoms and/ or clinical distress. A meta-analysis of 122 studies concluded that the prevalence of Cluster C personality disorders comorbid with depression lies between 68 – 78% (Friborg et al., 2014). Cluster C personality disorders, differentiated by DSM-V American psychiatric association (2013) as Anxious, Dependent and Obsessive compulsive personality disorders, have also been found to correlate highly with trait neuroticism (Saulsman and Page, 2004), and thus likely the aforementioned BIS. In the context of goal pursuit, such individuals may experience heightened affective sensitivity to perceivably negative stimuli, e.g. perceived difficulty associated with pessimistic



attribution style. This may motivate behaviour in pursuit of avoiding perceived incompetence and/or failure, relative to others, and thus avoid anticipated negative affect. It is also known that Cluster C personality difficulties are associated with low self-efficacy, higher psychological distress (Olsson and Dahl, 2012) and high comorbidity with anxiety disorders (Friborg et al., 2014).

Pham and Taylor (1999) highlighted that thinking about goals in a process focused way is likely to expose a person to a degree of negative affect, associated with the presence of anticipatory stress (in the moment), whilst contemplating challenges and plans to overcome them. Intolerance and avoidance of negative affect and emotion dysfunction, in respect to alexithymia (Lysaker et al., 2014) / limited affect consciousness and verbal expression (Johansen, Normann-Eide, Normann-Eide, & Wilberg, 2013), have been identified as specific neuro-affective processes or characteristics associated with Cluster C personality traits. These factors are likely to negatively impact on the affective experience of problem solving and self-regulation when engaging in process focused thinking and may serve to reinforce affective avoidant coping styles and thus further obstruct goal navigation and pursuit. In this way, it is likely that the interplay of affective dysfunction, coupled with maladaptive anxious, avoidant, obsessive compulsive and/ or dependent coping styles associated with Cluster C psychopathology may compound complexity and chronicity in depressed populations.

The way in which future goals are thought about (i.e. outcome focused or process focused), associated anticipatory affect and cognitive biases, amongst other cognitive and affective psychopathology associated with depression, are likely to

contribute to impaired motivation to engage in and / or sustain therapeutic goal pursuit aimed at enhancing wellbeing. High comorbidity of Depression with anxiety and Cluster C Personality disorders may present additional barriers to engaging in both goal oriented thinking and behaviour, as anxiety, pessimistic attribution, heightened biological sensitivity to perceivably negative stimuli and experiential affect avoidance may influence the type of goals a person engages in and additionally, the experience and tolerance of anticipatory affect that is experienced in the moment when these goals are contemplated.

Individuals with depression comorbid with Cluster C dispositional traits may present with a uniquely complex clinical presentation. Firstly, they may demonstrate neuro-affective dysfunction not only in regard to low reward sensitivity, failing ignite approach goal motivation, likely to be associated with depression. Secondly, they may also experience neuro-affective hypersensitivity and intolerance to perceivably negative affect, likely to be associated with Cluster C traits. Comorbidity may therefore precipitate premature goal disengagement when encountering perceived challenges in approach goal pursuit, and promote avoidance goal motivation. As such, Cluster C comorbidity may compound chronicity of depressive symptomology by amplifying barriers to engagement in approach oriented therapeutic goal pursuit. Results from (Johansen et al., 2013, p.520) also hypothesise a dysfunction in the “neuro-affective seeking system”, (approach system), of individuals with Avoidant personality disorder and have highlighted the importance of further empirical research. As such, it is essential to explore cognitive and affective influences of Cluster C comorbidity with depression in order to further understand and inform

clinical therapeutic challenges and approaches to promoting approach goal focused engagement.

### **Aims.**

In efforts to enhance the theoretical tapestry of goal motivation and behaviour, the present study aimed to tap both the cognitive and affective components that may underpin mechanisms of motivation to understand why individuals with depression, particularly those with comorbid Cluster C personality psychopathology, a known clinical population to demonstrate particular chronicity, may experience such difficulty in sustaining meaningful change and/or therapeutic engagement. The present study aimed to explore whether thinking about future goals in different ways (outcome focused or process focused), impacts on the anticipatory affect that individuals experience, and in what way. The study also aimed to examine whether the identified impact varied depending on participants' baseline characteristics, notably their levels of depression and presence of Cluster C dispositional traits.

### **Hypotheses.**

It was anticipated that levels of depression, anxiety and levels of likely personality psychopathology for Clusters A, B and C would be interrelated and that depression, anxiety and higher self-reported levels of personality psychopathology would relate inversely to levels of baseline positive affect and positively with negative affect. This was expected on the basis that such associations between

personality and affect have been identified when assessed using an alternative measure of personality (Structured Interview of Personality Organization; Stern et al., 2010). It was expected that overall, there would be a significant change in positive and/ or negative affect following outcome focused thinking and process focused thinking. It was expected that positive affect may increase following outcome focused thinking, on the basis of consummatory mental simulation, whereas negative affect may increase following process focused thinking, resulting from mental engagement in planning and problem solving. However, where between group comparisons could be made, it was also considered likely that those higher in self-reported levels of depression would report less positive affect following outcome focused thinking to those with low levels of depression, due to impairments in reward sensitivity, and that participants with higher self-reported Cluster C traits were expected to report higher levels of negative affect than those with low Cluster C traits when engaging in process focused thinking, on the basis of heightened sensitivity to negative affect.

## **Method**

### **Participants.**

The participant sample consisted of  $N = 45$  adults aged eighteen and above, inclusive of both males ( $N = 12$ ) and females ( $N = 33$ ). Ages ranged from 18 - 71 years,  $M = 29.73$ ,  $SD = 13.70$ ,  $IQR = 13$ . Forty-four percent of participants were university students of which, 18% were postgraduate students that were also employed in the community. Thirty-eight percent of participants were a community

sample, which consisted of individuals who were employed full-time (22%), part-time (7%), retired (7%) and unemployed (2%). Over half of the population identified as being of “white British” ethnicity (56%), with a further 24% identifying as “any other white background” which was inclusive of European (N = 9) and American participants (N = 2). The remaining 20% consisted of “any other Asian background” (13%) and “Indian” (7%).

The desired sample size ( $n \geq 44$ ) was calculated a priori using G\*Power statistical analysis software to ensure that the study was sufficiently powered (power > .8) to statistically detect both large correlations ( $r = .05$ ) amongst variables and to detect within group differences ( $d = .05$ ) in affect following the two thinking tasks.

### **Measures and materials.**

#### ***Depression.***

The Patient Health Questionnaire-9 (PHQ-9; Kroenke, Spitzer, & Williams, 2001) was used to measure levels of depressive psychopathology. The PHQ-9 is a sensitive and specific self-report measure (88% sensitivity and specificity) for detecting the presence of diagnostic properties of major depressive disorder (Kroenke, Spitzer, & Williams, 2001). The measure has been found to demonstrate high internal consistency ranging from  $\alpha = 0.74 - 0.92$  and good convergent and discriminant validity when compared with other measures of mental health (Cameron, Crawford, Lawton & Reid, 2008; Kroenke, Spitzer, & Williams, 2001; Titov, Dear, McMillan, Anderson & Sunderland, 2011), though some discrepancy in distinguishing depression severity was evident across measures.

The PHQ-9 is validated and routinely used in the diagnosis of depression across UK Primary Care NHS settings (Gilbody, Richards, D & Barkham, 2007) and was therefore deemed appropriate to employ for the screening of depressive psychopathology. The measure asks individuals to what extent over the past two weeks they have experienced each of nine symptoms known to characterise depression, with options ranging from “not at all”, “several days”, “more than half the days” to “nearly every day”. Each response corresponds with a numerical score that cumulatively reflects severity. A score of 5, 10, 15 and 20 represent severity of “mild”, “moderate”, “moderate to severe” and “severe” depression respectively.

### ***Anxiety.***

Levels of anxiety were measured via the 7 item Generalised Anxiety Disorder self-report questionnaire (GAD-7; Spitzer, Kroenke, Williams & Löwe, 2006). The GAD-7 has demonstrated high sensitivity and specificity of 89% and 82% respectively, excellent internal consistency (Cronbach  $\alpha = .92$ ) and good construct validity when compared with measures of well-being and mental health (Spitzer, Kroenke, Williams & Löwe, 2006). It is also widely used across UK Primary Care NHS settings as a brief and efficient diagnostic screening tool for anxiety. Scores of 5, 10 and 15 are representative of “mild”, “moderate” and “severe” anxiety respectively.

### ***Personality.***

The International Personality Disorder Examination screening questionnaire (IPDE-SQ; Loranger, Janca & Sartorius, 1997) is a brief and efficient self-report

measure (Blasco-Fontecilla et al., 2009) that is highly sensitive to the detection of likely personality psychopathology (Mulcahy-Avery & McNair, 2008). Though it is a non-diagnostic tool, items are based on ICD-10 diagnostic criteria for personality disorders (WHO, 1992) as a precursor to determine the appropriateness of further (IPDE) structured diagnostic clinical interview in clinical settings.

### ***Affect.***

To measure in-the-moment positive and negative affect (anticipatory affect), the “fears” and “joviality” subscales were taken from the Positive And Negative Affect Scale-X (PANAS-X; Watson & Clark, 1999). The measure provided participants with words that described negative (fear subscale, N = 6) affective states (e.g. afraid, nervous) and positive (joviality subscale, N = 7) affective states (e.g. cheerful, excited). Using a five point likert scale ranging from “very slightly or not at all” to “extremely”, participants were instructed to “indicate to what extent you feel this way *right now*” (see Appendix III). These subscales have demonstrated good internal consistency with the broader construct of positive and negative affect, with joviality demonstrating a median internal consistency estimate of  $\alpha = .93$  and fear demonstrating consistency with negative affect (median  $\alpha = .87$ ). Fear was also found to correlate with other scales of anxiety (Watson and Clark, 1999) indicating good construct validity. The PANAS-X is known to be the “one of the most widely used instruments in mood research” (Stanton & Watson, 2014, p.556). Despite the PANAS-X consisting of multiple subscales that represent positive (n = 3) and negative (n = 4) affect, subscales are robustly correlated with one another and also correlate

strongly with the five-factor model of personality (McCrae & John, 1992) traits of extraversion and neuroticism respectively (Stanton & Watson, 2014).

