



**An Examination of Goal Processes and Goal Cognitions in Relation to Momentary  
Mood Changes**

Emma Weymouth

6<sup>th</sup> June 2016

Supervised by:

Dr Joanne Dickson (University of Liverpool)

Dr Peter Taylor (University of Liverpool)

Dr Alyson Dodd (University of Lancaster)

Submitted in partial fulfilment of the Doctorate in Clinical Psychology

University of Liverpool

### Acknowledgements

I would like to express my gratitude to all the individuals who have encouraged, supported and inspired me throughout this process.

Thank you to my supervisors Dr Peter Taylor and Dr Joanne Dickson for your time, patience and guidance. Thank you to Dr Alyson Dodd for your invaluable contribution, support and encouragement and to Dr Jasper Palmier-Claus for his guidance with ESM.

Thank you also to all the participants who volunteered to take part in this research and everyone who gave their time to help with recruitment, data entry and checking. Special thank you to Ray Manning and Suzanne Jakeman for their collaboration, support and good sense of humour throughout the process! It was a pleasure to complete my training with you both.

Thank you also to the Liverpool Doctorate of Clinical Psychology team for your support and teaching over the last three years and for giving me the opportunity and privilege to be part of the programme.

Finally, to my wonderful family and friends for always supporting me over the years, being there every step of the way and never doubting me.

This thesis is dedicated to my late grandfather Les, for being the most loving and encouraging teacher I could wish for.

## Table of Contents

<b>Introductory Chapter: Thesis Overview .....</b>	<b>1</b>
<b>References.....</b>	<b>4</b>
<b>Chapter 1: How are Goal Processes and Goal Cognitions Related to Daily or Momentary Mood? A Systematic Review .....</b>	<b>5</b>
<b>Abstract.....</b>	<b>6</b>
<b>Introduction.....</b>	<b>8</b>
Aims of the Present Review .....	13
<b>Method.....</b>	<b>14</b>
Inclusion Criteria .....	14
Search Strategy and Screening Procedures .....	14
Methodological Quality Assessment Strategy .....	17
<b>Results .....</b>	<b>18</b>
Study Characteristics .....	18
Findings of the Review .....	23
Overview of the Quality of Studies Included .....	27
<b>Discussion.....</b>	<b>28</b>
Clinical Implications and Future Research .....	29
Limitations .....	31
<b>Conclusions.....</b>	<b>34</b>
<b>References.....</b>	<b>35</b>

**Chapter 2: Conditional Goal Setting, Momentary Perceived Goal Progress, Goal Effort  
and Momentary Mood Symptoms: Experience Sampling Method in a Student**

<b>Population .....</b>	<b>42</b>
Preface.....	43
<b>Abstract .....</b>	<b>44</b>
<b>Introduction .....</b>	<b>45</b>
<b>Aims and Hypotheses .....</b>	<b>51</b>
<b>Method.....</b>	<b>51</b>
Participants .....	51
Design .....	52
Measures .....	52
Baseline Measures .....	52
ESM Measures .....	55
End of Study Measures .....	57
Procedure .....	58
Data Analysis .....	59
<b>Results .....</b>	<b>61</b>
Fluctuations in mood over time .....	64
Are Goal Progress, Goal Effort and CGS Related to NA and PA Over Time? .....	64
Predicting NA .....	66
Predicting PA .....	66
<b>Discussion .....</b>	<b>68</b>
Clinical Implications.....	71
Limitations .....	72

Future Research .....	74
<b>Conclusion .....</b>	<b>76</b>
<b>References .....</b>	<b>77</b>
<b>Appendices .....</b>	<b>87</b>

**List of Tables****Chapter 1: Literature Review**

Table 1: Overview of Study Characteristics ..... 19

Table 2: Overview of Assessment of Study Methodological Quality ..... 22

**Chapter 2: Empirical Paper**

Table 1: Means and Standard Deviations for Measures ..... 62

Table 2: Intercorrelations Between Variables ..... 63

Table 3: Multi-Level Regression Predicting Momentary NA and PA from Momentary Perceived Goal Progress, Momentary Perceived Goal Effort and CGS ..... 65

**List of Figures****Chapter 1: Literature Review**

Figure 1: PRISMA Diagram Showing Study Selection Process ..... 16

**Appendices**

Appendix A: Systematic Review Quality Assessment Tool..... 88

Appendix B: Participant Information Sheet ..... 91

Appendix C: Participant Consent Form ..... 94

Appendix D: Goal “Script” ..... 95

Appendix E: Baseline Measures..... 97

Appendix F: ESM diary (one time point example) ..... 103

Appendix G: Signposting Information Sheet..... 109

Appendix H: Author Guidelines for Submission for Personality and Social Psychology Bulletin..... 112

**Word Count (excluding references): 22,209**

### **Introductory Chapter: Thesis Overview**

Goal dysregulation theories posit that affective disorders are linked to dysregulation of goal pursuit (e.g. Johnson, Carver, & Fulford, 2010) and many psychological therapies for mood disorders focus on increasing wellbeing by working with individuals to generate and pursue personally meaningful goals. The literature pertaining to goals and mood has identified highly idiosyncratic nomothetic properties of goal pursuit such as perceived goal progress, goal importance and goal effort which all contribute to distinct goal pursuit profiles. For example, perceived goal progress has been linked to positive affect and affective reactions may serve to alter the amount of effort made towards that goal (Carver, Avivi, & Laurenceau, (2008). Gollwitzer (1993) contended that the perceived importance of a person's goal would influence their level of effort towards that goal. Specifically, it is suggested that the centrality of that goal to a person's self-concept increases the importance of that goal (Boden, 1973). The importance a person places on their goals may be detrimental if that individual is overly invested in a particular goal and they are not achieving their desired level of progress towards this goal and therefore have increased difficulty in disengaging from their goals despite low goal progress (Lam, Green, Power, & Checkley, 1994; Wrosch, Scheier, Carver, & Schulz, 2003). Additionally, more recent research into Conditional Goal Setting (Street, 2001) posits that those vulnerable to depression are suggested to define their self worth on the achievement of their goals.

Although personal goals typically represent sustained activity over time and phenomena such as motivation and mood fluctuate, most of the research on goals and mood has been limited to the use of cross-sectional designs which usually treat them as stable, measuring them at a time point and ask the person to recall retrospectively. This method is suggested to make capturing completely the true nature of a person's goal pursuit and mood

experience in the moment unlikely. Additionally, this approach is susceptible to recall and cognitive biases.

Experience Sampling Method (ESM) allows researchers to look at mood from a momentary perspective to examine dynamic and transient emotional reactions. Several studies have used ESM to look at momentary mood and personal goals. To the author's knowledge, to date, there has been no systematic review of the findings of these studies. Chapter 1 of this thesis details a systematic review conducted with the aim of synthesising the current empirical research concerning goal processes, content and/or cognitions and their relationship to momentary mood using ESM. This systematic review focused only on studies using an Experience Sampling Methodology to look at goal processes and mood. Results from the review found that a range of goal processes and goal cognitions were found to be associated with affective experience and in particular, all studies found that goal progress was linked to experiencing positive affect. The studies identified were from a variety of settings, including universities, business and workplace settings and healthcare settings, with varying participant samples. Studies differed in the terms they used to define goals and how they asked people to generate goals. The quality of these studies varied however as ESM is a developing methodology in research, standard quality assessment tools are not available currently.

In an effort to further contribute to the research in this domain, Chapter 2 presents an empirical study examining the relationship between the particular goal cognitions of perceived goal progress and perceived levels of goal effort and their impact on momentary mood through the use of ESM. It is hoped that this will allow not only for highly ecological, real-life assessments of mood and goal cognitions but also an evaluation of the potential impact of Conditional Goal Setting. It was hypothesised that lower perceived momentary

goal progress and higher momentary goal effort would be associated with greater momentary mood symptoms in those with higher CGS scores. The findings of this study suggest that negative affect (NA) and positive affect (PA) fluctuated considerably from moment-to-moment over time. ESM captures these within-person fluctuations as well as the between-person differences. Examining momentary mood changes from a goal pursuit perspective found that goal progress and amount of goal effort account for some of the variance in these fluctuations. In particular, results showed that not only does advancement in goal progress predict momentary positive mood, it also predicts decreased negative mood. In addition, perceived goal effort was found to be related to momentary PA and NA in that increased effort led to more NA and less effort led to more PA. A combination of increased goal progress and decreased goal effort predicted increased levels of PA and vice versa for NA. Contrary to expectation, CGS did not predict momentary mood. Extensive previous cross-sectional research has identified this link between goal progress and affective experiences and data from ESM studies sheds further light on the conceptual frameworks surrounding motivation, goal pursuit and mood.

## References

- Boden, M. A. (1973). The structure of intentions. *Journal for the Theory of Social Behavior*, 3(1), 23-46. <http://psycnet.apa.org/doi/10.1111/j.1468-5914.1973.tb00314.x>
- Carver, C. S, Avivi, Y. E, & Laurenceau, J. P. (2008). *Handbook of Approach and Avoidance Motivation*. <http://dx.doi.org/10.4324/9780203888148.ch22>
- Csikszentmihalyi, M., & Larson, R. (1987). Validity and reliability of the experience-sampling method. *The Journal of Nervous and Mental Disease*, 175(9), 526-536. <http://dx.doi.org/10.1097/00005053-198709000-00004>
- Gollwitzer, P. M. (1993). Goal achievement: The role of intentions. *European Review of Social Psychology*, 4(1), 141-185. <http://dx.doi.org/10.1080/14792779343000059>
- Johnson, S. L., Carver, C. S., & Fulford, D. (2010). Goal dysregulation in the affective disorders. *Emotion Regulation And Psychopathology: A Transdiagnostic Approach To Etiology And Treatment*, 204-228. <http://dx.doi.org/10.1080/16506073.2010.524747>
- Lam, D., Green, B., Power, M., & Checkley, S. (1994). The impact of social cognitive variables on the initial level of depression and recovery. *Journal Of Affective Disorders*, 32(2), 75-83. [http://dx.doi.org/10.1016/0165-0327\(94\)90065-5](http://dx.doi.org/10.1016/0165-0327(94)90065-5)
- Street, H. (2001). Exploring the role of conditional goal setting in depression. *Clinical Psychologist*, 6(1), 16-23. <http://dx.doi.org/10.1080/13284200310001707331>

How are goal processes and goal cognitions related to daily or momentary mood?

A Systematic Review

### **Abstract**

**Objectives:** This systematic review aims to summarise the current empirical research concerning goal pursuit and momentary mood using Experience Sampling Methodology (ESM). Phenomena such as motivation and mood fluctuate daily and even momentarily, yet traditional research designs and clinical assessments usually treat them as stable, measuring them cross-sectionally making it unlikely to capture completely the true nature of a person's experience in the moment.

**Methods:** Three electronic databases (PsychINFO, Scopus and Web of Science) were searched to identify ESM studies exploring goal processes, goal cognitions and momentary mood. An assessment of quality assessment is reported following PRISMA reporting guidelines.

**Results:** A range of goal processes and goal cognitions were found to be associated with positive and negative affect. All studies found that goal progress was linked to experiencing positive affect. The studies identified were from different settings, including healthcare settings, universities, business and workplace settings with varying participant samples. Studies differed in the terms they used to define goals and how they asked people to generate goals.

**Conclusions:** Examining the way an individual frames and cognitively appraises their goals can offer insight into affective wellbeing. ESM can help us to study these constructs in more detail examining everyday experiences occurring in their natural environment, recognising the dynamic and changing nature of mood and goal pursuit. Further research exploring these concepts in the moment could add to the literature around goals and mood and inform effective individualised therapies for mood disorders.

*Keywords:* Systematic Review, Goal Processes, Goal Cognitions, Mood, Experience  
Sampling Methodology (ESM), Daily Diary Study.

## Introduction

Austin and Vancouver (1996) define goals as: “*Internal representations of desired states, where states are broadly construed as outcomes, events, or processes*” (p.338). Goal pursuit can also include striving to inhibit or prevent undesirable goal outcomes (e.g., not to let little things upset me). Related to this, Gray’s (1982) prominent neurobiological model suggests that there are two main motivational systems: the behavioural activation system (BAS) and the behavioural inhibition system (BIS). The BAS is posited to be associated with approaching desired outcomes by being sensitive to reward and is associated with positive affect (PA). The BIS is sensitive to signals of punishment or non-reward and novelty and is linked with the experience of negative affect (NA). These early concepts have formed the basis for research by personality researchers and goal theorists into goal orientation - moving to and from particular end states in line with a person’s goals (e.g. Trew, 2011). These hypothetical systems have also been linked to a range of psychopathological conditions, including mood disorders (Fowles, 1988).