***Goal generation task.***

Participants were given 75 seconds to write down as many personally meaningful goals as they could think of that they would like to achieve. The time frame was determined on the basis that it has previously been a sufficient amount of time for individuals to generate future goals under experimental conditions (Dickson & MacLeod, 2004). Participants then rated the goals in order of importance with one being the most important goal and so on. Ratings were used to distinguish the top four most important goals for each participant and to counterbalance administration of the experimental task. The present study required a minimum of four personal goals to be generated, which was achieved by all participants within the time.

***Affect regulation/ Distractor task.***

A neutral word search was administered between tasks for two minutes per administration, in order to regulate affect and cognitively distract participants from their prior thinking task (goal generation or outcome focused tasks). Neutral word searches have been used by other studies as cognitive distractors (Goldenberg & Shackelford, 2005; Maxfield, Pyszczynski, Greenberg, Pepin & Davis, 2012)



***Outcome focused thinking task (adapted from Gerlach et al., 2014).***

In this task, participants were presented with one of their listed goals and asked to mentally simulate and describe what it would be like to have achieved the goal for two minutes.

***Process focused thinking task (adapted from Gerlach et al., 2014).***

In this task, participants were presented with one of their listed goals and asked to mentally simulate and describe what processes and steps would be required to attain the goal.

**Procedure.**

Ethical approval was obtained from both the UK National Health Service, Health Research Authority (HRA) and the Psychology Research Ethics Committee of Royal Holloway University prior to study commencement.

The sample was of a combined community and student population, recruited from Royal Holloway University and surrounding area. Participants were sought opportunistically, via community advertisement in shops, libraries and community centres, and were also recruited across RHUL University campus, via e-mail advertisement sent to the student and community participant pool. First year undergraduate participants were awarded student credits for participation, in accordance with RHUL regulations, whilst all other participants were offered entry into a monetary prize draw. Participants were self-selecting and were required to

make first contact (via e-mail or telephone) to express an interest in the study prior to study participation.

Participant eligibility was on the basis that individuals were English speaking, able to read and write in English, adult (aged eighteen and above) with no upper age limit. Prior to participating, participants were required to demonstrate intact cognition, such that they were able to fully understand, retain, recall and engage in the requirements of the study and thus give fully informed consent. This was evaluated informally and interpersonally on first meeting with each participant. Written informed consent was obtained from all participants. All participants recruited (n = 45) completed the full duration and participation requirements of the study without data omissions or error.

To ensure privacy and confidentiality, the experimental procedure took place in a private room across various community settings e.g. public libraries and research rooms at Royal Holloway University campus, to accommodate participant convenience and accessibility. The study administrator was a trainee clinical psychologist, with doctoral training on ethical and professional conduct and risk management, who met with all participants.

To ensure fully informed consent, participants read a detailed study information sheet prior to study participation. Participants were offered the opportunity to ask questions and were given assurance of their right to withdraw at any time, prior to completion of the consent form (see Appendix III) and at intervals during the study. Participants were then administered questionnaires that consisted of demographic information (age, gender, ethnicity), the PHQ-9, GAD-7 and IPDE-SQ.

Participants were subsequently instructed to complete the goal generation task, whereby they were verbally instructed to write down as many future goals as possible that they could think of that they would like to achieve. Participants were assured that the goals could be big or small, though they were asked to select goals that were personally meaningful to them and be willing to talk about them afterwards if instructed. Participants were made aware that they would be given “a minute or so” (75 seconds) to complete the task. Participants were then asked to rate their goals in order of importance by adding a number one next to their most important goal and so on. Participants were then given the neutral word search for two minutes to regulate any affect roused by the exercise of generating goals. Baseline positive and negative affect was recorded using the PANAS-X fears and joviality subscales questionnaire.

The outcome thinking task was then introduced, whereby participants were reminded of one of their top four most important goals that they had generated (in accordance with a randomly pre-generated order of goal importance) and were instructed “for the next two minutes, imagine and describe aloud what it would be like to have achieved that goal, place yourself in the position whereby you have achieved [the goal] and describe what would be different, what might you be doing differently, how would you be feeling”. Prompts included “what would be the impact of achieving [the goal]”, “what else might be different”. After two minutes, participants were thanked and promptly asked “in the same way” to repeat the task with another of their randomly assigned goals. Affect was recorded promptly after completing the task, followed by re-administration of the neutral word search. Affect

was again recorded to serve as a secondary baseline in order to minimise bias of carry-over effects from the outcome focused thinking task and/or wider confounds such as experimental fatigue. The process focused thinking task was subsequently introduced herein which, participants were reminded of another of their top four most important goals, selected via the pre-randomised order. They were then instructed “for the next two minutes, imagine and describe aloud what would be all of the necessary steps and processes that would be required to achieving [the goal]. Describe what would need to be different, how might you do that and how might you feel as you are doing these things”. Prompts included “really break down the steps involved”, “what else might need to happen to achieve this”. After two minutes, participants were thanked and promptly asked “in the same way” to repeat the task with the remaining goal from their selected top four, followed by a final record of affect. Participants were thanked and debriefed.

In accordance with the study risk protocol, participants that had demonstrated present levels of psychological distress (indicated via scores of mild or greater levels of depression and/or anxiety on the PHQ-9 and GAD-7) and/or via the nature of qualitative information shared during the experimental process, were given details of local and national mental health support services and given the opportunity to discuss ways of accessing mental health support if desired. Participants within the clinical group were requested to give consent to disclose their participation and potential risk information with their psychological health care co-ordinator for ongoing risk and well-being management prior to study participation.

## **Results**

### **Data screening.**

Following initial review of descriptive statistics and confirmation of normal data distribution ( $z = <3.29$ ) (Ghasemi & Zahediasl, 2012), single outliers ( $N = 2$ ) identified amongst the anxiety and Cluster B datasets were winsorized, in order to minimise bias posed by over-inflation, whilst retaining a lessened yet non-excluded representation of the datum (Ghosh & Vogt, 2012), (see Appendix IV). Data met the assumptions required for subsequent parametric tests (Garson, 2012).

### **Baseline relationships.**

In line with the initial hypotheses and subject of inquiry, baseline relationships were firstly explored using correlational analyses (see Table 1.). Depression, anxiety and personality Clusters A, B and C were correlated individually with the primary baseline measures of positive and negative affect. There was a significant positive correlation between depression and anxiety. Clusters A, B and C each correlated positively with scores on depression and anxiety; Cluster C illustrated large correlations to both depression and anxiety, and Cluster B illustrated large to medium correlations respectively with depression and anxiety. Significant correlations were also identified between Cluster A and both depression and anxiety. All personality Clusters also correlated positively with one another, such that higher scores on one personality Cluster therefore related to higher likelihood of scoring on additional comorbid personality psychopathology.

Despite correlations between mood and personality measures, depression was the only baseline variable found to correlate significantly with baseline positive affect, whereby higher levels of depression related to lower levels of positive affect ( $r(43) = -.30, p = .05$ ). No significant relationship between depression and negative affect was evident at baseline. The only variable found to significantly correlate with baseline negative affect was Cluster C ( $r(43) = .31, p = .04$ ), such that higher scores on Cluster C personality characteristics related to higher levels of negative affect.

**Table 1.**  
*Baseline correlations*

Baseline variable	Analysis	Depression	Anxiety	Cluster A	Cluster B	Cluster C	Baseline positive affect	Baseline negative affect
Depression	Pearson Correlation	1	(.75**)	(.35*)	(.51**)	(.53**)	(-.30*)	.02
	Sig. (2-tailed)		.00	.02	.00	.00	.05	.89
Anxiety	Pearson Correlation	(.75**)	1	(.34*)	(.42**)	(.63**)	-.27	.20
	Sig. (2-tailed)	.00		.02	.01	.00	.07	.20
Cluster A	Pearson Correlation	(.35*)	(.34*)	1	(.55**)	(.58**)	.25	.11
	Sig. (2-tailed)	.02	.02		.00	.00	.10	.47
Cluster B	Pearson Correlation	(.51**)	(.42**)	(.55**)	1	(.46**)	.03	.01
	Sig. (2-tailed)	.00	.01	.00		.00	.82	.97
Cluster C	Pearson Correlation	(.53**)	(.63**)	(.58**)	(.46**)	1	-.08	(.31*)
	Sig. (2-tailed)	.00	.00	.00	.00		.60	.04

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

### **Affect following outcome versus process thinking.**

To identify whether, and in what way, thinking about goals in different ways (outcome focused and process focused) affects anticipatory affect, dependent t-tests were used to compare mean positive and negative affect scores before and after

engaging in each of the two experimental conditions (see Table 2a.). Mean positive affect was significantly higher after, relative to before outcome focused thinking ( $t(44) = 5.31, p < .001, d = .80$ ). However, no significant difference in negative affect was identified following outcome focused thinking ( $t(44) = .70, p = .49$ ). Conversely, mean negative affect was significantly higher, following process focused thinking ( $t(44) = 3.25, p = .002, d = .49$ ), whereas no significant difference in positive affect was found after process thinking ( $t(44) = .40, p = .69$ ).

**Table 2a.**

*Descriptive statistics for mean affect*

Condition	Affect	Mean	Std. Dev
Outcome	Positive pre	<b>3.04</b>	<b>.87</b>
	Positive post	<b>3.42</b>	<b>.92</b>
Outcome	Negative pre	<b>1.26</b>	<b>.53</b>
	Negative post	<b>1.22</b>	<b>.40</b>
Process	Positive pre	<b>2.96</b>	<b>1.02</b>
	Positive post	<b>3.00</b>	<b>1.063</b>
Process	Negative pre	<b>1.11</b>	<b>.21</b>
	Negative post	<b>1.26</b>	<b>.47</b>

Dependent t-tests revealed that proportion change in positive affect (see Table 2b.) was significantly larger following outcome thinking than following process thinking ( $t(44) = 2.31, p = .03, d = .34$ ), whereas proportion change in negative affect was significantly larger following process thinking than outcome thinking ( $t(44) = 2.29, p = .03, d = .34$ ).

**Table 2b.***Descriptive statistics for proportion change in mean affect*

Proportion change in affect	Condition	Mean	Std. Dev
Positive	Outcome	<b>.06</b>	<b>.09</b>
	Process	<b>.00</b>	<b>.11</b>
Negative	Outcome	<b>-.01</b>	<b>.13</b>
	Process	<b>.04</b>	<b>.09</b>

**Predictors of affect change.**

Proportion change in positive affect following outcome thinking and proportion change in negative affect following process thinking were correlated with the baseline variables (depression, anxiety, Clusters A, B and C) to identify whether each variable was associated with the changes in affect identified. Only Cluster B personality characteristics were found to relate (inversely) to the proportion of change in positive affect following outcome thinking ( $r(43) = -.41, p = .01$ ), such that higher levels of self-reported Cluster B characteristics related to smaller proportion change in positive affect. However, depression, Cluster A, B and C were all found to relate to proportion change in negative affect following process thinking (see Table 3.).