Self regulation theories such as that formulated by Carver (1979) propose that affect is central to motivated behaviour and specifically that goal progress is intrinsically related to the experience of PA (Brunstein, 1993). Diener (2000) describes how goals are central to the affect system with an individual’s personal goals affecting their emotions and life satisfaction. The general conceptual model is that if a person is making satisfactory progress towards a personally meaningful goal, they will experience PA. Conversely, when a person is not making their desired level of progress towards their goals, they will experience NA. Carver and Scheier (1998) suggest that affect is created by a feedback loop measuring how much progress a person is making towards their goal. This then serves to regulate the amount of effort a person needs to expend in pursuing (or disengaging from) their goals. Carver and

Scheier (1990) posit that goal progress is a dimension ranging from high to low progress with high goal progress being linked to positive emotions and affective wellbeing. King (2008) suggested that the link between goal progress and affective wellbeing is so robust that they propose that an effective way to increase and maintain wellbeing is to focus on the attainment of personally meaningful goals. The literature surrounding goals and mood generally focuses on two main areas: goal cognitions or appraisals (also referred to as goal processes) and goal content. Goal content refers to the actual goal itself – what it is that the person is trying to achieve, for example, to pass an exam or to lose weight. Goal cognitions or appraisals represent the constructs that an individual may assign to their goals relating to how they perceive or think about the particular goal of passing their exam. Goal cognitions are highly idiosyncratic for each individual and can be assessed in terms of nomothetic or formal properties such as importance, expectancy and effort, for example.

Goal dysregulation theories posit that affective disorders are linked to dysregulation of goal pursuit (e.g. Johnson et al., 2010). Cross-sectional research indicates that distinct goal pursuit profiles are related to mood and affective disorders. Consistent with Gray's early BAS/BIS model of motivation, goal theorists (e.g. Elliot, Sheldon, & Church, 1997) have identified two forms of idiographic goal pursuit, approach and avoidance goals. Each are hypothesised to have their own influence on mood. Approach goals represent the types of goals that people set in order to achieve desirable outcomes (for example, *'to get fit and healthy'*), avoidance goals on the other hand, represent goals that people set in order to avoid undesirable outcomes (for example, *'to avoid looking incompetent to others'*). Some authors have suggested that impaired approach goal pursuit is associated with depression (Schimmack & Grob, 2000) whereas, hypomania has been characterised by increased approach goal pursuit (Johnson et al., 2010).

Coats, Janoff-Bulam & Alpert (1996) found that having more avoidance goals was associated with lower self-esteem and psychological wellbeing than those with more approach goals.

Dickson and MacLeod (2004) found that in a school sample of 16 to 18-year-olds, an increase in avoidance goals correlated with an increase anxiety.

Goal expectancy is a goal cognition/appraisal that has been implicated in mood disorders (e.g. Russell & Carroll, 1999; Schimmack & Grob, 2000). Goal expectancy relates to the cognitive appraisal of the expectancy of future achievement or non-achievement of goals. If goal expectancy is high it is likely that a person will maintain their efforts and commitment to that goal therefore potentially making progress and experience PA. If goal expectancy is low, this is more likely to deter an individual from sustaining their efforts towards a goal potentially leading to low mood (Carver & Scheier, 1998). Counter to theoretical assumptions, Dickson, Moberly, & Kinderman (2011) found that those with depression did not generate fewer approach goals than those who were not depressed, however they did express more pessimism about their goal expectations for both approach and avoidance goal outcomes (i.e. they expected that 'good' outcomes were less likely to happen and 'bad' outcomes were more likely to happen).

Carver, Avivi, & Laurenceau (2008) suggest that affective reactions alter amount of goal effort (the deliberate actions taking towards pursuing a desired end state (Austin & Vancouver, 1996); for example, PA may serve as an indicator that a person is making good progress towards a particular goal and can therefore relax their efforts and change their focus onto another goal. Difficulties arise when a person is unable to disengage from a goal that is perhaps very difficult or unattainable leading to repeated failure and lack of progress. Goal theorists have suggested that continuing futile efforts towards unattainable goals may be at the root of depression and that goal expectancy is suggested to moderate the relationship

between goal progress and goal effort (Greenberg, Pyszczynski, Burling, & Tibbs, 1992). Increased perception of goal difficulty has been found to impact negatively on goal expectancy thus reducing effort and PA (Tubbs, Boehne, & Dahl, 1993).

One reason suggested for difficulty in disengaging from particular goals is the concept of goal importance. Gollwitzer (1993) contended that the perceived importance of a person's goal would influence their level of commitment towards that goal. Specifically, it is suggested that the centrality of that goal to a person's self-concept increases the importance of that goal (Boden, 1973). Champion & Power (1995) suggest that the number of important goals a person has is linked to their mood and wellbeing. These authors propose that if a person is overly invested in only one or two goals, as opposed to having a repertoire of goals, then the person has no other meaningful goals, if the overly invested goal fails. Pomerantz, Saxon, & Oishi (2000) have suggested that the pursuit of important goals often comes at a psychological price with those with many important goals often experiencing increased anxiety due to the stress of trying to achieve these goals and their increased vested interest in them. Those vulnerable to depression are suggested to define their self worth on the achievement of their goals (Street, 2001) and therefore have increased difficulty in disengaging from their goals despite low goal progress (Lam et al., 1994; Wrosch et al., 2003).

Street's (2001) Conditional Goal Setting (CGS) theory has recently gained momentum in the mood and goals literature and sheds further light on the importance of individual goal cognitions and their relationship to mood. CGS theory builds on Carver & Scheier's (1990) work and suggests that those who perceive higher order goals (e.g. *'to be happy'*) as dependent on or linked to the achievement of specific lower order goals (e.g. *'to pass my exam'*) are more vulnerable to mood difficulties. McIntosh (1996) refers to this as

“linking goals” and suggests that those who conditionally set their goals are prone to rumination which we understand to be linked to vulnerability to depression (Street, 2001).

Although personal goals typically represent sustained activity over time, most of the research on goals and mood has been limited to the use of cross-sectional designs. Within-subject analysis across time points has started to gain momentum in the goals and mood literature. Phenomena such as motivation and mood fluctuate daily and even momentarily, yet traditional research designs and clinical assessments usually treat them as stable, measuring them at a time point and ask the person to recall retrospectively making it unlikely to capture completely the true nature of a person’s goal pursuit and mood experience in the moment. For example, in clinical practice, assessment of mood is usually measured retrospectively, which is potentially susceptible to recall bias. In the case of those who are experiencing low mood, their recall may be affected by their cognitive biases in that they may selectively attend to the negative aspects of their everyday lives (Watson & Tellegen, 1985). Russell & Carroll (1999) found that adolescents diagnosed with depression showed discrepancies in their reporting of mood symptoms throughout a week compared to their retrospective recall of these symptoms at the end of the week. In therapeutic interventions, monitoring which aims to capture such ‘in-the-moment’ experiences such as thought monitoring and behavioural monitoring have been used, particularly in Cognitive Behavioural Therapy (CBT) to help a person to identify negative automatic thoughts in response to situations, for example, and the impact these have on their mood (Beck, 1967).

Experience Sampling Method (ESM) (or Ecological Momentary Assessment (EMA) as it is sometimes known) allows researchers to measure constructs which are dynamic and fluctuating, such as mood and goal processes. ESM measures are better suited for addressing questions concerning moment-by-moment changes or fluctuations in variables of interest by

studying everyday experiences in their natural environment. Looking at moods from a momentary perspective allows researchers to examine dynamic and transient emotional reactions as opposed to assessments of global mood. Affect encompasses both state feelings in the moment and trait feelings (Watson & Clark, 1984), yet traditional research designs do not measure it as such. ESM research could help to shed new light on the conceptual framework around goals and mood and in doing so further add to our knowledge around individualised goal pursuit profiles and their impact on mood in people's day-to-day lives.

### **Aims of the present review**

Several studies have used ESM to look at momentary mood and personal goals. To date and to the author's knowledge there has been no systematic review of the findings of these studies.

The current systematic review was conducted with the aim of synthesising the current empirical research concerning goal processes, content and/or cognitions and their relationship to momentary mood using ESM.

## **Method**

### **Inclusion Criteria**

Studies were included providing they i) were written in English language, ii) included a measure of goal processes and/or goal cognitions (specifically concepts relating to goal striving, goal regulation, goal orientation, goal pursuit, goal progress, goal expectancy, goal effort, conditional goal setting), iii) included measures of momentary mood, iv) adopted an ESM or EMA approach (this was defined as a methodology which required measures to be repeatedly completed as participants go about their daily lives), v) studies sampling participants over 16 years old were included. Participants under the age of 16 were excluded as ESM/EMA studies focusing on the everyday lives and activities of children and adolescents differ substantially from those of adults (aan het Rot, Hogeneist & Schoevers, 2012).

### **Search Strategy and screening procedures**

Studies published up to October 2015 were identified by searching the following terms:

(Goal\*) AND (mood\* OR affect\* AND “experience sampling” OR “ESM” OR “ecological momentary assessment” OR “EMA”) from three databases (Scopus, Web of Science and PsycINFO). First, any duplicate records were noted and excluded. All titles and abstracts of papers identified in the search were then screened for selection using the inclusion criteria.

The full texts of remaining articles were further screened for inclusion in the review.

References from the papers were hand searched to ensure no studies were missed from the search. The database was held in the Endnote X7 software package. Figure 1 presents a flow diagram of the screening procedure reported, in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (PRISMA) (Moher, Liberati, Tetzlaff, &

Altman, 2009). A second reviewer also completed the same search following the same protocol to ensure that no papers were missed from the review. Duplicates were again removed and titles and abstracts were then screened for selection using the same inclusion criteria. Following this, the second reviewer also assessed the included studies for inclusion. Agreement was reached between both reviewers on all 15 papers selected for review.

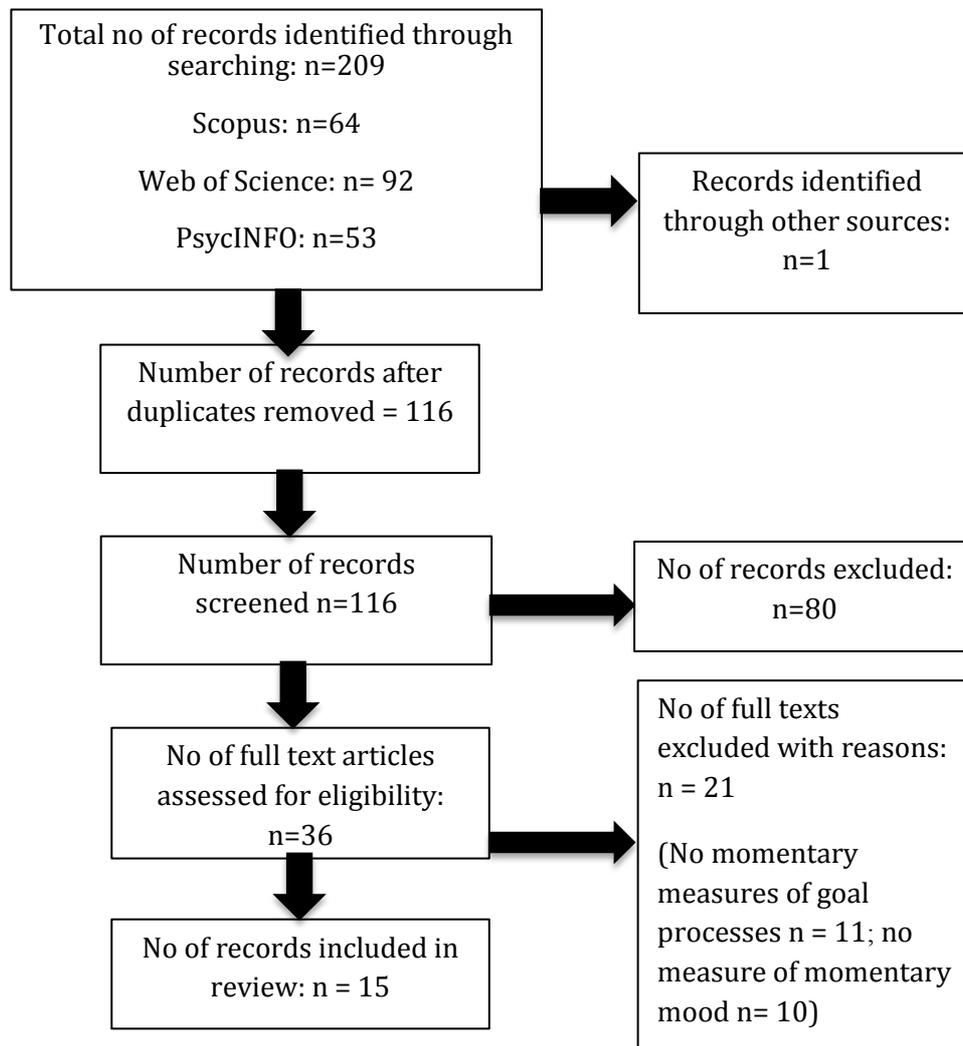


Figure 1: PRISMA diagram showing study selection process

**Methodological Quality Assessment Strategy**

Methodological quality of studies was assessed independently by the author (EW) and to ensure reliability, a second independent researcher quality assessed eligible papers. The tool used was adapted from the Agency for Healthcare Research and Quality (Williams, Plassman, Burke, Holsinger, & Benjamin, 2010). This measure required ratings of whether studies met, did not meet or partially met quality criteria in a number of key methodological areas. This measure was adapted to assess the methodological quality of ESM studies, as the ESM literature is relatively new and current quality assessment tools do not assess this method of data collection. The author adapted the quality assessment tool based on guidance from Fisher & To's (2012) paper which provides best practice recommendations for conducting and analysing ESM research. A copy of the adapted measure is displayed in Appendix A. Results of the quality assessment can be found in Table 2.