**Table 3.**  
*Correlations between proportion change in affect with baseline variables*

Baseline variable	Analysis	Proportion change positive affect outcome	Proportion change negative affect process
Depression	Pearson Correlation	<b>-.07</b>	<b>(.32*)</b>
	Sig. (2-tailed)	<b>.65</b>	<b>.03</b>
Anxiety	Pearson Correlation	<b>-.01</b>	<b>.21</b>
	Sig. (2-tailed)	<b>.94</b>	<b>.18</b>
Cluster A	Pearson Correlation	<b>-.05</b>	<b>(.34*)</b>
	Sig. (2-tailed)	<b>.76</b>	<b>.02</b>
Cluster B	Pearson Correlation	<b>(-.41**)</b>	<b>(.34*)</b>
	Sig. (2-tailed)	<b>.01</b>	<b>.02</b>
Cluster C	Pearson Correlation	<b>.06</b>	<b>(.31*)</b>
	Sig. (2-tailed)	<b>.69</b>	<b>.04</b>

To assess the extent to which the multiple independent variables (depression, Clusters A, B and C) accounted for the variance in change in negative affect when engaging in process thinking, a multiple regression was carried out. “proportion change in negative affect when engaging in process thinking” was the dependent variable and depression, Clusters C, B and A were the predictor variables. The aim was to identify what the predictive power of these variables was and also determine the extent to which depression and Cluster C accounted for variance in change in negative affect within the process thinking condition. No single predictor variable was identified to significantly account independently for variance in change in negative affect following outcome thinking. This is likely due to high

multicollinearity amongst predictor variables, as variables that are insufficiently independent from one another may bias (overinflate) the coefficient estimation and reduce associated power for detection of independent variance (Yoo et al., 2014). Multicollinearity may have thus obstructed identification of particular predictor variables that are likely to contribute to identified effects of process thinking.

**Depression and change in affect.**

***Outcome thinking, positive affect.***

In order to further explore the hypothesis that individuals with depression may experience deficits or differences in their affective response style when thinking in an outcome focused way the highest third of scorers on depression ( $N = 13$ ), and the lowest third of scorers ( $N = 17$ ) were selected for between group comparisons. This analysis was undertaken because it is possible that differences may only be evident amongst those with higher levels of depression. Participants with higher scores on depressive symptoms (scores ranging between 5 - 11 on PHQ-9,  $M = 7.67$ ,  $SD = 2.19$ ) were compared to participants with low-to-no levels of depression (scores ranging between 0-1,  $M = 0.27$ ,  $SD = 0.46$ ) on reported symptoms ("type") on a measure of positive affect, before and after thinking in an outcome focused way ("condition"). The dependent variable was level of self-reported positive affect at each time point. A type (high depression vs low depression) x time (pre / post outcome thinking) mixed model ANOVA showed a significant main effect of time ( $F(1, 28) = 11.85$ ,  $p < .01$ ,  $\eta p^2 = .30$ ), with participants reporting higher levels of positive affect following outcome focused thinking compared to before outcome

focused thinking. There was a significant main effect of type, indicating that individuals with high levels of depressive symptoms differed significantly in self-reported levels of positive affect to those with low levels of depressive symptoms ( $F(1, 28) = 5.42, p = .03, \eta^2 = .16$ ). However, there was no significant interaction of condition on type, indicating that the affective response style in regard to positive affect did not differ significantly between participants with high levels of depressive symptoms to those with low levels.

***Process thinking, negative affect.***

In line with the hypotheses that individuals with Cluster C personality traits may experience heightened negative affectivity, further analysis of variance was conducted for the purpose of completeness, to ascertain whether the correlational effect identified was also present when comparing the highest and lowest third of scorers on Cluster C personality traits. Participant scores were recoded to distinguish the highest third of scorers on cluster C items (Anxious, Anakastic, Dependent) of IPDE-SQ ( $N = 14$ ), and the lowest third of scorers ( $N = 16$ ) for comparison. Those with higher scores on cluster C traits (scores ranging between 7-14,  $M = 9.6, SD = 2.23$ ) were compared to participants with low-to-no scores across the three personality subscales (scores ranging between 0-4,  $M = 1.7, SD = 1.48$ ). Where negative affect was the dependent variable, a type (high Cluster C vs low Cluster C) x condition (pre/post process thinking) mixed model ANOVA showed a significant main effect of condition ( $F(1, 28) = 7.18, p = .01, \eta^2 = .20$ ), with participants reporting higher levels of negative affect following process focused thinking. There was a significant main

effect of type, indicating that individuals with high Cluster C characteristics differed significantly in self-reported levels of negative affect to those with low Cluster C traits ( $F(1, 28) = 5.74, p = .02, \eta^2 = .17$ ). The interaction of condition and type was significant ( $F(1, 28) = 6.01, p = .02, \eta^2 = .18$ ), indicating that the affective response style in regard to negative affect differed significantly between participants with high Cluster C traits to those with low Cluster C traits. Post-hoc t-tests compared participants with high Cluster C scores to those with low Cluster C scores on self-reported levels of negative affect before and after undertaking the process thinking task. Separate variance estimates were used since homogeneity of variance assumptions were not met. No significant differences in negative affect were identified between the two groups (high and low Cluster C) before engaging in the process thinking task ( $t(15.96) = 1.63, p = .12$ ), however, significant differences in negative affect were identified following the process thinking task ( $t(14.77) = 2.37, p = .03, d = .89$ ), with the high Cluster C group demonstrating higher negative affect ( $M = 1.35$ ) than the low Cluster C group ( $M = 1.04$ ). These findings are consistent with the identified correlation between proportion change in affect following process thinking and Cluster C traits.

## Discussion

The present study aimed to explore the effects of manipulating goal focused cognition on experiences of positive and negative anticipatory affect. Variables including depression, anxiety and Cluster A, B and C personality traits were compared in relation to positive and negative affect, to identify in what way such variables may relate to the affect that is experienced in-the-moment when thinking about goals in different ways. Baseline comparisons illustrated that all variables were interrelated, however in spite of this, only depression was found to relate to lower positive affect at baseline, and only Cluster C traits related to higher negative affect at baseline. It is possible therefore that individuals with comorbid depression and Cluster C traits are likely to present with a combination of inhibited positive affect and heightened negative affect.

On the whole, outcome goal focused thinking appeared to induce positive anticipatory affect, but did not affect negative affect, whereas process thinking appeared to increase negative anticipatory affect but not positive affect. It could therefore be suggested that the two thinking styles may provoke distinctly different affective (and likely motivational) responses. It is possible that enhancement of positive affect, associated with approach motivation (Erdle & Rushton, 2010; Gable, Reis, & Elliot, 2000), in the absence of change in negative affect, may suffice to promote subsequent GDB due to activation of consummatory systems (MacLeod, 2017). However, the experience of positive anticipatory affect may also pose a risk of idealised attainment and underestimation of what is required to reach attainment (planning fallacy; Pham & Taylor, 1999), to the extent that unanticipated challenges

may impede GDB and goal engagement and drive premature disengagement (Dickson et al., 2016). In line with Taylor et al., (1998), it is therefore possible that exposure to a certain degree of negative affect that occurs when thinking about goals in a process focused way may support self-regulation of emotion and behaviour that primes successful and sustained GDB. As process thinking appears not to incite appetitive motivation, and outcome thinking is unlikely to orient goal focused planning, it is possible that a synthesis of the two thinking styles may be complimentary in promoting effective goal pursuit. Outcome thinking may serve to entice and raise positive anticipatory affect towards engaging in GDB, whilst problem solving / planning may support self-regulation and resilience to anticipated barriers during GDB.

Key differences appear to exist however, when considering goal engagement in depressed samples. The present study identified that individuals with higher levels of depression experience lower levels of positive affect than those with low-to-no levels of depression. This is consistent before and after outcome thinking, however the higher depression group did appear to experience a relative increase in positive affect as a result of outcome thinking to the low-to-no depression group. In contrast to the reward sensitivity theory (that those with depression experience impoverished responsiveness to reward (Alloy et al., 2016; Gray, 1994)), the present findings indicate some positive affective responsiveness to outcome focused thinking. However, the disparity between levels of baseline affect was to the extent that, even after engaging in outcome thinking, the higher depression group mean positive affect ( $M = 2.89$ ) remained less than the baseline (pre-outcome thinking)

mean positive affect of the non-depressed group ( $M = 3.27$ ).

It is possible that individuals in the higher depression group may not have experienced sufficient levels of depression to demonstrate distinct differences in affect responsiveness that has been widely theorised (Alloy et al., 2016). However, as it is likely that individuals with higher (more reliably clinical) levels of depression may function at substantially lower levels of positive affect, it is also possible that responsiveness may appear to be inhibited or “blunted” depending on how this is compared or defined.

Results of the present study indicate that outcome thinking alone may be insufficient to activate approach motivation for depressed individuals to engage in GDB, on the basis of disparity in baseline positive affect impeding exposure to sufficient levels of positive anticipatory affect required to spark approach motivation. One explanation for this is that outcome thinking relies on an ability to access mental representations of the anticipated event (achievement of the goal). Evidence has supported the notion that depressed individuals experience reduced specificity and broader difficulties in accessing cognitive goal representations (Dickson & Moberly, 2013; MacLeod & Salaminiou, 2001), which may contribute to the perpetuation of a lack of anticipated positive experiences (MacLeod & Salaminiou, 2001). It is also possible that dysfunction/ biases in autobiographical memory, a known vulnerability factor to depression, may impede access to constructing future events and contribute to low expectations and pessimism regarding goal attainment. Roepke and Seligman (2016) propose that these three aspects of faulty prospection, difficulty in cognitive construction of future events,

negative evaluations of possible futures, and pessimistic beliefs are theorised to serve as “causal elements” (p.23) of depression, however their model does not account for the role and/ or interaction of affect during prospection.