## Results

### Study Characteristics

Details of study characteristics are presented in Table 1. The studies were published between 1986 and 2015. The studies were conducted in six different countries: United States of America, United Kingdom, Australia, Israel, the Philippines and Canada. Sample size varied from  $n = 30$  to  $n = 230$ . Studies focused on a variety of different populations including university students, married couples, entrepreneurs, middle managers and company employees, married couples and non-clinical general adult samples. One study recruited patients from a rheumatology outpatient clinic from patients with a diagnosis of Primary Fibromyalgia Syndrome (PFS).

Duration of experience sampling ranged from three days to 30 days with the average duration being 13.9 days of sampling at any one testing period. All studies utilised signal-contingent reporting with alerts being sent at random or stratified-random times dependent on the population being studied. Signal contingent reporting uses alerts sent via mobile phones or pagers to alert the participant that they are to fill in their diaries at that moment. Alerts may have been scheduled to be sent at random times during the hours that participants were likely to be awake, at work, or with their partners, for example. Table 1 displays the summaries of each of the papers included in the review.

Table 1

*Overview of Study Characteristics*

Author	Year	Country	Participant				Duration of ESM	ESM mood items	ESM goal items
			N	Description	Gender	Average age			
Affleck et al	1998	USA	50	Patients with Fibromyalgia syndrome	Female	43.86 (SD=2.13)	3 x daily x 30 days	Csikszentmihalyi and Larson (1987) eight factor mood circumplex	DD measuring goal effort and progress that day and how much their attempts to achieve the goal had been hindered by symptoms of PFS.
Alliger & Williams	1993	USA	41	Non clinical	Mixed	32.2	8 x daily x 7 days	PA (excited, enthusiastic, interested, aroused, happy). NA (nervous, distressed, sad, unhappy, blue)	Perceived goal progress, perceived task skill measured.
Auerbach	2002	USA	52	Non clinical	Mixed	37	8 x daily x 7 days	NA and PA subscales of the PANAS	Goal progress on the current task was measured by asking participants to answer the following questions: "How efficient are/were you while working on the main activity" and "how happy are you with your progress on the main activity" measured on 5-point Likert scales.
Cantor et al.	1991	USA	54	Non clinical	Female	Not stated	5 x daily x 15 days	13 bipolar 7-point Likert scales.	"Task" appraisals all rated on 9-point Likert scales.
Emmons & King	1989	USA	88	Non clinical	Mixed	Not stated	4 x daily x 21 days	Adjectives (happy, joyful, pleased, enjoyment/fun and five NA adjectives (unhappy, angry, anxious, depressed, and frustrated)	Generated 15 "personal strivings" and completed a striving differentiation measure to measure goal conflict
Emmons	1986	USA	40	Non clinical	Mixed	Not stated	4 x daily x 21 days	Self-report scales assessing PA & NA	Participants generated 15 personal strivings and rated each on Striving Assessment Scales (SAS) and the Striving Instrumentality Matrix (SIM) to examine goal conflict
Fisher et al.	2013	Australia	135	Non clinical	Mixed	34	5 x daily x 21 days	PA (happy, content, enthused). NA (stressed, tense, sad, frustrated) Likert scales	Goal importance and confidence measured on 7-point. Goal orientation (performance goal orientation) Mastery goal orientation was also measured and used as a control variable.

*Note.* PANAS = Positive and Negative Affect Scale (Watson & Tellegen, 1985); PA= Positive Affect; NA= Negative Affect; DD = Daily Diary

Table 1 (*continued*)

Author	Year	Country	Participant			Duration of ESM	ESM mood items	ESM goal items	
			N	Description	Gender				Average age
Fleeson & Cantor	1995	USA	54	Non clinical	Female	Not stated	5 x daily x 15 days	13 bipolar 7-point scales with higher numbers reflecting the more positive affects recorded 5 times a day for 15 days.	Phase 1: "life tasks" appraised by each participant on 15 dimensions Phase 2: DD goal relevance of each event recorded that day.
Gere et al	2011	Canada	97	Non clinical	Mixed	Wives = 37.4 (SD = 11.3) Husbands = 40.3 (SD = 12.3)	6 x daily at approx. 2-3 hour intervals x 14 days	Scales (1-7) looking at emotions: (happy/cheerful, angry/irritated, worried/anxious and sad/blue)	Asked to state the goal that motivated the activity they were engaged in at time of signal and whether this fulfils the person's goals, their partner's goals or both theirs and their partners goals.
Hofmann, Finkel, & Fitzsimons (Study 1)	2015	USA	230	Non clinical	Mixed	Males = 24.68 (SD = 5.06) Females = 23.37 (SD = 4.46)	6 x daily x 7 days	Report on their own current state (PA).	Locus of control, goal focus, perceived partner support in relation to goal progress. Additional DD entry at the reporting on goal progress and performance regarding each of the goals.
McCabe & Fleeson	2012	USA	47	Non clinical	Not stated	Not stated	5 x daily x 10 days	State PA was measured through 10 adjectives from that the PANAS.	Participants rated the extent to which they were trying to accomplish 18 goals at that moment using a 6-point scale.
Moberly & Watkins	2010	UK	139	Non clinical	Mixed	26.8, (SD = 13.3)	8 x daily x 7 days	Participants recorded their levels of sadness, anxiety and irritation and the extent to which they were focusing on feelings and problems on 7-point Likert scales Adapted items from the PANAS	Record the main purpose or goal when the alert was received. Participants then asked to rate goal importance and perceived success in achieving the goal on 7-point Likert scales
To et al	2012	Australia	30	Non clinical	Mixed	27	3x daily x 10 days	Adapted items from the PANAS	Trait goal orientation at baseline.
Uy	2009	Philippines	100	Non clinical	Mixed	Not stated	2 x daily for 4 days x 6 rounds (every other week)	A 10-item shortened version of the PANAS	Goal progress and goal effort towards a previously identified goal.

Table 1 (*continued*)

Author	Year	Country	Participant			ESM duration	ESM mood items	ESM goal items	
			N	Description	Gender				Average age
Zohar, Tzischinski & Epstein	2003	Israel	78	Non clinical	Mixed	26-39	3x daily x 3 days. Each P provided 5 sets of ESM data 6 months apart	Brief version of the NA and PA subscales of the PANAS	Goal disruptive events and goal-enhancing events were measured.

Table 2

*Overview of Assessment of Study Methodological Quality*

Author	Unbiased selection of cohort	Justification of sample size	Adequate description of the cohort	Validated (or clear descriptions) of constructs for defining and/or measuring goals	Validated method for ascertaining momentary mood	Adequate data collection schedule	Missing data random not systematic	Appropriate analytic methods
Affleck et al.	Partial	Not clear	Yes	Yes	Yes	Yes	Yes	Yes
Alliger & Williams	Partial	Not clear	Partial	Yes	Yes	Yes	Not clear	Yes
Auerbach	Partial	Not clear	Yes	Yes	Yes	Yes	Not clear	Yes
Cantor et al.	No	Not clear	No	Yes	Yes	Yes	Yes	Yes
Emmons & King	Partial	Not clear	No	Yes	Yes	Yes	Not clear	Yes
Emmons	Yes	Not clear	Partial	Yes	Yes	Yes	Yes	Yes
Fisher et al.	Partial	Not clear	Partial	Yes	Yes	Yes	Not clear	Yes
Fleeson & Cantor	No	Not clear	No	Yes	Yes	Yes	Yes	Yes
Hofmann, Finkel, & Fitzsimons (Study 1)	Partial	Not clear	Yes	Yes	No	Yes	Yes	Yes
McCabe & Fleeson	Partial	Not clear	No	Partial	Yes	Yes	Yes	Yes
Moberly & Watkins	Not clear	Not clear	No	Yes	Yes	Yes	Partial	Yes
To et al.	Yes	Partial	Partial	Yes	Yes	Yes	Not clear	Yes
Uy	Partial	Not clear	Partial	Yes	Yes	Yes	Yes	Yes
Zohar, Tzischinski & Epstein	Partial	Not clear	Partial	Yes	Yes	Partial	Not clear	Yes

## Findings of the review

All studies reported a significant positive relationship between perceived goal progress and PA, in line with Carver & Scheier's (1998) Self-Regulation Theory.

Alliger & Williams (1993) found that in a work environment, goal progress and perceived task skill predicted task enjoyment, goal progress predicted PA and skill predicted lower levels of NA. The authors concluded that there appears to be a moderate relationship between task perceptions (goal progress, enjoyment and skill) and mood across all subjects. Uy (2009) found that entrepreneurs' PA influenced the amount of effort they put into their goal and that this relationship was partially mediated by goal cognitions such as perceptions of goal progress. These relationships were supported for both within-day and next-day outcomes. The author found that perceived goal progress also partially mediated the impact of PA on subsequent venture efforts.

Both Gere et al., (2011) and Hofmann (2015) looked at goal pursuit in relation to relationships with others. Gere et al. looked specifically at the effect of romantic partners' goal congruence on their affective wellbeing. The authors found partners pursuing goal-congruent activities created an increased sense of closeness, which in turn increased affective wellbeing. Hofmann et al., (2015) looked at the concept of relationship satisfaction in general and its motivational properties in terms of everyday goal pursuit. Participants' goal performance was impacted by high relationship satisfaction. Specifically, they found that high relationship satisfaction was related to a "*positive motivational mindset during goal pursuits*" (p.445) and predicted levels of perceived self-control, goal focus and PA, which were linked with increased goal progress.

Auerbach (2002) found that interruptions to current goal progress were significantly related to affect. That is, the fewer interruptions a person had, the more likely they were to experience PA, presumably because their goal progress was not hindered in this way.

Similarly, Zohar et al. (2003) found that goal-disruptive events were moderately positively correlated with NA and cognitive fatigue. Goal-enhancing events were correlated positively with PA and fatigue.

Goal importance was found to be significantly and positively related to PA. Affleck et al. (1998) found that goals that were more highly valued were pursued with more effort and more successfully in participants with Primary Fibromyalgia Syndrome. A day in which more goal progress was reported in attaining social-interpersonal goals also saw an increase in positive mood over the course of the day, despite levels of pain or fatigue. On days where symptoms affected their level of goal progress, they generally experienced more NA throughout the day.

Emmons (1986) found that PA was most strongly associated with degree of effort that the goal striving requires, and goal importance. The strongest correlates with NA were ambivalence about goals and having lots of conflicting goals. NA also correlated significantly and negatively with perceptions of probability of success (goal expectancy) and importance. The product of both the variables importance and ambivalence was significantly correlated with NA. Goal effort and past fulfillment were positively correlated with PA however neither was significantly associated with NA. Conversely, Moberly & Watkins (2010) found that goal importance was positively correlated with NA. Goal success was negatively correlated with NA. The interaction between goal importance and goal success was significantly associated with NA such that high levels of goal importance and low goal progress predicted the highest levels of NA. In this study these authors suggest that rumination on problems may hinder goal pursuit and progress when the goal you are aiming for is of high importance with little current success in achieving it.