Positive affect remained largely unaffected by process thinking, however individuals with high Cluster C traits demonstrated an extreme spike in negative affect, indicating a uniquely hypersensitive negative affectivity in response to the cognitive challenge of process thinking. Luu, Collins & Tucker (2000) identified that college students high in negative affect and negative emotionality demonstrated greater error-related negativity (neuroaffective response to committing error) that precipitated premature task disengagement when compared with controls. Error-related negativity was observed to decrease following task disengagement, indicating a relationship between frontal lobe executive functions, regulation and tolerance of negative affect and behavioural responses.

For individuals with Cluster C personality difficulties, executive processes involved with thinking about goals, particularly in a process focused way, may therefore relate to heightened error-related negativity in this population and contribute to avoidance coping. Spinhoven, Bamelis, Molendijk, Haringsma and Arntz (2009) identified that individuals with Cluster C personality difficulties demonstrated reduced memory specificity when compared with non-clinical controls however, this was mediated by depressive symptoms. This supports the prospect that difficulties in specificity associated with autobiographical memory, thought to impact on specificity of prospection of future goals, remains characteristic to the comorbid presentation and may serve to aggravate negative affect, possibly



associated with error-related negativity, when contemplating future action. It is likely that at the earliest stages of change motivation, dysregulation of negative affect, coupled with alexithymia and / or intolerance of negative affect may motivate avoidance behaviours and thus impede engagement at the contemplation stage (Prochaska, DiClemente, & Norcross, 1992) (thinking about future goals) and subsequent stages throughout goal focused therapeutic approaches.

### **Clinical implications.**

The present study has identified distinct affect response styles in individuals with scores on depression and for those with Cluster C personality traits. Owing to insufficient sample size, comorbidity of depression and Cluster C could not be statistically compared. However, it is possible that in clinical settings, individuals with comorbid depression and Cluster C personality psychopathology may experience a synthesis of inhibited sensitivity in positive affect that is compounded by hypersensitivity in negative affect in response to thinking about future goals. In wider studies, Cluster C has been identified as a negative predictor of treatment outcome in chronically depressed populations at short-term (6 month; Viinamäki et al., 2002) and long-term follow-up ( $\geq 25$  month; Holma, Holma, Melartin, Rytsälä & Isometsä, 2008; Viinamäki et al., 2003), to the extent that it has been deemed an obstruction to sustained remission from depressive psychopathology.

Chronic depression is associated with disruptions in cognition and affect and failure to engage in and/ or sustain GDB. The prevalence of comorbidity with Cluster C personality psychopathology is high (Friborg et al., 2014), which may present

unique complexity when formulating and engaging such individuals in goal focused therapeutic work. It has been argued that thinking about goals in different ways, thinking about the outcome or thinking about the process of attaining goals, can motivate subsequent GDB, however there is also an affective component that contributes towards an individual's motivation to engage in moving towards their goals, namely, disruptions in anticipatory affect. Positive and negative anticipatory affect are thought to influence goal motivation either towards perceivably positive experience, or away from perceivably negative outcomes respectively.

In a five-year prospective follow-up study, Bukh, Andersen & Kessing (2016) identified that rates of remission from a first episode of depression decreased by 30% when comorbid with Cluster C personality disorder and that risk of relapse following remission increased by 80%. Higher baseline scores of neuroticism were also found to impede the rate of remission by  $\geq 20\%$  (Bukh, Andersen & Kessing, 2016). In line with scores of neuroticism, the experience of heightened negative affect identified in the present study may therefore serve as a marker for prospective treatment responsiveness that may warrant specific therapeutic attention in the preparation stages and throughout psychological therapy. Additionally, comorbid difficulties in prospection specificity (Dickson & Moberly, 2013), coupled with vulnerability to error-related negative affect, may negatively impact on relapse prevention work, as this typically relies on the anticipation of behaviours that promote and sustain well-being and anticipatory planning of responses to difficult events that risk triggering relapse (Witkiewitz & Marlatt, 2011).

In sum, those with both higher levels of negative affect (associated with Cluster C traits) and lower levels of positive affect (associated with depression) may be less likely to experience changes in positive affect during process focused thinking, that may ordinarily contribute to intrinsic motivation and regulate their ability to sustain goal pursuit in the face of negative affect. Instead, such individuals may be more likely to experience and be motivated by the inevitable spike in negative affect that corresponds with both outcome and process thinking, which then contributes to avoidance motivation and approach goal disengagement in self-protective efforts to minimise exposure to a negative anticipated affective state. In support of these findings, some third-wave approaches have demonstrated promising evidence at preventing relapse in recurrent depression, such as Mindfulness Based Cognitive Therapy (Chiesa & Serreti, 2011; Piet & Hougaard, 2011) and Radically Open-Dialectical Behavior Therapy (Drago, Marogna & Søgaaard 2016; Lynch, 2018) and at alleviating Cluster C psychopathology Affect Phobia Treatment (Schanche, Stiles, McCullough, Svartberg & Nielsen, 2011). In addition to cognitive mechanisms of change, these approaches pay particular attention to developing emotional awareness, affect tolerance, regulation, self-compassion and openness to experience. Therapeutic approaches such as these may therefore be relevant to addressing complexity that arises in comorbid depression and Cluster C populations.

#### **Limitations and future direction.**

Despite promising findings in support of two widely theorised mechanisms of affect, the present study is not without its limitations. Firstly, the use of a non-

clinical, self-selecting population with limited diversity in age, gender, education and ethnic demographics result that caution should be employed when deriving hypothetical implications for wider clinical and comorbid populations. The demonstrable volition to participate in a goal focused study may in itself, distinguish a contrary population to those who may be typically less motivated to approach and more motivated to avoid such potential for distress, thus limiting the ecological validity of the target sample characteristics. Secondly, despite high sensitivity of the personality measure employed, the IPDE-SQ has received criticism for low specificity (Mulcahy-Avery & McNair, 2008), which may have contributed to inflated estimations of inter-correlations between personality and mood variables, and poses risk of failure to adequately distinguish Cluster C personality psychopathology from that of Cluster A and B. In a meta-analysis of 122 studies, Friborg et al (2014) identified that comorbidity of personality disorders were higher when determined by questionnaires in comparison to clinical interview. Further research using a more sensitive measure of personality psychopathology and / or clinical interview would therefore be crucial to determine a more reliable distinction of the effects of personality characteristics on affect in depressed populations.

Despite apriori power calculation, the present study was only powered to detect moderate to large effect sizes. Subsequent between groups analysis further minimised statistical power and sensitivity, such that the statistical risk of type II error was inflated. Low specificity and small sample size may have contributed to the failure to identify how, if any, of the predictor variables in this study contributed to the effects of process thinking when using multiple regression analysis, resulting that

this question remains unanswered. Additionally, correlational analyses do not infer causality, nor explain the mechanisms behind changes in affect identified under the two thinking conditions. Neither do the results infer whether the experience of anticipatory affect is a predictor of subsequent goal focused behaviour or engagement. It is important to acknowledge that the cross sectional, correlational design employed also does not measure or control for multiple cognitive factors that may contribute to changes (or lack of change) in affect, such as pessimism, goal commitment, expectancies of attainment and theorised “repetitive, uncontrollable and negative thinking” that may occur simultaneously to goal focused thinking (Spinhoven, Bamelis, Molendijk, Haringsma & Arntz, 2009, p.520), which would benefit from multifaceted enquiry. The present study also did not distinguish between personality Cluster sub-types. It is therefore anticipated that the negative affect response style evident amongst individuals with Cluster C personality characteristics would warrant further inquiry to determine whether this can be specified or generalised to one or more personality Cluster sub-types. It is possible that individuals with chronic depression may demonstrate additional differences in affect response style to those with first or second episode of depression. This would also warrant further exploration.

The present study has drawn attention to the role of affect and disposition when thinking about future goals. Despite acknowledged limitations, results of the present study support further exploration of the role of affect and personality in the context of goal focused prospection in order to inform formulation of presenting

clinical difficulties and support engagement in what is likely to be a distinctly complex and challenging therapeutic demand.

## **Integration, Impact and Dissemination**

### **Integration**

Goal focused approaches are an integral feature of third-wave psychological therapies for depression (Brown, et al., 2011). However, challenges can occur therapeutically in supporting individuals to engage in thinking about future goals and motivating behaviour to engage in and sustain goal directed behaviour. Individuals with chronic or recurrent depression demonstrate particular difficulty in this area and have been found to demonstrate particular susceptibility to goal disengagement (Dickson et al, 2016). Having worked with individuals with chronic depression and Cluster C personality difficulties on both an assessment level and therapeutically, and having worked amongst other clinicians that work with this particular demographic, it has been anecdotally acknowledged that this population experiences particular difficulty in goal focused work. Observable shifts in affect that have illustrated feeling overwhelmed and deterred from thinking about goals was a shared feature in both my experience and that of my colleagues. For the present research project, I therefore set out to explore what cognitive and affective factors are likely to contribute to relationships between depression and goal focused engagement in efforts to support the formulation and treatment approaches to goal focused therapeutic engagement.

Firstly, I conducted a systematic literature review of the existing evidence base focusing on relationships between depression and two widely accepted models of motivation, namely approach motivation and avoidance motivation, specifically in regard to personal goals. Approach motivation refers to the active pursuit of

perceivably positive outcomes, whereas avoidance motivation refers to the active prevention of exposure to perceivably negative outcomes or experiences. The systematic review provided empirical and theoretical context of differences in goal motivation associated with depressive symptoms, along with broad evaluation of the heterogeneity in methodology applied to measure goal focused motivation. Interestingly, despite depression being characterised as an emotional disorder (Williams et al., 2007), all studies identified via the systematic review failed to assess for the role of affect as a contributory factor to goal focused approach or avoidance motivation. Instead, the key emphases were on cognitive factors, broadly themed as; subjective importance of the goals, causal motivators of why the goal(s) would be accomplished or avoided, reported efficacy of achieving the goals and anticipated likelihood of goal attainment. Depression was consistently associated with deficits in approach goal motivation, associated with pessimism, low self-efficacy and disengagement in perceivably unattainable goals, though depression was less consistently associated with heightened avoidance motivation.

Adding to the complexity of depressive psychopathology, comorbidity with personality disorder is common in chronically depressed populations (Svartberg, Stiles & Seltzer, 2004), with Cluster C personality comorbidity estimated at 68 – 78% (Friborg et al., 2014). Cluster C comorbidity has been found to increase the risk of relapse from first episode depression by 80% Bukh, Andersen & Kessing (2016), indicating a unique complexity of presenting psychopathology likely to impede goal directed behaviour and sustained well-being. Both depression and Cluster C personality characteristics have been associated with disruptions in affect, such that



depression has been associated with deficits in positive affect, whilst Cluster C has been associated with heightened negative affect. This presented an interesting possible combination of affect response styles that may serve to compound difficulties in goal focused engagement.

I originally planned to study the affect response style of individuals with comorbid chronic depression and Cluster C personality difficulties to ascertain whether, and in what way, differences may exist in anticipatory affect when thinking about future goals in different ways, when compared with a non-clinical sample. An NHS London-based secondary care outpatient Mental Health service, was a service with known links to Royal Holloway University (RHUL) due to academic staff involvement. I learned that this service predominantly treated individuals with the comorbid presentation of interest and that a RHUL staff member, also working at the service was willing to support my involvement with the service as field supervisor. This was extremely useful in setting up the study due to having a point of contact with existing systemic context and contacts embedded within the service. During the initial stages of recruitment planning it was uncertain whether additional equivalent mental health services would be required to maximise recruitment, however I decided that in the first instance, as links were already established at the original service, this would be utilised as the main recruitment hub, with possibility of broadening recruitment locality at a later stage if needed. This was a crucial decision that in hindsight, may have contributed to the recruitment failure of a clinical sample.

Following a lengthy NHS ethical approval process, approval was granted by the Health Research Authority on 9<sup>th</sup> August 2017, however despite active correspondence in efforts to expedite the process, Trust confirmation of capability and capacity for the original site was not received until 1<sup>st</sup> December 2017. I had planned to recruit a target clinical sample size of N = 25 however, this proved less feasible as the approval delay intruded on recruitment time allocation. Whilst delays in Trust approval were evident, efforts by my field supervisor and I were made to develop links with a second equivalent NHS site and maximise recruitment locality. Approval and service engagement was in place by 18<sup>th</sup> January 2018. However, owing to the limited remaining recruitment period, a total of five clinical participants volunteered for the study, of which, only three amounted to successful attendance and participation within the recruitment window. Cancellations and access difficulties were barriers to accessing the study, as the study did not fund transport to attend the mental health centres for study participation and cancellations proved fruitless to reliably reschedule.

At the end of February 2018 it was evident that the prospect for recruiting a sufficient clinical sample was no longer feasible. In agreement with my primary supervisor, I decided that a community / student sample recruited from the RHUL participant pool would be required to supplement the existing data collected from what was originally, the non-clinical control group. The participant pool therefore evolved to a mixed community and student sample. Recruitment via the RHUL participant pool expedited recruitment hugely due to accessibility of participants, accessible booking systems and access to room availability to conduct the research.

This enabled thirty participants to be recruited intensively over a one-month period (March 2018) in order that a total sample  $N = 45$  was accomplished.

In addition to the limitations on recruitment period, I believe that additional factors may have posed barriers to recruitment of a clinical sample. The identification of clinical participants relied entirely on self-selection (via exposure to posters in waiting areas) of clinical participants themselves and on clinical staff to identify and introduce appropriate potential participants to the prospect of the study. On reflection that the present study aimed to target individuals with complex deficits in motivation, particularly in the context of goal engagement, the prospect of self-referral for a study that was transparently goal related, may have been somewhat counterintuitive. The interpersonal nature of the study may have presented an additional barrier to participation, particularly because avoidant personality difficulties are also commonly associated with clinical features of social phobia (Hummelen, Wilberg, Pedersen & Karterud, 2007).

Throughout the research process, I learned that the reliance on staff awareness and understanding of the study, commitment to supporting the study and full understanding of the recruitment criteria and referral pathways was also a key factor that required substantial time investment. This was evident as I noticed that I received a more enquiries via e-mail and telephone consultations regarding participant referrals with the staff located at the second service, where I had spent more time personally introducing the study and research context and emphasised my personal availability to provide support and consultation to facilitate successful referrals. Research has identified that many Allied Health Professionals have

reported not having sufficient time, resources, skills or support to engage with research that may inform their clinical practice (Mickan, Wenke, Weir, Bialocerkowski & Noble, 2017). It is possible that as a service, the second service to become involved with the study, may have had broader capacity to engage in supporting the research study, perhaps due to additional resources to allocate to the recruitment demands of the study and / or having better perceptions of direct accessibility of support. Contextually, the original mental health service was also undergoing a service restructure at the time of recruitment, which may have contributed to limitations on clinician resources at this site. Additionally, across both sites, clinical staff typically met with clients on a once per week or bi-weekly basis. As the study was not the primary reason for contact, it is possible that invitation to participate may not have been remembered, or may have been perceived as intrusive of allocated therapeutic time.

Staff engagement and motivation to become involved in the study was a crucial area that I believe I underestimated when evaluating the feasibility of the study. On reflection, study recruitment of the clinical population relied heavily (almost entirely) on staff familiarity with the study inclusion criteria, identification of potential participants and on staff dedicating time to introduce their clients to the prospect of the study. This may have been too great of demand on staff resources and may have required substantially more engagement to motivate staff to engage in the additional (perceivably effortful) resource investment required for study success. I believe that such engagement with clinical staff would have been facilitated by the development of professional relationships with staff individually,

frequent exposure to reminders and updates on the study and recruitment progress and efforts to promote a sense of collaboration, such that clinical staff became aware of their active, valued and pivotal role in the research process. Despite receiving confirmation of service capacity approval, I have learned that in carrying out future research designed with such reliance on clinical staff, I would firstly pilot a survey that outlined the context of the study and evaluated staff interest, perceived effort, resource capacity and attitudes towards supporting the study in the way that is required. This would provide better insight into the feasibility of the recruitment design and would also serve as a pre-engagement tool to prime commitment to study involvement.

Failure to recruit a sufficient clinical sample size meant that the study evolved from a between groups clinical samples design to a non-clinical cohort design. Despite the change in target population, the purpose of inquiry remained as closely as possible to the original aims, but instead compared relationships between levels of depression and frequencies of scores on personality characteristics that fell within Cluster A, B and C domains. The results obtained were sufficient to split the cohort, in efforts to move slightly closer to a group comparison whereby the groups were differentiated clearly on levels of the independent variables (depression and Cluster C). Though the study was unable to make comparisons to the extent of comparing clinical versus control groups, comparisons were made between the top third of highest scorers on depression to lowest third of scorers on depression, along with a separate comparison of the top third of scorers (those who self-reported higher frequencies) of Cluster C personality traits, to the lowest third of scorers. Splitting

the dataset in this way was at the statistical expense of loss of power and threatened risk of Type II error. The use of a non-clinical sample also resulted that the “higher scorers on depression” group consisted of a mix of sub-clinical (mild) to moderate levels of depression which is somewhat discrepant in likely cognitive and behavioural presentation to the initial clinical group of inquiry (chronic depression with at least moderate levels of depression). Equally, the presence of personality traits do not adequately equate to representing the presence of maladaptive cognitive, affective and behavioural dimensions that constitute a diagnosable personality disorder. Individuals with chronic depression and personality difficulties are known to experience entrenched maladaptive beliefs and cognitive, affective and behavioural responses (Keefe, Webb, & DeRubeis, 2016) and as such, the present use of a small, non-clinical sample in this way, poses significant risks to the validity of conclusions when attributed to this specifically complex population.

A further disadvantage that arose as a result of the change in study design, was the application of the IPDE-SQ, personality questionnaire. This measure was designed for the purpose of screening for the likely presence of personality psychopathology, as a precursor to the IPDE clinical diagnostic interview. The original intended application of the IPDE-SQ was for clinicians to refer to informally, as a tool to distinguish this particular comorbid presentation from their caseload of depressed individuals for potential study referral. The IPDE-SQ was also intended for the categorical purpose of screening and confirming the between groups distinction of those with current and chronic depression (PHQ-9 score of  $\geq 10$  and existing diagnosis of chronic depression) and comorbid “likely Cluster C personality

psychopathology” (determined via a score of five or more on any specific Cluster C sub-type) to non-clinical controls (PHQ-9 score  $\leq$  , IPDE-SQ  $\leq$  3 on any given Cluster C sub-type). The IPDE-SQ has been criticised for low specificity (Mulcahy-Avery & McNair, 2008) and was not designed to evaluate dimensional scores on personality (Loranger, Janca & Sartorius, 1997). This may have threatened the construct validity of Cluster C personality identification and would not have been selected for use in this way, had the study set out to be correlational in the first instance.

Nevertheless, despite changes and challenges experienced during the processes of recruitment and data collection, and resultant limitations on sample generalisability, the findings in the present study provide a significant and meaningful contribution to the emergent evidence base on goal focused thinking, the role of anticipatory affect, and relationships between depression and personality.

## **Impact**

Overall, findings identified positive relationships between outcome thinking and positive affect, and also between process thinking and negative affect. However, distinct differences in anticipatory affect were identified when comparisons were made between the highest and lowest scorers on depression, and further differences were identified when comparing participants with highest and lowest scores on Cluster C personality traits. The highest scorers on depression demonstrated significant deficits in their experience of positive anticipatory affect at baseline, though demonstrated a relative positive responsiveness to low scorers

following outcome thinking. The discrepancy in baseline levels of positive affect between the groups however, illustrated that despite an evident increase in positive affect following outcome thinking, the higher depression group levels of positive affect remained less than the baseline levels of positive affect reported by the the low-to-no depression group. In comparisons between high and low scorers on the presence of Cluster C personality traits, the highest scorers on Cluster C traits demonstrated significantly heightened negative affect after process thinking. The findings therefore indicate a unique diversity in the way in which different goal focused approaches may be responded to, associated with presenting mood and personality psychopathology.

The main findings of this study illustrated and provided the basis for the synthesis of two theories. Firstly, depression is associated with deficits in positive affect, and secondly, that Cluster C disposition is associated with heightened negative affect. As such, a working hypothesis for future research to test would be that when engaging in goal focused cognition, individuals with comorbid chronic depression and Cluster C personality psychopathology are likely to present with a complex presentation of potentially multiple disruptions in anticipatory affect, associated with neuroaffective hyposensitivity to positive affect, obstructing or inhibiting approach motivation, and neuroaffective hypersensitivity to negative affect, driving avoidance motivation in efforts to avoid and regulate exposure to perceivably intolerable affect.