Cantor et al. (1991) found that the more important life tasks were to the person, the

more they considered them relevant to their daily life. Additionally, if the event occurring at the time of the ESM alert was perceived as highly task (goal) relevant, the participants were more emotionally involved than during the less relevant events. However, there was no significant difference found between their experiences of PA in highly relevant versus less relevant daily life events. Appraisals of task difficulty related negatively to both task involvement and PA. A further study using the same data from Cantor et al.'s (1991) study by Fleeson & Cantor (1995) looked at the interaction between contexts of goals (situational, interpersonal and temporal) goals and affective experience in daily life. The researchers found that although the context played a role, nonetheless, life task relevance and PA were strongly associated regardless of the context.

Task confidence was found to be more strongly and positively related to positive emotions when task importance was high than when it was low. When task importance was high, task confidence was more strongly and negatively associated with negative emotions than when it was low (Fisher et al., 2013).

Emmons & King (1989) suggested that variation in affective reactivity is related to differences in cognitive self-complexities. One form of cognitive complexity is the differentiation between personal goal strivings, or "*differentiated striving systems*" (p.479). The authors predicted that those who experience high affective intensity (more intense and variable emotions) would have more independent different goals and would generate fewer plans for trying to achieve these goals. This perhaps links with the research Pomerantz et al. (2000) who suggested that those with many important goals may be more likely to experience increased anxiety due to the stress of trying to achieve these goals. Emmons & King (1989) also include the concept of planning for the achievement of goals, which may further add to research on number of goals and emotional wellbeing. Emmons & King

acknowledge a key issue involved in this kind of research: the direction of causality.

Therefore, they state that further research is needed to assess whether affective reactivity causes more striving differentiation or vice versa.

One study (McCabe & Fleeson, 2012) found that the self-reported pursuit of extraversion-related goals at a given moment (e.g. *“trying to have fun”*) was predictive of positive momentary affect. The authors conclude that these results support the contention that enacting extraverted states by pursuing extraversion goals helped to bring about PA.

However, they also acknowledge that the results show one potential causal pathway by which goals are related to extraversion and PA and that the reverse is also possible.

In summary, this review found that range of goal processes and goal cognitions were found to be associated with PA and NA. Studies included also examined a variety of additional concepts relevant to the particular research questions relevant to each study. This review reports the findings relating to the current review question. A consistent finding across all studies was that perceived goal progress was linked to experiencing PA. Studies differed in the terms they used to define goals and how they asked people to generate goals. Alliger & Williams (1993) discussed ‘task perceptions’ which shares much of the same ideas as goal cognitions or appraisals including goal progress. Fisher et al. (2013) uses the term ‘task confidence’ which could be thought of as a similar concept to goal expectancy and is an example of how the literature relating to goal pursuit has many varying concepts. Future research could seek to define and refine these concepts further into a more universal language of goal pursuit. No ESM research has looked at the concept of CGS and this could be a further branch of ESM research into goals and mood.

### **Overview of the Quality of Included Studies**

The studies varied in how biased they were in terms of selection of the cohort with 10 out of 15 studies involving participants that were only partially representative of the population of interest selected for the study. Thus, this makes generalisation of the findings from these studies to the wider population problematic. Similarly, no studies explicitly justified their sample size and only four out of the 15 studies gave an adequate description of the relevant demographics of their cohort. None of the authors gave a description of how they conducted a power analysis (if one was done) to determine the adequacy of sample sizes for the ESM. The number of participants needed to include in an ESM study relates to the desired statistical power to detect between-person phenomena (Fisher & To, 2012). Fisher & To (2012) recommend that authors justify their sample sizes based on an appropriate power analysis. However, this is not to say that this was not done and that the samples sizes are not appropriate; the process just may not have been made explicit. The use of a standard “script” delivered to all participants to clearly measure the construct of interest in the time frame of interest is recommended (for example, “*goal progress since the last alert*”). This was achieved in all the studies. As mentioned previously, there are currently no standardised quality assessment tools for ESM studies as it is a relatively new methodology. Findings from this quality assessment adapted from Fisher & To’s (2012) recommendations suggest that the main concerns relating to quality are around the explicit presentation (or in this case, omission) of methodological procedures (e.g. justification for the sample size by presenting the results of a power analysis).

### Discussion

A range of goal processes and goal cognitions were found to be associated with PA and NA. The studies identified in this review were from different settings, including healthcare settings, universities, business and workplace settings. Most studies included other variables to be studied however they were not pertinent to this review. All studies reviewed found that momentary goal progress corresponded to an increase in positive affect. These results echo the findings from cross-sectional research into mood and goal progress (e.g. Brunstein, 1993) and are in line with self-regulation theory, which posits that PA is experienced when a person makes progress towards their goals. ESM data should be more accurate at examining the frequency distribution and intensity of psychological variables as recall bias should be minimised (Larson & Csikszentmihalyi, 1983).

Contrary to theory some studies in the review (Alliger & Williams, 1993; Uy, 2009) reported a non-significant relationship between goal progress and negative affect. Self-regulation theory would suggest that a lack of goal progress would be associated with the experience of NA, however this was not found to be the case in these particular studies. NA and PA are believed to represent orthogonal rather than bipolar affective dimensions (Watson, Clark, & Tellegen, 1988) so variations such as this might be expected.

Results from studies looking at interruptions to goal progress show how in-the-moment events can cause changes in mood if they hinder goal progress. For example, Zohar et al. (2003) found that goal-disruptive events were moderately correlated with NA and fatigue. Goal-enhancing events were correlated positively with PA and negatively with fatigue. This suggests that examining moment-to-moment goal pursuit may be important to the management of mood. Affleck et al. (1998) looked at the impact of physical symptoms on

mood and suggested that it was not the mood symptoms themselves that caused NA; instead it was the impact that those symptoms had on the person's goal pursuit. The effect of interruptions to goal progress and the cognitive-energy expenditure involved in goal progress interruptions could expand self-regulation theories to include an assessment of these dimensions in the processes of self-regulation and goal pursuit.

The strongest correlates with NA were ambivalence around achieving the goal and conflict between competing goals. NA also negatively correlated with probability of success and importance. Generally studies found that highly valued goals were pursued with more effort and with greater success. However, high levels of goal importance and low goal success predicted the highest levels of NA. This suggests that just because a goal is important to a person, it does not mean that it is pleasant for them in striving to achieve it. For example, a highly important goal may lead to higher levels of NA due to increased anxiety over a fear of failure and the implications of this (VandeWalle, Brown, Cron, & Slocum Jr, 1999). Fisher et al. (2013) found that when task importance was high, task confidence was more strongly and negatively associated with negative emotions.

From a clinical perspective, the perceived importance of someone's personal goals has an impact on how they pursue their goals and the impact this has on their mood. When thinking about mood regulation in the context of goal pursuit it seems pertinent to examine the importance of the goals that people set and how they are linked with their values and the judgements they make around their happiness and self-worth in relation to goal pursuit.

### **Clinical Implications and Future Research**

PA was found to influence the amount of effort put into momentary goal pursuit and this relationship was partially mediated by goal cognitions such as perceptions of goal

progress. These relationships were supported for both within-day and next-day outcomes suggesting the motivational impact of PA for continuing goal progress.

Affective wellbeing is influenced by goal processes, specifically goal progress is linked to PA and it has been suggested that goal setting and pursuit is fundamental to maintaining affective wellbeing (King, 2008). Looking at a person's goals can tell us why individuals engage in activities and the impact these have on their mood. Specifically, examining the ways in which an individual frames and cognitively appraises their goals can offer insight into goal pursuit and mood. Previous cross-sectional research suggests that it is important to think about goals in treating mood difficulties but more specifically, ESM research suggests perhaps looking in more detail at these specifics and how they fluctuate over time can help shed new light on the use of goal setting in psychological therapies. ESM can help us to study these constructs in more detail studying everyday experiences in their natural environment, recognising the dynamic and changing nature of mood and goal pursuit.

Findings from this review bring together the current literature in the area of goals and mood using ESM. As mentioned, looking at individual factors such as goal importance and its relation to momentary goal pursuit may assist clinicians to help their clients to recognise problematic goal pursuit processes. For example, when goal progress is hindered and the person is struggling to disengage with the goal due to its high perceived importance. Goal disruptive events and their impact on goal progress and mood could be looked at further. Establishing what makes some people deal more effectively with disruptions to goal progress than others and thinking about ways in which people can be helped to deal with these inevitable everyday disruptions to self-regulate.

Recognising the impact of pursuing goals in the context of others has also been identified in some studies included in this review. Creating a social world around a person,

which is supportive of their goal pursuits is suggested to be of benefit to increasing affective wellbeing and could be taken into consideration when helping a person to set and pursue their goals in their everyday life. The number of goals a person has and whether they have the resources to pursue them all, or whether they may be conflicting are also important concepts to be considered. Assessing the degree of importance and effort a person expends on their goals and goal pursuit and how this links with goal progress over time also impacts on affect. Effective ways of managing effort towards goals and thinking about how an individual appraises their goals (and themselves) could also be taken into consideration when helping a person to self-regulate. Looking at these concepts in the moment and over time can help to identify fluctuations and capitalise on learning from more successful episodes or moments of goal pursuit and affective wellbeing. Further research into these concepts from a momentary perspective is needed perhaps focusing on specific goal processes and incorporating new concepts into ESM research such as CGS.

Sheeran, Webb & Gollwitzer's (2005) work on emotional regulation suggests that monitoring emotional states and recognising the discrepancy between a person's current emotional state and their desired state is the first step towards effective emotional regulation. Following this, a person is required to make plans for how to reduce this discrepancy. A person's 'implementation intention' (Gollwitzer, 1993) or how they plan to achieve their goal could also be thought about from a goal pursuit perspective (i.e. making specific plans towards important goals in the pursuit of mood regulation). Looking at this from a momentary or day-to-day perspective could offer new insight into effective mood and goal regulation processes.

### **Limitations**

All studies included in this review acknowledge that they cannot infer causal

relationships between the variables explored. For example, in Emmons & King's (1989) study it is not possible to say whether affective reactivity leads to the development of more differentiated striving systems or the other way round. Researchers therefore have referred to theory in order to suggest a possible likelihood of direction for relationships, but nonetheless, causality cannot be assumed. ESM offers little experimental control and data can only be correlational as participants cannot be randomly assigned to their own daily life experiences. However, despite these limitations, researchers (e.g. Fisher & To, 2012) argue that ESM should offer more insight into psychological variables in the moment more so than cross-sectional designs due to the minimized effects of memory recall.

The studies in this review used different ways of measuring goal-related variables and also participant samples that varied greatly, including university students, women with a chronic health condition, entrepreneurs, medical residents and married couples. Therefore, it could be argued that it is unwise to generalise the findings across groups. As the quality assessment suggests, 10 out of 15 studies involved participants that were only partially representative of the population of interest selected for the study. For example, some studies sampled women from the same sorority within one university within the United States. This group may not be representative of university students and university students are not representative of the general population, therefore affecting the generalizability of the results to the wider population.

Additionally, the personality traits of entrepreneurs or medical residents may lead them to set qualitatively different goals and have different goal cognitions that have allowed them to pursue difficult academic or occupational goals.

Fisher & To (2012) suggest that repeated self-monitoring could cause a change in the phenomena being examined. For example, asking participants to focus on their current mood

(with the knowledge that they will be required to focus on it again later on) may cause the person's perception of their mood or their emotional reactions to change as a response. Also, measurement reactivity may be more likely when the possible responses are more desirable. For example, in relation to studies looking at goal progress, a participant may report increased goal progress in relation to work tasks.

### **Conclusion**

This review aimed to review and synthesise available the research using ESM in relation to exploring goal processes, cognitions and mood over time. A range of goal processes and goal cognitions were found to be associated with positive and negative affect from the studies reviewed, including goal progress and goal importance. Findings from this review suggest that research using ESM comes from researchers in different domains looking at the same concepts. This adds to the growing literature around ESM, specifically looking at personal goals and affective wellbeing. From a clinical perspective examining the way an individual frames and cognitively appraises their goals can offer insight into affective wellbeing. ESM can help us to study these constructs in more detail in everyday experiences in their natural environment, recognising the dynamic and changing nature of mood and goal pursuit. Further research exploring these concepts in the moment could add to the literature around goals and mood and contribute to the on-going development of more effective therapies in the treatment of mood disorders.

## References

- Affleck, G., Tennen, H., Urrows, S., Higgins, P., Abeles, M., Hall, C., . . . Newton, C. (1998). Fibromyalgia and women's pursuit of personal goals: a daily process analysis. *Health Psychology, 17*(1), 40. <http://psycnet.apa.org/doi/10.1037/0278-6133.17.1.40>
- Alliger, G. M., & Williams, K. J. (1993). Using signal-contingent experience sampling methodology to study work in the field - a discussion and illustration examining task perceptions and mood. *Personnel Psychology, 46*(3), 525-549. doi:10.1111/j.1744-6570.1993.tb00883.x
- Auerbach, M. A. (2002). *The Dynamic Cycle Of External Task Interruptions: An ESM Study Of Multiple Role Management*. (63), ProQuest Information & Learning, US.
- Retrieved from  
<http://search.ebscohost.com.ezproxy.liv.ac.uk/login.aspx?direct=true&db=psyh&AN=2002-95022-238&site=ehost-live&scope=site> Available from EBSCOhost psych database.
- Austin, J. T., & Vancouver, J. B. (1996). Goal constructs in psychology: Structure, process, and content. *Psychological Bulletin, 120*(3), 338.  
<http://psycnet.apa.org/doi/10.1037/0033-2909.120.3.338>
- Beck, A. T. (1967). *Depression: Causes And Treatment*. Philadelphia: University of Pennsylvania Press. <http://dx.doi.org/10.1080/00029157.1974.10403697>
- Boden, M. A. (1973). The structure of intentions. *Journal for the Theory of Social Behavior, 3*(1), 23-46. <http://psycnet.apa.org/doi/10.1111/j.1468-5914.1973.tb00314.x>
- Brunstein, J. C. (1993). Personal goals and subjective well-being: A longitudinal study. *Journal Of Personality And Social Psychology, 65*(5), 1061.  
<http://psycnet.apa.org/doi/10.1037/0022-3514.65.5.1061>

- Cantor, N., Norem, J., Langston, C., Zirkel, S., Fleeson, W., & Cook-Flannagan, C. (1991). Life tasks and daily life experience. *Journal of Personality*, *59*(3), 425-451.  
[doi:10.1111/j.1467-6494.1991.tb00255.x](https://doi.org/10.1111/j.1467-6494.1991.tb00255.x)
- Carver, C. S. (1979). A cybernetic model of self-attention processes. *Journal Of Personality And Social Psychology*, *37*(8), 1251. <http://psycnet.apa.org/doi/10.1037/0022-3514.37.8.1251>
- Carver, C. S, Avivi, Y. E, & Laurenceau, J. P. (2008). Handbook Of Approach And Avoidance Motivation. <http://dx.doi.org/10.4324/9780203888148.ch22>
- Carver, C. S. & Scheier. M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review*, *97*(1), 19.  
<http://dx.doi.org/10.1037/0033-295x.97.1.19>
- Carver, C. S. & Scheier. M. F. (1998). *On the Self-Regulation of Behavior*. [electronic book]: Cambridge : Cambridge University Press, 1998.  
<http://dx.doi.org/10.1017/cbo9781139174794>
- Champion, L., & Power, M. (1995). Social and cognitive approaches to depression: Towards a new synthesis. *British Journal of Clinical Psychology*, *34*(4), 485-503.  
<http://dx.doi.org/10.1111/j.2044-8260.1995.tb01484.x>
- Coats, E. J., Janoff-Bulman, R., & Alpert, N. (1996). Approach versus avoidance goals: Differences in self-evaluation and well-being. *Personality and Social Bulletin*, *22*, 1057–1067.
- Csikszentmihalyi, M., & Larson, R. (1987). Validity and reliability of the Experience-Sampling Method. *The Journal Of Nervous And Mental Disease*, *175*(9), 526-536.  
<http://dx.doi.org/10.1097/00005053-198709000-00004>

- Dickson, J. M., & MacLeod, A. K. (2004). Anxiety, depression, and approach and avoidance goals. *Cognition and Emotion, 18*, 423–430.
- Dickson, J. M., Moberly, N. J., & Kinderman, P. (2011). Depressed people are not less motivated by personal goals but are more pessimistic about attaining them. *Journal Of Abnormal Psychology, 120*(4), 975. <http://dx.doi.org/10.1037/a0023665>
- Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist, 55*(1), 34-43. doi:10.1037/0003-066X.55.1.34
- Elliot, A. J., Sheldon, K. M., & Church, M. A. (1997). Avoidance personal goals and subjective well-being. *Personality and Social Psychology Bulletin, 23*(9), 915-927. <http://dx.doi.org/10.1177/0146167297239001>
- Emmons, R. A. (1986). Personal strivings: An approach to personality and subjective well-being. *Journal of Personality and Social Psychology, 51*(5), 1058-1068. doi:10.1037/0022-3514.51.5.1058
- Emmons, & King. (1989). Personal striving differentiation and affective reactivity *Journal of Personality and Social Psychology, 56*(3), 478-484. doi:10.1037//0022-3514.56.3.478
- Fisher, C. D., & To, M. L. (2012). Using experience sampling methodology in organizational behavior. *Journal of Organizational Behavior, 33*(7), 865-877. <http://dx.doi.org/10.1002/job.1803>
- Fisher, C. D., Minbashian, A., Beckmann, N., & Wood, R. E. (2013). Task appraisals, emotions, and performance goal orientation. *Journal of Applied Psychology, 98*(2), 364-373. doi:10.1037/a0031260
- Fleeson, W., & Cantor, N. (1995). Goal relevance and the affective experience of daily life: Ruling out situational explanations. *Motivation and Emotion, 19*(1), 25-57. doi:10.1007/BF02260671

Fowles, D. C. (1994). Psychophysiology and Psychopathology: A Motivational Approach.

*Psychophysiology*, 25(4), 373–391. doi:10.1111/j.1469-8986.1988.tb01873.x

Gere, J., Schimmack, U., Pinkus, R. T., & Lockwood, P. (2011). The effects of romantic partners' goal congruence on affective well-being. *Journal of Research in Personality*,

45(6), 549-559. doi:10.1016/j.jrp.2011.06.010

Hofmann, W., Finkel, E. J., & Fitzsimons, G. M. (2015). Close relationships and self-

regulation: How relationship satisfaction facilitates momentary goal pursuit. *Journal*

*of Personality and Social Psychology*, 109(3), 434-452. doi:10.1037/pspi0000020

Gollwitzer, P. M. (1993). Goal achievement: The role of intentions. *European Review Of*

*Social Psychology*, 4(1), 141-185. <http://dx.doi.org/10.1080/14792779343000059>

Gray, J. (1982). *The Neuropsychology Of Anxiety: An Investigation Into The Functions Of*

*The Septo-Hippocampal System*: Oxford, England: Oxford University Press.

<http://dx.doi.org/10.1017/s0140525x00013066>

Greenberg, J., Pyszczynski, T., Burling, J., & Tibbs, K. (1992). Depression, self-focused

attention, and the self-serving attributional bias. *Personality and Individual*

*Differences*, 13(9), 959-965. [http://dx.doi.org/10.1016/0191-8869\(92\)90129-d](http://dx.doi.org/10.1016/0191-8869(92)90129-d)

Johnson, S. L., Carver, C. S., & Fulford, D. (2010). Goal dysregulation in the affective

disorders. *Emotion Regulation And Psychopathology: A Transdiagnostic Approach To Etiology And Treatment*, 204-228.

<http://dx.doi.org/10.1080/16506073.2010.524747>

King, L. A. (2008). Interventions for enhancing subjective well-being: Can we make people

happier and should we? In M. Eid & R. J. Larsen (Eds). *The Science Of Subjective*

*Well-Being*. New York: Guildford Press.

- Lam, D., Green, B., Power, M., & Checkley, S. (1994). The impact of social cognitive variables on the initial level of depression and recovery. *Journal Of Affective Disorders, 32*(2), 75-83. [http://dx.doi.org/10.1016/0165-0327\(94\)90065-5](http://dx.doi.org/10.1016/0165-0327(94)90065-5)
- Larson, R., & Csikszentmihalyi, M. (1983). *Naturalistic Approaches To Studying Social Interaction*: San Francisco: Jossey-Bass Inc.
- McCabe, K. O., & Fleeson, W. (2012). What is extraversion for? Integrating trait and motivational perspectives and identifying the purpose of extraversion. *Psychological Science, 23*(12), 1498-1505. doi:10.1177/0956797612444904
- McIntosh, W. (1996). When does goal nonattainment lead to negative emotional reactions, and when doesn't it?: The role of linking and rumination. In L. L. Martin, & A. Tesser (Eds). *Striving And Feeling: Interactions Among Goals, Affect, And Self-Regulation*. pp.53-77. Lawrence Erlbaum Associates. <http://dx.doi.org/10.4324/9781315806396>
- Moberly, N. J., & Watkins, E. R. (2010). Negative affect and ruminative self-focus during everyday goal pursuit. *Cognition and Emotion, 24*(4), 729-739. doi:10.1080/02699930802696849
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals Of Internal Medicine, 151*(4), 264-269. <http://dx.doi.org/10.7326/0003-4819-151-4-200908180-00135>
- Pomerantz, E. M., Saxon, J. L., & Oishi, S. (2000). The psychological trade-offs of goal investment. *Journal Of Personality And Social Psychology, 79*(4), 617. <http://dx.doi.org/10.1037//0022-3514.79.4.617>
- Russell, J. A., & Carroll, J. M. (1999). On the bipolarity of positive and negative affect. *Psychological Bulletin, 125*(1), 3. <http://dx.doi.org/10.1037/0033-2909.125.1.3>

- Schimmack, U., & Grob, A. (2000). Dimensional models of core affect: A quantitative comparison by means of structural equation modeling. *European Journal of Personality, 14*(4), 325-345. [http://dx.doi.org/10.1002/1099-0984\(200007/08\)14:4%3C325::aid-per380%3E3.0.co;2-i](http://dx.doi.org/10.1002/1099-0984(200007/08)14:4%3C325::aid-per380%3E3.0.co;2-i)
- Sheeran, P., Webb, T. L., & Gollwitzer, P. M. (2005). The interplay between goal intentions and implementation intentions. *Personality and Social Psychology Bulletin, 31*(1), 87-98. <http://dx.doi.org/10.1177/0146167204271308>
- Street, H. (2001). Exploring the role of conditional goal setting in depression. *Clinical Psychologist, 6*(1), 16-23. <http://dx.doi.org/10.1080/13284200310001707331>
- Trew, J. L. (2011). Exploring the roles of approach and avoidance in depression: an integrative model. *Clinical Psychology Review, 31*(7), 1156-1168. <http://dx.doi.org/10.1016/j.cpr.2011.07.007>.
- Tubbs, M. E., Boehne, D. M., & Dahl, J. G. (1993). Expectancy, valence, and motivational force functions in goal-setting research: An empirical test. *Journal of Applied Psychology, 78*(3), 361. <http://dx.doi.org/10.1037/0021-9010.78.3.361>
- Uy, M. A. (2009). *The Roller Coaster Ride: Affective Influences In Entrepreneurial Efforts*. (70), ProQuest Information & Learning, US. Retrieved from <http://search.ebscohost.com.ezproxy.liv.ac.uk/login.aspx?direct=true&db=psyh&AN=2009-99190-536&site=ehost-live&scope=site> Available from EBSCOhost psyh database.
- VandeWalle, D., Brown, S. P., Cron, W. L., & Slocum Jr, J. W. (1999). The influence of goal orientation and self-regulation tactics on sales performance: A longitudinal field test. *Journal of Applied Psychology, 84*(2), 249. <http://dx.doi.org/10.1037/0021-9010.84.2.249>

- Watson, D., & Clark, L. A. (1984). Negative affectivity: the disposition to experience aversive emotional states. *Psychological Bulletin*, *96*(3), 465. <http://dx.doi.org/10.1037/0033-2909.96.3.465>
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal Of Personality And Social Psychology*, *54*(6), 1063. <http://dx.doi.org/10.1037//0022-3514.54.6.1063>
- Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin*, *98*(2), 219. <http://dx.doi.org/10.1037//0033-2909.98.2.219>
- Williams, J. W., Plassman, B. L., Burke, J., Holsinger, T., & Benjamin, S. (2010). Preventing Alzheimer's Disease And Cognitive Decline. <http://dx.doi.org/10.1037/e554772010-001>
- Wrosch, C., Scheier, M. F., Carver, C. S., & Schulz, R. (2003). The importance of goal disengagement in adaptive self-regulation: When giving up is beneficial. *Self and Identity*, *2*(1), 1-20. <http://dx.doi.org/10.1080/15298860309021>
- Zohar, D., Epstein, R., & Tzischinski, O. (2003). Effects of Energy Availability on Immediate and Delayed Emotional Reactions to Work Events. *Journal of Applied Psychology*, *88*(6), 1082-1093. doi:10.1037/0021-9010.88.6.1082

Conditional goal setting, momentary perceived goal progress, goal effort and momentary mood symptoms: Experience Sampling Method in a student population<sup>1</sup>

---

<sup>1</sup> Article prepared for submission to the *Personality and Social Psychology Bulletin* – word limit: 10,000 including abstract and references (Author instructions can be found in Appendix H) Word Count: 7,424.