The results of this study add value to the theoretical and empirical tapestry of cognition and affect influencing goal motivation, the implications of which may drive



further research into mood and dispositional factors that contribute to person-centred formulation and treatment planning for engaging individuals in goal focused therapeutic work. Findings of the present study may also be impactful on raising awareness in clinical practice, of the diversity and subjectivity in affective response styles and intrinsic barriers that individuals may experience when faced with the prospect of even thinking about future goals. The systematic review offers insight into multiple cognitive factors that pose barriers to approach goal engagement which, coupled with the prospect of idiosyncratic affective response styles identified by the empirical study, serve to inform the person-centred formulation of bi-directional relationships between cognition and affect associated with goal focused thinking. For example, it is likely that individuals with heightened neuroaffective sensitivity to negative affect, may be more susceptible to feeling overwhelmed and experience negative, non-specific or pessimistic goal related cognitions and self-evaluations when exposed to the stressor of process focused goal cognition. Additionally, cognitive and behavioural avoidance motivation in efforts to regulate or avoid experiences of negative affect, may further confirm and perpetuate cycles of negative cognition, negative self-evaluation and goal disengagement.

The presence of personality difficulties is known to adversely affect treatment outcome in Primary Care (Improving Access to Mental Health; IAPT) mental health services (Goddard, Wingrove & Moran, 2015). It has therefore been recommended that IAPT “routinely assess for the presence of personality difficulties” on referral (Goddard, Wingrove & Moran, 2015, p.1), in order to promote access to personalised treatment pathways. However, this is yet to be seen

in current Primary Care practice (Scott, 2018). Failure to identify and sensitively attend to personality difficulties in this way may trigger disturbances in negative affect and perpetuate pessimistic expectations and premature disengagement at even the earliest stages of service contact. For example, an individual's first contact with primary care mental health services (IAPT) consists of a triage assessment (conducted over the telephone, or less commonly face-to-face), whereby individuals are routinely asked to identify goals for therapy. For individuals with Cluster C personality characteristics that are experiencing their first episode of depression, it is likely that this may trigger negative affect and associated disruption in goal focused cognition, which may prime pessimistic and negative expectancies for therapy and threaten further engagement. This is pivotal in that services aimed at improving access to psychological therapies, may inadvertently present barriers to service engagement at the earliest point of contact. Approaching goal directed thinking in the absence, or in advance, of assessment and understanding of an individual's personality and psychopathology may in fact be aversive to service engagement.

Treatment non-attendance within IAPT has been estimated between 42%-48% (Marshall et al., 2016). Though this may not be directly, nor wholly attributable to Cluster C comorbidities, the role of affect responsiveness in driving avoidance motivation and inhibiting approach motivation is pivotal to informing service-led approaches to engagement in order to provide motivational support to those experiencing clinical disturbances in motivation. It is also critical to the cost-effectiveness of service delivery and successful attainment of outcomes.

Existing goal and future-focused therapies such as, Solution-Focused therapy (De Shazer & Coulter, 2012; Molnar & De Shazer, 1987), Cognitive therapy (Beck, 1979) and goal-setting and planning (MacLeod, Coates, & Hetherington, 2008) have demonstrated promising outcomes (Roepke & Seligman, 2016). However, they place a predominant emphasis on cognitive aspects of goal focused engagement, in line with factors discussed in the systematic review. The role of affect response style is crucial, particularly with Cluster C populations, as the impact of alexithymia, dysregulation of negative affect, and subsequent avoidance motivation is likely to contribute to difficulties in clinical engagement that not only impact negatively on the propensity for individual change, but also systemically via the cost of prolonged and chronic service demands. Honkalampi et al., (2001) identified that although alexithymia is common in depressed populations, this ordinarily subsides in line with recovery from depression. Cluster C personality comorbidity however, negatively impacts on recovery from alexithymia (Honkalampi et al., 2001). Theoretical implications from the present study infer that failure to address affect and alexithymia during therapeutic interventions may perpetuate ongoing affective disturbance and avoidance behavioural response style, to an extent that may precipitate relapse.

Some more recent third-wave therapeutic approaches have begun to place heightened therapeutic emphasis on the role of affect in chronically depressed populations. Mindfulness Based Cognitive Therapy (MBCT; Teasdale et al., 2000) supports the enhancement of metacognitive awareness (the ability to notice and conceptualise one's own thoughts and feelings) in ways that encourage the non-

judgemental exposure to, and regulation of negative affect, for example, by perceiving negative cognitions and affect as transient. Metacognitive mastery has also been found to moderate the relationship between alexithymia and Cluster C personality (Lysaker et al., 2014), which may, as a consequence, minimise aforementioned barriers presented by Cluster C comorbidity on the alleviation of alexithymia in depression. A systematic review and meta-analysis regarded MBCT as a “low cost intervention for relapse prevention in recurrent Major Depressive Disorder” (Piet & Hougaard, 2011, p.1039), though acknowledged an empirical need for further research into the mechanisms of effects and change.

The present study and systematic review offers empirical insight into the cognitive and affective mechanisms that MBCT may serve to alleviate. Radically Open-Dialectical Behaviour Therapy (RO-DBT; Lynch, 2018) also embeds affect regulation within the treatment protocol, in efforts to improve openness to experience and thus nurture approach motivation. RO-DBT has demonstrated promising outcomes of alleviating chronic and recurrent depression (Hoch, 2018). In this approach, intolerance of negative affect is associated with maladaptive avoidance motivation, characterised as cognitive, affective and behavioural “over-control” (Hoch, 2018). Findings of the present study add to the empirical basis for therapeutic approaches such as RO-DBT, as findings expose the importance of attending to negative affect as a means to tackle avoidance motivation and support the enhancement of approach motivation in this complex comorbid presentation.

Finally, the present study identified that, despite between group differences pertaining to the severity or degree of affect experienced, the overall trend that

outcome thinking increased levels of positive affect, whereas process thinking increased levels of negative affect, propose further clinical implications for therapeutic processes of goal focused work, to optimize motivational responses. Current evidence debates the superiority of one thinking style (outcome versus process) over another, however, the present systematic review and study emphasise unique value in both approaches. Outcome thinking serves to rouse positive affect, associated with appetitive, approach motivation, and process thinking raises negative affect, associated with the evaluation of challenges and requirements for goal attainment that engages anticipatory problem-solving skills. Intolerance of negative affect roused by process thinking may serve to promote premature disengagement, however tolerance and regulation of negative affect associated with process thinking has been found to minimise anxiety and heighten self-efficacy at managing challenges when going on to engage in goal pursuit.

On the basis that outcome thinking promotes positive affect, whereas process thinking (despite its utility) induces negative affect, it appears sensible to propose that the order of goal focused approaches may impact on the optimisation of motivation and engagement during goal focused therapeutic work. Effective therapeutic support to firstly engage those with depression and comorbid Cluster C personality traits in outcome thinking may benefit from attending to cognitive barriers such as difficulty in accessing specific mental representations of goals in order to up-regulate positive affect and enhance approach motivation. Subsequent progression to process focused thinking however, may benefit from therapeutic preparatory work that attends to alexithymia, down-regulation of negative affect

and metacognitive mastery, prior to engagement in process focused work in order to minimise risk of avoidance motivation associated with intolerable spikes in negative affect. Though the present implications here, are somewhat theoretical, they endeavour to provide a basis for future research on optimisation of goal focused engagement in clinical populations with complex, comorbid presentations.

### **Dissemination**

Results of the present study have been disseminated via presentation to Clinical Psychology Trainee Doctoral students in anticipation that findings may be incorporated into their clinical understanding of goal focused formulation of engagement in the context of depression and Cluster C personality, and also inspire future research within this field. Results will also be presented to the second London mental health team involved with the study, in order to inform and promote discussion on the clinical implications of the findings on their clinical practice and experiences within this specific population. It is possible that the theoretical basis for therapeutic approaches such as MBCT for example, consideration of affect tolerance and regulation, and the order of introducing goal focused approaches (outcome thinking before process thinking) may prompt the service to reflect on their current approaches to goal focused work and encourage involvement in future research that may add direct clinical insight to the evidence base regarding the application and value of the findings in the present study. Results will also be edited for submission to, *Cognition and Emotion* for academic peer review and journal publication.

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**Appendix I**  
**AXIS quality appraisal**

**Table 4.**  
*AMS critical appraisal tool to assess the quality of cross-sectional studies*

	1		2		3		4		5		6		7		8		9		10		11	
	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C
<b>Introduction</b>																						
1 Were the aims/objectives of the study clear?	Y		Y		Y		Y		Y				Y		Y				Y		Y	
2 Was the study design appropriate for the stated aim(s)?	Y		Y		Y		Y		Y				Y		Y				Y		Y	
3 Was the sample size justified?	N	no apriori power analysis	N	no apriori power analysis	Y		N	no apriori power analysis	Y	Sample size and resultant power justified in discussion	Y		N		Y		N		Y		Y	
4 Was the target/reference population clearly defined? (Is it clear who the research was about?)	Y		Y		Y		Y		Y		Y		Y		Y		Y		Y		Y	
5 Was the sample frame taken from an appropriate population base so that it closely represented the target/reference population under investigation?	Y		Y	Students - not specifically targeting depression	N	Students	N	non-clinical adolescents	N	non-clinical adolescents	Y		Y		Y		Y		N		N	student sample, though sample mean for depressive symptoms reportedly near recommended cut off for moderate depression
6 Was the selection process likely to select subjects/participants that were representative of the target/reference population under investigation?	Y		Y		N	HADS	Y	though "not sufficient indicators of nosologic diagnoses"	Y	though non-diagnostic	Y		Y		Y		Y		N	student sample	Y	
7 Were measures undertaken to address and categorise non-responders?	Y			DNK		DNK		DNK	Y		Y		Y		Y		DNK		DNK		Y	
8 Were the risk factor and outcome variables measured appropriate to the aims of the study?	Y		Y		Y		Y		Y		Y		Y		Y		Y		Y		Y	
9 Were the risk factor and outcome variables measured correctly using instruments/measurements that had been trialled, piloted or published previously?	Y		Y/N	No indication of piloting and no reference of prior use of goal-evaluation measures	Y		Y		Y		Y		Y		Y		Y/N	No indication of piloting and no reference of prior use of Underlying motivation task	Y	Some measures adapted. No evidence of piloting.	Y	
10 Is it clear what was used to determined statistical significance and/or precision estimates? (eg, p values, CIs)	Y		Y/N	Only goal frequency correlations reported with evidence of statistical significance. No indication whether reported goal-evaluation "associations" were significant	Y		Y		Y		Y		Y		Y		Y		Y		Y	
11 Were the methods (including statistical methods) sufficiently described to enable them to be repeated?	Y		Y/N	Unclear how goal-evaluation "associations" were statistically identified	Y		Y		Y		Y		Y		Y		Y		Y		Y	
<b>Method</b>																						