### **Preface**

The present study forms part of a wider project in collaboration with researchers at the University of Liverpool, University of Manchester and the University of Lancaster. Doctorate in Clinical Psychology trainees undertaking this project each explored concepts relating to motivation, social comparison, psychopathology and affective experiences. Each trainee and their supervisors devised a distinct project with the aim of working collaboratively in order to facilitate recruitment.

Trainees worked independently on their own projects and the current paper describes a distinct stand-alone study with its own data analysis and write up based on the research aims of the project.

### Abstract

**Objectives:** This study aimed to explore the relationship between goal progress, goal effort, Conditional Goal Setting (CGS) and momentary mood. Previous research in goal pursuit and mood has found that amount of goal progress, goal effort and CGS all impact on mood. The current study aims to look at this relationship from a momentary perspective using Experience Sampling Method (ESM). It was hypothesised that lower perceived momentary goal progress and higher momentary goal effort would be associated with greater momentary mood symptoms in those with higher CGS scores.

**Method:** Undergraduate students ( $N = 91$ ) took part in a six-day ESM study. Participants were required to complete six signal-contingent diary entries per day rating their perceived momentary goal progress, goal effort and mood. CGS was measured at baseline.

**Results:** Multilevel regression analyses found a significant negative association between perceived level of momentary goal progress and negative affect (NA) and a significant positive association between goal progress and PA. Perceived momentary goal effort was also found to be positively and significantly associated with NA and negatively associated with PA. CGS was found not to impact on momentary mood over time.

**Conclusions:** The findings of this study suggest that NA and PA fluctuated considerably from moment-to-moment over time. ESM captures these within-person fluctuations as well as the between-person differences. Examining momentary mood changes from a goal pursuit perspective found that goal progress and amount of goal effort account for some of the variance in these fluctuations. Clinical implications and further research are discussed.

*Keywords: Experience Sampling Method, Goal progress, Goal effort, Momentary mood, Conditional Goal Setting.*

## Introduction

Affect encompasses both state feelings in the moment and trait feelings (Watson & Clark, 1984). Previous research into mood has generally tended to use measures of mood rather than looking at reactive emotion. Emotion theorists such as Emmons & Diener (1986) Diener & Iran-Nejad (1986) suggest that in order to capture an individual's affective experience it is important to look at mood variation over time, differentiating between momentary emotions, momentary moods, and long-term levels of affect when examining the structure and measurement of affect.

In clinical practice, mood symptoms tend to be measured retrospectively, which is susceptible to recall bias. In the case of those experiencing low mood, their recall may be affected by their cognitive biases in that they may selectively attend to the negative aspects of their everyday lives (Beck, 1963). Mokros (1993) found that adolescents diagnosed with depression showed discrepancies in their reporting of mood symptoms throughout a week and their retrospective recall of these symptoms at the end of the week. In research, phenomena such as intrinsic motivation and mood fluctuate daily and even momentarily, yet traditional research designs usually treat them as stable, measuring them at a particular time point making it unlikely to capture completely the true nature of a person's experience (Csikszentmihalyi & Larson, 1987).

Within-subject analysis across time points has started to gain momentum in the literature. Experience Sampling Methodology (ESM) allows researchers to measure constructs which are dynamic and fluctuating, such as mood. Further, ESM measures are better suited for addressing questions like: "*Do fluctuations in X covary with fluctuations in Y?*" by studying everyday experiences in their natural environment. ESM research requires individuals to provide systematic self-reports at random occasions during the waking hours of

a normal week (or other specified time period). Individuals are required to provide in-the-moment recordings of their experiences and in doing so provide real-time data aiming to capture their experiences as they are happening (Csikszentmihalyi & Larson, 1987).

aan het Rot, Hogenelst, & Schoevers (2012) conducted a systematic review of all studies using ESM in the study of mood disorders. All studies included in the review measured momentary positive affect (PA) and negative affect (NA) to assess mood and considered fluctuations in affect in relation to everyday situational factors that may predict affect changes. Peeters, Nicolson, Berkhof, Delespaul, & deVries (2003) found that adults with major depressive disorder experienced less PA and more NA on a daily basis than controls. This was associated with a lack of positive events throughout the day. Other studies in the review looked at other variables such as sleep on mood in children (Cousins et al., 2011) and adults (Bower, Bylsma, Morris, & Rottenberg, 2010). The authors of the review suggest that ESM can be used to study the impact of treatment on mood in everyday life and vice versa and may improve the accuracy and validity of measuring mood by examining changes in PA and NA over time and in response to events.

Watson & Tellegen (1985) developed the Positive and Negative Affect Schedule (PANAS) based on the proposition that affects can be described by PA and NA and suggest that they are two uncorrelated independent basic dimensions. Diener & Iran-Nejad (1986) explored the experience of PA and NA and found a strong negative correlation between PA and NA when the experience of a particular affect was reported at particular moments. They suggested that the two were only mutually exclusive during a period of intense PA or NA. Over longer time periods they found no correlation between NA and PA across individuals, again suggesting that NA and PA are relatively independent constructs. When an individual experiences low intensity PA or NA, the other affect can be at any level. PA and NA are not

seen as opposite ends of a continuum and specific factors can predict one but not always the other. Thus, a person may experience combinations of both high and low affect (i.e. high PA, high NA; low PA, low NA; high PA, low NA; or high NA, low PA).

Taking this further, researchers such as Russell & Carroll (1999) and Schimmack & Grob (2000) advocated for the utility of studying the structure of the affect system in order to examine which particular emotions are correlated and therefore either facilitate or inhibit the experiencing of other emotions. Studying the antecedents of PA may help to generate ideas for how to foster PA in individuals and to identify antecedents for negative emotions enabling individuals to effectively regulate mood experience. Pekrun, Götz, Titz, & Perry (2002) suggest that experiencing positive emotions and moods leads to healthy psychological growth and wellbeing, helping to facilitate the envisioning of goals and problem solving.

Goals have been defined as typically involving trying to ‘move’ from an actual state to a desired state, the pursuit of which is central to human motivation (Klinger, 1975). Goals are intimately linked to affect as they typically focus on a movement toward a positive goal outcome (i.e., the pursuit of desirable goal outcomes). The importance of particular goals for an individual is a salient factor in the motivation to pursue the goal. The successful striving for goals that are personally meaningful to an individual has been found to play an important role in the maintenance and development of their subjective wellbeing (Brunstein, 1993). Palys & Little (1983) found that participants who reported high life satisfaction were more likely to be striving for meaningful, inspiring and pleasurable goals in turn leading to increased self-efficacy. It is argued that the process of striving to achieve personal goals is related to psychological growth and personality development not just the achievement of goals per se (Sheldon, Kasser, Smith, & Share, 2002). The value or importance we ascribe to our goals is just one of the cognitive appraisals we attribute to them.

Cognitive appraisals or perceptions of events occurring in people's lives have long been considered to be crucial in mediating the impact of these events on emotional experience (Lazarus, 1991). These 'events' are the things that happen to us daily, from the benign to the very personally important. Events can also be cognitive events –internally occurring events such as our thoughts and feelings. Cognitive appraisals relating to our goals such as goal importance, goal progress, effort and expectancy have all been explored as potential antecedents to positive emotional experiences in cross-sectional research (Roseman, 2001).

In addition to how we appraise goals, dysregulation of goals has been linked to mood states and in recent years goal dysregulation has been implicated in the aetiology and maintenance of affective disorders (Dickson & Moberly, 2013; Dickson et al., 2011; Johnson et al., 2010). Goals are highly idiosyncratic for each individual however, as mentioned, they can also be assessed in terms of nomothetic or formal properties such as perceived goal progress, goal importance and goal effort. Essentially, it is not just the *content* of the goals themselves that are important (i.e. *what* the person is striving for), it is the ways in which an individual frames, pursues, and cognitively appraises their goals that have an effect on their mood and life satisfaction. Self regulation theories such as that formulated by Carver (1979) propose that affect and motivated behaviour are intrinsically linked. Brunstein (1993) suggests that goal progress is central to motivated behaviour and specifically that goal progress is inherently related to the experience of PA. In addition, goal effort has since also been examined in relation to affect. Goal effort has been defined as the deliberate actions taken in pursuit of a desired end state or goal (Austin & Vancouver, 1996). Carver, Avivi, & Laurenceau (2008) suggest that emotional experiences and moods alter amount of goal effort. The experience of PA may indicate adequate goal progress and therefore suggest that a

person has capacity then to focus their efforts on another goal and vice versa for NA. From a clinical perspective, goal theorists have suggested that continuing futile efforts towards unattainable goals may be at the root of low mood and depression (Greenberg et al., 1992).

Another emerging body of research related to cognitive appraisals of goals in relation to more broad cognitions about the self suggests that depressed persons are prone to setting conditional type goals (Hadley & MacLeod, 2010), for example, ‘I can only [be happy], [have a sense of worth], [have a sense of fulfilment] if I achieve this goal’ versus ‘even if I don’t achieve this goal I can still [be happy], [have a sense of worth], [have a sense of fulfilment]’. Less flexible, conditional goal setting may exacerbate mood symptoms, particularly when individuals perceive low goal progress combined with high goal effort.

Taken together this emerging research is clearly implicating goal regulation and dysregulation processes in the maintenance of subjective wellbeing and mood. Earlier goal theory research has focused on the experience of positive affect due to perceived goal progress; from this, the conceptual framework around goals and mood has expanded to explore the idiosyncrasies in an individual’s goal pursuit. Dickson et al. (2011) in recognising the effects of goal cognitions suggest that therapeutic efforts should focus attention on the individual’s goal cognitions related to goal pursuit rather than merely encouraging them to identify possible goals to pursue in the treatment of low mood. Recognising the impact of goal pursuit on mood and studying both of these variables in the moment may improve current interventions for mood disorders. Taking the setting of and successful pursuit of goals as a therapeutic intervention one step further, examining an individual’s thoughts about their goals and the effect this has on their mood may offer further insight into interventions that could be developed to help a person to effectively self-regulate in the moment.

Although personal goals typically represent sustained activity over time, most of the research in the goals and mood literature has been limited to the use of cross-sectional designs (e.g. Brunstein, 1993; Dickson et al., 2011; Johnson et al., 2010). Several studies have used ESM to look at momentary mood and personal goals. ESM research could help to shed new light on the conceptual framework concerning the relationship between goals and mood. In doing so, there is the potential to further add to our knowledge about individualised goal pursuit profiles and daily mood by exploring how people “really” feel in real time.

To date, the ESM literature around goals and momentary mood suggests that a range of goal processes and goal cognitions are found to be associated with PA and NA. Studies utilising this approach are from non-clinical populations in a variety of settings, including healthcare settings (Affleck et al., 1998), universities (Cantor et al., 1991; Fisher, Minbashian, Beckmann, & Wood, 2013; Fleeson & Cantor, 1995; Moberly & Watkins, 2010; To, Fisher, Ashkanasy, & Rowe, 2012) and business and workplace settings (Auerbach, 2002; Fisher et al., 2013; Uy, 2009; Zohar et al., 2003). Two studies investigated the effects of goal congruence between romantic couples and its effect on their mood (Gere, Schimmack, Pinkus, & Lockwood, 2011; Hofmann, Finkel, & Fitzsimons, 2015) and others looked at momentary mood and goal pursuit in the general population (Alliger & Williams, 1993; McCabe & Fleeson, 2012). All of these studies found that momentary goal progress corresponded to an increase in PA in the moment. These results echo the findings from cross-sectional research into mood and goal progress (e.g. Brunstein, 1993) and are in line with self-regulation theory (Carver & Scheier, 1990) which posits that PA is experienced when a person makes progress towards their goals. However, ESM data should be more accurate at examining the frequency distribution and intensity of psychological variables as recall bias

should be minimised (Csikszentmihalyi & Larson, 1987) and should create less artificial settings for measuring mood.

In an effort to further contribute to the research in this domain, the current study aimed to examine relationships between perceived goal progress and momentary mood. This study also aimed to explore the possible additional effects of perceived levels of goal effort and their impact on momentary mood through the use of ESM. It was hoped that this will allow not only for highly ecological, real-life assessments of these appraisal and emotion constructs but also an evaluation of the potential impact of Conditional Goal Setting.

### **Aims and Hypotheses**

The aim of this study was to explore the relationship between perceived goal progress, goal effort and Conditional Goal Setting on momentary mood. It was hypothesised that higher perceived momentary goal progress and lower momentary goal effort would be associated with greater levels of PA. It was also hypothesised that lower perceived momentary goal progress and higher perceived levels of goal effort would be associated with higher levels of NA. It was also hypothesised that greater momentary mood experiences (whether PA or NA) would be associated with Conditional Goal Setting scores.

### **Method**

Ethical approval for the study was granted by the IPHS Research Ethics Committee (reference number: IPHS-1415-053).

### **Participants**

Undergraduate students ( $N = 91$ ) were recruited from Universities in the North West of England. Participants were aged between 18 and 40 years old with an average age of 22.9

(SD = 4.76). The sample consisted of 80 females and 11 males. Sixty eight percent of participants were White British. Ninety-one participants consented to take part in the study with no drop-outs over the six days.

Snijders & Bosker (2012) state that '*rules of thumb*' exist regarding adequate sample sizes for power in multilevel models. They suggest an  $n \geq 30$  is adequate for non-biased significance tests of fixed effects. The sample size of  $n = 30$ , with 36 time points (signal alerts to participants) within each level-2 unit was therefore chosen. Due to the multiple recruitment sites available to the research team for this study, a sample size of  $N = 91$  university undergraduate students were recruited and data were collated for analysis.

### **Design**

The longitudinal research design utilised Experience Sampling Methodology (ESM) with signal-contingent alerts sent to participants' mobile phones.

### **Measures**

As this study formed part of a larger study involving two other researchers, participants consented to take part in all three research projects. The following measures are presented in the order that they were administered to the participants. Those relevant to this specific study are indicated. The author recruited 30 participants from one university, another researcher collected data from 30 participants and another recruited 31 participants from another university (61 in total from that university) to make a total sample of 91 participants. All measures were collected in the same order by each researcher.

At the initial meeting with each researcher participants were asked to complete the following measures:

Demographics: Age, gender, ethnicity and Body Mass Index (BMI; a calculation based on height and weight measurements, taken using a tape measure and scales) were all recorded at

baseline. Those relevant to this study were age, gender and ethnicity. There were also five items enquiring about participation in specific eating disorder related behaviours: restricted eating, exercise, laxative/diuretic use and purging to control weight, as well as binge eating. Response options were either “yes” or “no”. Upon a “yes” response, participants were asked to rate the frequency of their participation in these behaviours on a 7-point Likert scale anchored at “more than once daily” and “less than once per month”. This data was not relevant to the current study.

Paranoia: The Green Paranoid Thought Scales (GPTS; Green et al., 2008) is a self-report scale featuring 32 items concerning different paranoid thoughts that are each rated on a five point scale for conviction (‘Not at all’ to ‘Totally’). The validity and reliability of this scale has been confirmed in both clinical and non-clinical samples (Green et al., 2008).

Goal Task (Dickson & MacLeod, 2004) An adapted version of a Goal Task (using a single goal measure) was used to elicit participants’ self-generated goals for the purposes of this study, which were personally meaningful to them. All participants were read the same “*script*” asking them to generate personally meaningful goals. These goals could relate to anything that was personally important to the participant. Participants then selected their two most important self-generated goals. The moment-to-moment goal ratings were based on these two self-selected goals.

Goal importance: (Dickson & MacLeod, 2004) (for inclusion in this study): To assess goal importance (to check that participants generated subjectively important rather than trivial goals) participants rated all their generated goals on the item, “*how important is this goal to you?*” on 7-point scales ranging from 1 “*no importance*” to 7 “*extremely important*”.

Participants were also asked to rate how likely they felt it was that they would achieve their goal (goal expectancy) and also how difficult they felt their goal would be to achieve (goal

difficulty) both measured also on 7-point Likert scales. However, these measures were not included in the analyses for the current study.

**Conditional Goal Setting:** Conditional Goal Setting (CGS, e.g. (Hadley & MacLeod, 2010; Street, 2002) (for inclusion in this study) was used to assess CGS on happiness, fulfilment and self-worth. Participants selected the statement that was most relevant for their two self-selected goals from a pair of statements. For example, for both goals participants were asked to select one of the following statements: *“I can only be happy if I achieve this goal”* or *“even if I do not achieve this goal I can still be happy”*. After selecting one of these statements, respondents rated on a 4-point scale the extent to which they agreed with the selected statement: *“very strongly”*, *“strongly”*, *“moderately”* and *“slightly”*. This was repeated for fulfilment (*“I can only feel fulfilled if I achieve this goal or “even if I do not achieve this goal I can still feel fulfilled”*) and self-worth (*“I can only feel a sense of self-worth if I achieve this goal or “even if I do not achieve this goal I can still feel a sense of self-worth”*) for both goals in turn. An eight-point scale was then derived from the combination of answers. Scores for happiness, self-worth and fulfilment were then summed for each goal to produce an overall CGS score.

**Depression:** The Beck Depression Inventory II (BDI-II, Beck, Steer & Brown, 1996) (for inclusion in this study) is a well established and widely used 21-item measure to assess depression symptomatology with scores ranging from 0-63. Beck, Steer & Carbin (1988) conducted a meta-analysis of the BDI's internal consistency and found that estimates yielded a mean coefficient alpha of 0.86 for psychiatric patients and 0.81 for nonpsychiatric subjects. This measure was included to explore current levels of depression in the participant sample.

**ESM Measures (diary items, total items n=36)**

These items are presented in the order in which they appeared in the diaries. All entries followed the same order for every alert.

General mood items: (for inclusion in this study) ESM mood items were generated which have good face validity. Participants were asked to indicate on a Likert scale of 0 “*not at all*” to 7 “*very*” how they felt for each of the following negative affect items: “*sad*”, “*miserable*”, “*happy*” and “*down*” just before they received the text alert. The Cronbach’s alpha for the four NA items was .83. Positive affect ESM items were “*happy*”, “*elated*”, “*sped-up*” and “*over-active*”. Cronbach’s alpha for these items was .55

Shame & Guilt: Four items assessing shame (“I feel ashamed”) and four assessing guilt (“I feel blameworthy”) were adapted from two sources, the Positive and Negative Affect Schedule Expanded Form (PANAS-X; Watson & Clarke, 1994), and the state shame and guilt scales (Tangney & Dearing, 2002), both of which have been found to have high internal reliability, as well as predictive and convergent validity in student samples. Due to the overlap between shame and guilt it is necessary to assess both constructs (Tangney & Dearing, 2002). Items were rated on a 7-point scale from “Not at all” to “Very Much”.

Paranoia: Four items taken from previous ESM research (Oorschot, Lataster, Thewissen, Wichers & Myin-Germeys, 2012) were used to assess paranoid ideation (e.g., “I feel safe”), each rated on a 7-point scale anchored at “Not at all” and “very much”

Perceptions of Control: Two items have been generated by the investigator and supervisory team of one of the other studies, which relate to the perception of control over eating (“Since the last prompt I have felt in control of my eating”) and attempts at control of eating (“Since the last prompt I have tried to control my eating”). Respondents answered using a five-point Likert scale anchored at “Not at all” and “extremely”.

Social comparison: Four items inquired about momentary social comparison, asking “how do you feel you compare to others at the moment”. Responses were made on a 7-point scales anchored at inferior–superior, incompetent–competent, less talented – more talented, less attractive–more attractive. These items are derived from the social comparison scale, and demonstrated high factor loadings ( $>.55$ ) in a student sample on the ‘social comparison’ construct (Allan & Gilbert, 1995). A further item asked who participants are currently with, with response options including Stranger(s), Acquaintance(s), Friend(s), Family, Partner.

*Event-related stress*: One item, taken from Jacobs, et al. (2007), considered event-related stress. This item asks individuals to state the most important event to occur since the last beep and rate it from ‘very unpleasant’ to ‘very pleasant’ (–3 to 3) and has been validated in previous research (Jacobs, et al., 2007).

Perceived goal progress (Brunstein, 1993) (for inclusion in this study): To assess goal progress participants rated their two self-selected generated goals on the item: “*how much goal progress do you feel you are making?*” on 7-point scales ranging from 1 “*no progress*” to 7 “*a great deal of progress*”. Scores for progress on both goals were summed for the analysis. Total scores could range from 0 to 14.

Perceived goal effort (Brunstein, 1993) (for inclusion in this study): To assess goal effort participants rated their two self-selected generated goals on the item: “*how much goal effort have you made?*” on 7-point scales ranging from 1 “*no effort*” to 7 “*a great deal of effort*”. Scores for goal effort were also summed and could range from 0 to 14.

Finally, participants were asked to record exact time of the entry (time when the participant had completed the final question in the diary for that alert).

### **End of Study Measures**

Depressive vulnerability: The Up 7 Down Inventory (7U7D; Youngstrom, Murray, Johnson, & Findling, 2013) assesses lifetime propensity towards depressive and hypomanic symptoms. Subscales totals can range from 0 to 21, with higher scores indicating greater tendency towards hypomanic and depressive symptoms. Sound psychometric properties have been found for this scale (Youngstrom et al., 2013).

The Eating Disorder Examination Questionnaire 6.0 (EDE-Q; Fairburn & Beglin, 2008) was used to assess degree of eating disorder symptoms within participants. Several studies have demonstrated the reliability and validity of the EDE-Q in both clinical and student samples (e.g. Berg, Peterson, Frazier, & Crow, 2012; Aardoom, Dingemans, Slof Op't Landt, & Van Furth, 2012; Rose, Vaewsorn, Rosselli-Navarra, Wilson, & Weissman, 2013).

The Experiences in Close Relationships scale (ECR; Brennan, Clark, & Shaver, 1998) is a self-report measure comprised of two 18-item scales: attachment anxiety and attachment avoidance.

The Social Comparison Scale (SCS; Allan & Gilbert, 1995) includes 11 items assessed on a 10-point Likert scale measuring self-ratings anchored inferior–superior, incompetent–competent, weaker–stronger, unconfident–more confident with to social situations. Low scores indicate low social status and rank. Research has shown the SCS is internally consistent ( $\alpha = 0.91$ ; Allan & Gilbert, 1995).

Experience of Shame Scale (ESS; Andrews, Qian & Valentine, 2002) was be used to provide a comprehensive measure of trait shame.

Social Anxiety Disorder: The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998;  $\alpha = .89$ ) is a 20-item self-report measure of anxiety in social interaction situations. It is

assessed on a series of statements relating to social anxiety with a five-point Likert scale (0 - not at all, 4 - extremely). This scale has excellent psychometric properties.

The Social Phobia Scale (SPS; Mattick & Clarke, 1998) is a companion scale to the SIAS. The 20-item SPS assesses socially anxious concerns of being scrutinized or judged during routine activities. Coefficient alpha was .95 for the SPS in a recent sample (Brown, et al., 2007).

### **Procedure**

Prior to recruitment of participants the researcher tested out the online text alert system over three days to ensure that texts were being received.

Participants met with a researcher initially face-to-face and the ESM process was explained to each participant and they were given time to ask any questions or discuss any aspect of the research with the researcher. Participants provided informed consent before taking part in the study. The importance of completing as many ESM assessments as possible was emphasised. Demographic and baseline measures were collected at this first meeting. As mentioned previously, as this study formed part of a larger study involving other researchers, other measures not related to this particular study were also collected at baseline. Participants were aware that they were consenting to their data being used for these other studies also.

Following the initial meeting participants were asked to complete the ESM assessment over six days. Text alerts were generated randomly for each participant using an online text-alert system between the hours of 10am and 10pm (it was assumed that this was a reasonable time period in which students could reasonably be expected to complete their diaries). In the text alerts, participants were asked to please fill in their diary now. This was the same standard message sent to every participant for every alert. The researcher contacted

participants by phone after the first day to ensure participants were receiving the text alerts and were not having any other difficulties with the process.