**Table 4.**  
*AMS critical appraisal tool to assess the quality of cross-sectional studies*

	1		2		3		4		5		6		7		8		9		10		11	
	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C	Yes / No	DNK/C
<b>Results</b>																						
	Y		Y/N		Y		Y		Effect sizes not reported	Y			Y		Y		Y		Y		Y	
	N					DNK				N			N				DNK- not reported		DNK		N	
	Y					DNK				Y			Y		Y				N		Y	
	Y				Y		Y			Y			Y		Y				Y		Y	
<b>Discussion</b>	Y		Y/N		Y		Y			Y			Y		Y						Y	
	Y/N	small- medium effect sizes- also conclusion based on non-significant trends	Y/N	Unclear to what extent conclusions regarding goal-associations are valid.	Y		Y/N	Effect sizes not reported	Effect sizes not reported	Y/N	Y	Small effect sizes	Y		Y				Y	Small effect sizes		only significant difference identified for women, small effect sizes.
	Y		N		Y		Y			Y			Only one limitation identified	Y	Y				Y		Y	
<b>Other</b>	N		N		N		N			N			N		N				N		N	
	Y				Y			DNK - not reported	DNK - not reported				Y		Y		Consent obtained. Ethical approval not reported, though NHS recruitment requires approval		DNK		Y	

**Appendix II**  
**NHS Health Research Authority Ethical Approval**

Mrs Katie Rose  
Trainee Clinical Psychologist  
Camden & Islington NHS Foundation Trust  
Royal Holloway University  
Department of Clinical Psychology  
Egham hill  
Egham  
TW200EX  
[katie.rose.2015@live.rhul.ac.uk](mailto:katie.rose.2015@live.rhul.ac.uk)

Email: [hra.approval@nhs.net](mailto:hra.approval@nhs.net)

09 August 2017

Dear Katie

**Letter of HRA Approval**

<b>Study title:</b>	<b>Goal-directed thinking and Anticipatory Affect in Chronic Depression with Cluster C personality difficulties</b>
<b>IRAS project ID:</b>	<b>224556</b>
<b>REC reference:</b>	<b>17/EM/0215</b>
<b>Sponsor</b>	<b>Royal Holloway University</b>

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

**Participation of NHS Organisations in England**

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

*Appendix B* provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability. **Please read *Appendix B* carefully**, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.
- *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* - this provides detail on the form of agreement to be used in the study to confirm capacity and capability, where applicable.

**Appendix III**  
**Empirical Study Assessment Battery Materials**





## **Invitation to participate and study information**

### **Study title: Goal-directed thinking, mood and personality**

#### ***Invitation***

We would like to invite you to take part in a research study that is trying to understand more about how personal goals, mood, and personality might be related. Before you decide to take part in this study it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. A member of the team can be contacted if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

#### ***Purpose of the study***

This research aims to study the different ways that people think about their goals, how that may affect their current mood and how mood and personality traits might affect those relationships. We want to understand more about how thinking about personal goals in a particular way might be helpful for people.

The study will run from May 2017 to September 2018 as part of a Royal Holloway University Doctoral thesis research project.

#### ***Why have I been chosen?***

You have been chosen to participate in this study because you have expressed an interest in the study. The study is open to all members of the public who are willing to participate. Your participation will provide a comparison for us to explore whether relationships might exist between goal focused thinking and mood and personality.

***Do I have to take part?***

No, you are under no obligation to take part. Participation is entirely voluntary. You are welcome to express an interest in the study, though if you decide that it is not for you, you can always withdraw your interest. You can also withdraw your participation at any time if you change your mind during the study procedure.

***What will the study involve?***

To take part, you will be asked to meet a researcher (who is a trainee clinical psychologist) for no longer than 60 minutes in a private room on the Royal Holloway University campus, or at Bedford square. Here, you will talk through the purpose of the study with the researcher and have the opportunity to ask any questions before participating. If you decide to participate, you will firstly be asked to complete some brief questionnaires about your mood and personality. The researcher will then ask you to think about your personal goals and you will complete some short mood measures before and after thinking about a selection of your goals. Between thinking about your different goals you will also complete some simple puzzles that are designed just to take your mind off the last bit of thinking you did.

***Are there possible disadvantages and/or risks in taking part?***

The questions asked in the study are not expected to be distressing but it is possible that for some people it may be difficult to think about goals. It can sometimes be difficult to talk to someone that you are not familiar with. It is important for you to feel comfortable with the researcher and understand that you are welcome to withdraw from the study at any point if you wish to.

***What are the possible benefits of taking part?***

The study is not designed specifically to benefit participants, but some people may find it interesting and useful to think about their goals. By participating in this study, you will potentially have contributed to the development of future psychological therapeutic approaches.

***Will my taking part in this project be kept confidential?***

All information collected about you during the study will be kept strictly confidential and only accessed by the main researcher and their supervisor. Your personal details and responses will be anonymised by allocating you a participant number. This will mean that your responses will not be traceable back to you and only the

main researcher who you meet with will be able to identify you. All data collected will be kept securely using secure password protected computer systems and programs, which will only be accessed by the main researcher and their supervisor. Paper consent forms will be kept in a locked file in a locked office on Royal Holloway University premises and will be destroyed 2 years after the study has been completed.

**Exception:** If you disclose anything that indicates that you may be at risk of harming yourself or someone else during the study the researcher will be obligated to break confidentiality and inform relevant professionals outside of the study e.g. your GP. This may be by letter or telephone contact. You would be made fully aware of this at the time if this was to occur.

### ***What will happen to the results of the research project?***

All results will be presented as averages across everyone who participates. The results of the research project will be written up as a Doctoral Thesis Research Project which will be examined, and may also be presented at conferences. The results will also be written up in academic journals.

For participants who opt-in to be informed of the results of the study, overall findings will be fed back via a summary letter or e-mail. Their own individual data will not be fed back to participants as this will have been anonymised and will be unidentifiable.

### ***Who is organising and funding the research?***

The research is being organised and funded by Royal Holloway University of London Psychology Department.

### ***Ethical review of the study***

*The project has received ethical approval from the Psychology Research Ethics Committee of Royal Holloway University.*

### ***Contact for further information***

Katie Rose – Trainee Clinical Psychologist (Royal Holloway University) is the main researcher for this study. For more information please contact her either via e-mail ([katie.rose.2015@live.rhul.ac.uk](mailto:katie.rose.2015@live.rhul.ac.uk)) or telephone on 01784 414012 and leave your name, contact number and best time for her to call you with more details about the study. Professor Andrew MacLeod ([a.macleod@rhul.ac.uk](mailto:a.macleod@rhul.ac.uk)) is supervising the study.

IRAS ID: 224556

Centre Number:

Study Number:

Participant Identification Number for this trial:

### CONSENT FORM

#### Goal-directed thinking, mood and personality

Name of Researcher: Katie Rose, Trainee Clinical Psychologist.

Supervised by Professor Andy MacLeod

*Please initial each box  
below:*

*I confirm that I have read and understand the Participant  
Information Sheet* ☐

*I have had the opportunity to ask questions and had them  
answered* ☐

*I understand that all personal information will remain confidential  
and that all efforts will be made to ensure I cannot be identified  
(except as might be required by law)* ☐

*I agree that data gathered in this study may be stored  
anonymously and securely* ☐

*I understand that in the event of risk disclosure relevant  
professionals will be informed* ☐

*I understand that my participation is voluntary and that I am free  
to withdraw at any time without giving* ☐ *a reason.*

*I agree to take part in this study* ☐

\_\_\_\_\_  
Name of Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

KATIE ROSE

Main Researcher

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature

What is your age? \_\_\_\_\_

**Please tick the appropriate boxes below:**

**Do you identify as:                      What is your ethnicity?**

As a man	<input type="checkbox"/>	Asian or Asian British	Mixed
As a woman	<input type="checkbox"/>	Indian	White and Black Caribbean
In some other way	<input type="checkbox"/>	Pakistani	White and African
Prefer not to say	<input type="checkbox"/>	Bangladeshi	White and Asian
		Any other Asian background	Any other Mixed background
		Black or Black British	White
		Caribbean	White British
		African	Irish
		Any other Black background	Any other White background
		Chinese or other ethnic group	
		Other	Prefer not to say

PHQ9 Over the last <u>two weeks</u> how often have you been bothered by the following problems?		0 Not at all (0-3 days)	1 Several Days (4-7 days)	2 More than half the days (8-11 days)	3 Nearly every day (11-14 days)
A	Little interest or pleasure in doing things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B	Feeling down, depressed, or hopeless	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C	Trouble falling or staying asleep, sleeping too much	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D	Feeling tired or having little energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E	Poor appetite or overeating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F	Feeling bad about yourself – or that you are a failure or have let yourself or your family down	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G	Trouble concentrating on things, such as reading the newspaper or watching television	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H	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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I	Thoughts that you would be better off dead or of hurting yourself in some way	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	(0-3 days)	(4-7 days)	(8-11 days)	(11-14 days)
Feeling nervous, anxious, or on edge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Not being able to stop or control worrying	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Worrying too much about different things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trouble relaxing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Being so restless that it's hard to sit still	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Becoming easily annoyed or irritable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Feeling afraid as if something awful might happen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## IPDE

### Directions:

The purpose of this questionnaire is to learn what type of person you have been during the **past 5 years**.

Please do not skip any items. If you are not sure of an answer, select the one (T for TRUE or F for FALSE) that is **more likely** to be correct. There is no time limit, but do not spend too much time thinking about the answer to any single statement.

When the answer is TRUE, circle the letter T. When the answer is FALSE, circle the letter F.

If you wish to change your response, **do not erase**. Instead, mark an X through the incorrect response and circle the correct response.

1.	I usually get fun and enjoyment out of life	T	F
2.	I don't react well when someone offends me	T	F
3.	I'm not fussy about little details	T	F
4.	I can't decide what kind of person I want to be	T	F
5.	I show my feelings for everyone to see	T	F
6.	I let others make my big decisions for me	T	F
7.	I usually feel tense or nervous	T	F
8.	I almost never get angry about anything	T	F
9.	I go to extremes to try to keep people from leaving me	T	F
10.	I'm a very cautious person	T	F
11.	I've never been arrested	T	F
12.	People think I am cold and detached	T	F
13.	I get into very intense relationships that don't last	T	F
14.	Most people are fair and honest with me	T	F
15.	I find it hard to disagree with people if I depend on them a lot	T	F
16.	I feel awkward or out of place in social situations	T	F
17.	I am too easily influenced by what goes on around me	T	F

18.	I usually feel bad when I hurt or mistreat someone	T	F
19.	I argue or fight when people try to stop me from doing what I want	T	F
20.	At times I've refused to hold a job, even when I am expected to	T	F
21.	When I am praised or criticised I don't show my reaction	T	F
22.	I've held grudges against people for years	T	F
23.	I spend too much time trying to do things perfectly	T	F
24.	People often make fun of me behind my back	T	F
25.	I have never threatened suicide or injured myself on purpose	T	F
26.	My feelings are like the weather, they're always changing	T	F
27.	I fight for my rights even when it annoys people	T	F
28.	I like to dress so I stand out in a crowd	T	F
29.	I will lie or con someone if it serves my purpose	T	F
30.	I don't stick with a plan if I don't get results right away	T	F
31.	I have little or no desire to have sex with anyone	T	F
32.	People think I'm too strict about rules and regulations	T	F
33.	I usually feel uncomfortable or helpless when I'm alone	T	F
34.	I won't get involved with people until I'm certain they like me	T	F
35.	I would rather not be the centre of attention	T	F
36.	I think my spouse (or lover) may be unfaithful to me	T	F
37.	Sometimes I get so angry I break or smash things	T	F
38.	I've had close friendships that lasted a long time	T	F
39.	I worry a lot that people may not like me	T	F
40.	I often feel "empty" inside	T	F

41.	I work so hard I don't have time left for anything else	<b>T</b>	<b>F</b>
42.	I worry about being left alone and having to care for myself	<b>T</b>	<b>F</b>
43.	A lot of things seem dangerous to me that don't bother most people	<b>T</b>	<b>F</b>
44.	I have a reputation for being a flirt	<b>T</b>	<b>F</b>
45.	I don't ask favours from people I depend on a lot	<b>T</b>	<b>F</b>
46.	I prefer activities that I can do by myself	<b>T</b>	<b>F</b>
47.	I lose my temper and get into physical fights	<b>T</b>	<b>F</b>
48.	People think I am too stiff or formal	<b>T</b>	<b>F</b>
49.	I often seek advice or reassurance about everyday decisions	<b>T</b>	<b>F</b>
50.	I keep to myself even when there are other people around	<b>T</b>	<b>F</b>
51.	It's hard for me to stay out of trouble	<b>T</b>	<b>F</b>
52.	I'm convinced there's a conspiracy behind many things in the world	<b>T</b>	<b>F</b>
53.	I'm very moody	<b>T</b>	<b>F</b>
54.	It's hard for me to get used to a new way of doing things	<b>T</b>	<b>F</b>
55.	Most people think I'm a strange person	<b>T</b>	<b>F</b>
56.	I take chances and do reckless things	<b>T</b>	<b>F</b>
57.	Everyone needs a friend or two to be happy	<b>T</b>	<b>F</b>
58.	I'm more interested in my own thoughts than what goes on around me	<b>T</b>	<b>F</b>
59.	I usually try to get people to do things my way	<b>T</b>	<b>F</b>



### Neutral Word Search

T P B Y E R G H B S C B F R N I K J C G  
 A A O N W O R B A U C I A S E N D O G N  
 B P O S O F A E P N L R T D O T M W L I  
 L E K D I A R Y T E D R E C G B T L H T  
 E R M A C H I N E C I B K E I E A E O C  
 H P A R G O T O H P A I A N N B W S L E  
 B S R E T I R W E A N R A G T D O W I L  
 G J K A C L O S E G I T A O K E L O D E  
 G N I H C A E T R P I R O H N M L R A S  
 C L O U D S Y C T O D F R O C O E B Y C  
 E E L D N A H C N T B E I W T N Y R H O  
 S E P A R A T E O O B H P I E S C E S M  
 H H D G I D F C T M S I M N K T I P U M  
 O I C R N V A T U U P R A D N R S M R A  
 R X G T A I L N C R U U L O A A U U B S  
 T B X H I E W L C O L E T W L T M J N C  
 H O R S E W B O L E A S L E B E A O I A  
 T N A L P R S O R V T I S D R O W S A R  
 S Q U A R E C W E H N O T T U B A H G D  
 F L O O R P U S H E T K C O L B V L A S

AGAIN	COMPUTER	MACHINE
BADGE	CUP	MUSIC
BASIC	CURLS	NUMBER
BEARD	CUSHION	PAPER
BLANKET	DANCE	PHOTOGRAPH
BLOCK	DEMONSTRATE	PLANT
BOOKMARK	DIARY	PUSH
BOTTLE	DOG	SCREEN
BROWN	DRAG	SELECTING
BROWSE	FILE	SEPARATE
BRUSH	FLOOR	SHORT
BUTTON	FOOTBALL	SOFA
CAR	GREY	SQUARE
CARDS	HAIR	STRIPES
CHAIR	HANDBAG	SWITCH
CHARACTER	HANDLE	TABLE
CLOSE	HIGHER	TEACHING
CLOUDS	HOLIDAY	THROWING
COLOUR	HORSE	TOP
COMBINATION	JUMPER	TREE
COMMAS	KNOCKING	WINDOW
	LAMP	WOOL
	LEAVES	WORDS
	LETTER	WRITERS
	LINE	YELLOW

### PANAS-X

This scale consists of a number of words and phrases that describe different feelings and emotions.

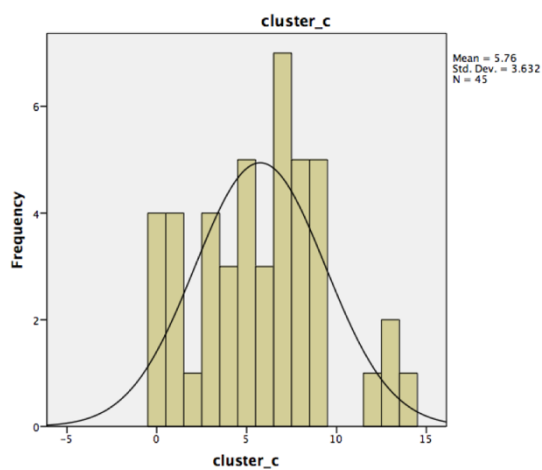
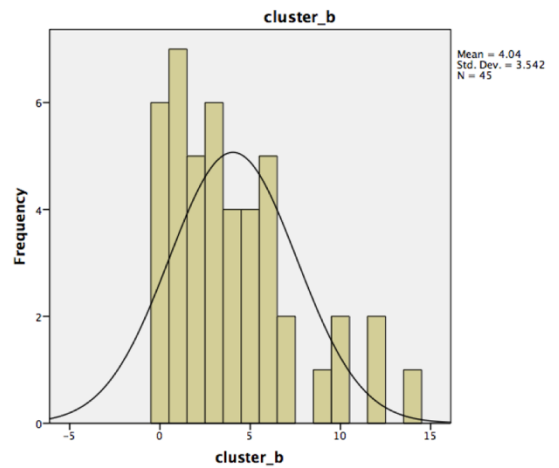
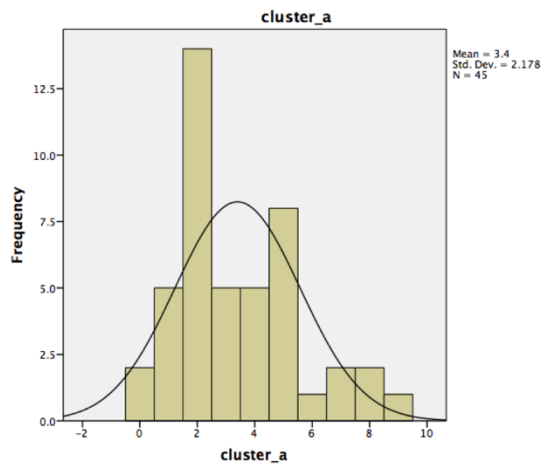
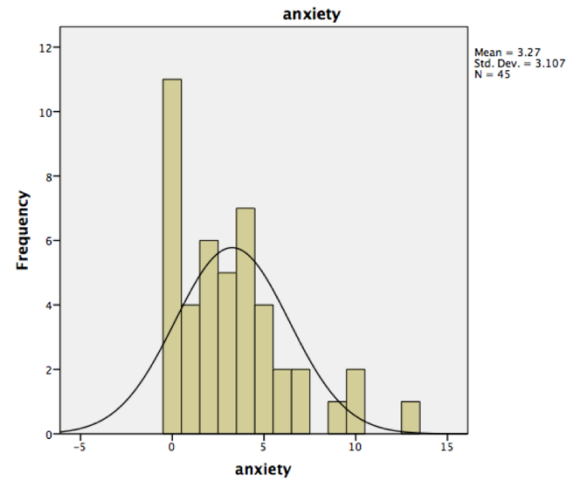
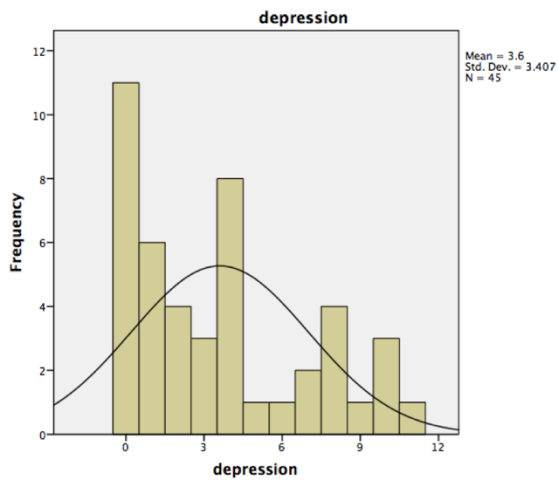
Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way *right now*. Use the following scale to record your answers:

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

1. \_\_\_\_\_ cheerful
2. \_\_\_\_\_ delighted
3. \_\_\_\_\_ afraid
4. \_\_\_\_\_ shaky
5. \_\_\_\_\_ happy
6. \_\_\_\_\_ joyful
7. \_\_\_\_\_ nervous
8. \_\_\_\_\_ excited
9. \_\_\_\_\_ jittery
10. \_\_\_\_\_ lively
11. \_\_\_\_\_ scared
12. \_\_\_\_\_ frightened
13. \_\_\_\_\_ energetic

## **Appendix IV Data Screening**

## Tests of distributions.



Screening and and winzorising of outliers.