The six entries per day were estimated to take approximately five minutes to complete each. Participants were required to record entries in a small paper diary that they were instructed to keep with them. A separate diary was provided for each day. Participants were encouraged to contact the researcher if they experienced any difficulties in completing the measures. Participants were assigned a number to maintain confidentiality. Those who took part in the study were reimbursed for their time and commitment to the project with a £15 Amazon voucher upon completion of the week's ESM diary. At the end of the six days (usually on the seventh day) participants met again with the researcher to hand in their diaries and complete end-of-study measures related to the other studies. No end of study measures were captured for analysis for this particular study. As further recognition for commitment to completing the week's ESM diary, all participants were entered into a draw to win a £50 Amazon voucher.

### **Data analysis**

Multilevel regression analyses were performed using the statistical package Stata v.14 (StataCorp, 2015) to test the main hypotheses. Due to studying negative mood in a non-clinical sample, most people within the sample do not report low mood most of the time, therefore it would be expected that the scores for NA would not be normally distributed but positively skewed. Similar non-normal distribution might be expected for PA also. This was the case when looking at the data. The multi-level linear regressions assume that residuals are normally distributed and heteroscedastic but this may not be the case if the outcome is non-normally distributed.

A further analysis was conducted using NA and PA variables after they were transformed to reduce skew. In this analysis, results were equivalent to when non-transformed outcomes were used. This supports the robustness of the results. Multilevel modelling is suggested to be robust to non-normality within data (Snijders & Bosker, 2012). When using transformed outcome variables this impacted on the interpretability of the regression coefficients, as the scale of the outcome variable had changed. For this reason only the results with non-transformed outcomes are reported here.

Variability within people within a day provides a rationale for studying mood over time using ESM, as opposed to just focussing on mood at a single time-point. An intra-class correlation coefficient was generated to assess the level of fluctuation in mood between participants and within participants over time.

Multilevel regression analyses were performed to examine relationships between the momentary ESM variables: NA, PA, goal progress and goal effort. In this multilevel regression, each alert represents a case (as opposed to every person as is normally the case). The multilevel analysis adjusts for the fact that these data points are nested within days and people. As such, data points are not independent as they would be in a normal regression and therefore each data point is represented within the analysis. The order in which the predictor variables were entered into the analysis was based on their theoretical importance within the existing literature around goals and mood. Goal progress is the earliest identified and most examined factor affecting mood in the existing goal literature, dating back to Carver & Scheier's work on control processes and self-regulation (e.g. Carver, 1979; Carver & Scheier, 1990). The goal progress variable was therefore entered into the analysis first. Other intraindividual differences in formal properties of goals were explored further from this, such as effort, importance and difficulty (Brunstein, 1993). Goal effort was the variable of interest

in this study and therefore was included into the second step of the analysis. Conditional Goal Setting (CGS) is a newer concept that was entered last to see if this factor accounted for any additional variance.

### **Results**

Paper-based diaries were completed six times a day for six days totalling 36 alerts for each participant making a total of 3,276 alerts.

Prior to conducting the analyses, all data were checked to identify data entry errors such as out-of-range responses or data that was recorded after the signal time period (i.e. longer than 15 minutes after the participant had received the text alert). Any data recording outside of the alert time were not included in the analysis for that time point. All models included in the analyses were based on a number of momentary observations ranging from 2,339 to 2,395 observations. This figure was dependent on how much of the data was missing at each time point. Average response rate for each alert was around 74%. Participants were required to state in their diaries any reasons for missing diary entries during the day. Reasons for missing data are discussed in the discussion section. Average response rate for each alert was 74% meaning that participants responded on time (within 15 minutes) to on average 26.7 alerts out of a possible 36 alerts each person received. This is consistent with typical response rates found in other ESM studies which report average response rates between 70-80% (Csikszentmihalyi & Larson, 1987). Four out of the 91 participants (11%) responded to all of their alerts within the 15-minute time frame. The range of total alerts responded to within the correct time frame ranged from 3 alerts to 36. Descriptive statistics for all variables completed are presented in Table 1.

Table 1

*Means and Standard Deviations for Measures*

Measure	Mean	Standard Deviation	Minimum score	Maximum score
Goal importance	11.38	2.16	4.00	14.00
CGS	-3.38	8.03	-21.00	14.00
Goal Progress	6.08	2.84	2.00	11.00
Goal Effort	6.42	3.03	2.00	12.00
NA	8.50	3.94	4.00	27.00
PA	10.78	3.97	4.00	20.00
BDI-II	10.40	7.60	0.00	38.00

*Note.* Descriptive statistics for momentary variables (goal progress, goal effort, NA and PA) are based on responses at day one, entry time one.

*Note.* CGS=Conditional Goal Setting, PA=Positive Affect, NA=Negative Affect, BDI-II=Beck Depression Inventory II

Average goal importance across both self-generated goals was high, indicating that participants chose goals that were personally meaningful to them and important for them to try to achieve. Average scores for CGS were low. This would suggest that, on average, participants in this group tend not to base their happiness/self worth/fulfilment on the achievement of their goals. Average goal progress and goal effort (across both goals) were around the mid range. The average score for NA for the group was low and similarly the average score for PA was also relatively low.

Intercorrelations between study variables are presented in Table 2. A point-biserial correlation was run to determine the relationship between the dichotomous variables (age and gender) and the continuous variables.

Table 2

*Intercorrelations Between Variables*

	1	2	3	4	5	6	7	8
1. Age	1	-.106	-.281*	-.138	-.036	.149	-.204	-.335**
2. Gender	-	1	.047	-.155	-.108	-.109	.079	.002
3. BDI-II	-	-	1	.280*	.104	.400**	.031	.108
4. CGS	-	-	-	1	-.029	.160	.147	.194
5. PA	-	-	-	-	1	-.218	.063	.025
6. NA	-	-	-	-	-	1	-.118	-.171
7. Goal Progress	-	-	-	-	-	-	1	.816**
8. Goal Effort	-	-	-	-	-	-	-	1

*Note.* BDI-II: Beck Depression Inventory-II, CGS: Conditional Goal Setting, PA: Positive Affect, NA: Negative Affect.

*Note.* Descriptive statistics for momentary variables (goal progress, goal effort, NA and PA) are based on responses at day one, entry time one.

*Note.* Items 1 to 4 are person-level measures; items 5 to 8 are ESM measures.

\*  $p < .05$

\*\* $p < .01$

Participants in the sample were similar ages and were predominantly female therefore it might be expected that there would not be much variance between these variables and the predictor variables. As might be predicted by previous literature, there was a significant positive correlation between scores on the BDI-II and CGS. There was also a significant positive relationship between NA and BDI-II scores. Goal progress was significantly and positively correlated with goal effort.

**Fluctuations in mood over time**

The intra-class correlation coefficient (ICC) between participants for NA ESM scores was .38 indicating that 38% of the variance in NA scores was accounted for by between participant differences, with the remaining variance accounted for by within-participant variability. Between people within a day the ICC was .57 indicating that 57% of the variance was between people within a day.

The ICC between participants for PA ESM scores was .32, indicating that 32% of the variance in PA scores was between participants. Between people within a day the ICC was .48, indicating that 48% of the variance was between people within a day.

**Are Goal Progress, Goal Effort and CGS related to NA and PA over time?**

Multilevel regression analyses were performed to examine relationships between momentary ESM variables. The variable CGS was also added into the model to assess whether this explained additional variance in momentary mood. All models included in the analyses were based on a number of momentary observations ranging from 2,339 to 2,395 observations. This figure was dependent on the variables included in the model as this influenced how much of the data was missing at each time point.

Table 3 shows the outcome of these analyses. Step 1 of the analysis looked at the association between NA and perceived level of goal progress. Step 2 added perceived goal effort into the model and Step 3 incorporated CGS into the model. The same steps were followed for examining the association between the goal variables and PA. Wald tests were performed after each additional variable was added to the model to evaluate the difference between the nested models. These results are also shown in Table 3.

Table 3

*Multi-Level Regression Predicting Momentary NA and PA from Momentary Perceived Goal Progress, Momentary Perceived Goal Effort and CGS*

Independent Variables	Dependent Variables							
	NA				PA			
	$\Delta X^2$	Unstandardised B	Confidence Interval 95%		$\Delta X^2$	Unstandardised B	Confidence Interval 95%	
<b>Step 1</b>								
Goal Progress	45.8*	-.27*	-.35	-.19	44.7*	.22*	.16	.29
<b>Step 2</b>								
Goal Progress	-	-.45*	-.56	-.34	-	.30*	.21	.40
Goal Effort	21.95*	.24*	.14	.34	5.76**	-.10*	-.19	-.02
<b>Step 3</b>								
Goal Progress	-	-.45*	-.56	-.34	-	.30*	.21	.40
Goal Effort	-	.24*	.14	.34	-	-.10**	-.19	-.01
CGS	2.34	.06	-.02	.13	0.35	-.02	-.69	.04

*Note.* NA = Negative Affect, PA = Positive Affect, CGS = Conditional Goal Setting

\* $p < .01$

\*\* $p < .05$

### **Predicting NA**

For NA Step1 showed that there was a significant negative association between participants' perceived momentary goal progress and their level of momentary NA. That is, the lower a participant's perceived level of goal progress, the more likely they were to experience increased levels of NA. A one-point increase in perceived goal progress was associated with an estimated .45 reduction in NA. The Wald test showed a significant effect of adding goal progress into the model at this stage suggesting that this variable explains further variance in NA over and above the model not containing this predictor. Step 2 again showed a significant negative association between momentary NA and perceived momentary goal progress when the effect of perceived momentary goal effort was held constant. A significant positive association was found between level of goal effort and NA indicating that as participants' efforts towards their goals increased, their levels of NA also were likely to increase, whilst holding perceived level of momentary goal progress constant. The Wald test found a significant effect of adding goal effort into the model suggesting that this variable explains some of the variance in NA in addition to goal progress. Whilst, goal progress and goal effort remained significant in Step 3, a non-significant association was found between NA and CGS scores in Step 3 of the model suggesting that the addition of the CGS setting did not explain any new variance in the model.

### **Predicting PA**

Step 1 of the analysis indicated that there was a significant positive correlation between participants' perceived momentary goal progress and their momentary experience of PA. That is, the higher a participant's perceived level of goal progress, the more likely they were to experience increased levels of PA. In step 2, a significant positive correlation between

momentary PA and perceived momentary goal progress remained when the effect of perceived momentary goal effort was held constant. A significant negative correlation was found between level of goal effort and PA, indicating that as participants' efforts towards their goals decreased, their levels of PA also were likely to increase, this was accounting for perceived level of momentary goal progress being held constant. The Wald test found a significant effect of adding goal effort into the model suggesting that this variable explains some of the variance in PA in addition to goal progress. In step 3, goal progress and goal effort remained significant predictors but a non-significant association was found between PA and CGS scores in the final model. The Wald test indicated again that the addition of CGS did not significantly improved the model.

### Discussion

This study aimed to examine the relationship between perceived momentary goal progress, momentary goal effort, CGS and momentary mood. As hypothesised, lower perceived momentary goal progress and higher momentary goal effort was associated with greater momentary mood symptoms. In particular, results showed that not only does advancement in goal progress predict momentary positive mood, it also predicts decreased negative mood. In addition, perceived goal effort was related to momentary PA and NA in that increased effort led to more NA and less effort led to more PA. A combination of increased goal progress and decreased goal effort predicted increased levels of PA and vice versa for NA. Finally, contrary to expectation, when included into the model, CGS did not predict momentary mood. A non-significant negative relationship was found between PA and CGS scores and also NA and CGS scores.

Results from baseline measures found that participants generated fairly highly important goals on which to base their ratings over the week's study. Average scores for CGS were low suggesting that on average, participants tended not to base their happiness/self worth/fulfilment on the achievement of their goals. Average NA scores were also fairly low over time as might be expected in a non-clinical sample. Previous research suggests that CGS is linked to depression with those scoring higher on CGS being more likely to experience depression (Street, 2002). McIntosh (1996) discussed the similar concept of linked goals – where higher order goals (such as “to be happy”) are linked with the achievement of lower order more concrete goals (such as “to lose weight”). As with CGS, “linkers” are more likely to experience depression given that their concept of happiness (in this example) is dependent on the achievement of their lower order goals meaning they may put their happiness on hold in the pursuit of their lower order goals. If goals are seen as necessary to achieve in order to

be happy, it may be very difficult for a person to detach themselves from futile goal efforts. Flexibility is therefore seen as healthy for wellbeing (Hadley & MacLeod, 2010). This raises the question of whether results might be different in a clinical sample where scores may be higher for both CGS and NA over time. It may be that given that mood was assessed using ESM in this study that we are seeing a different picture when examining mood from a momentary perspective which is not related to CGS. In line with Mokros' (1993) findings, this study found greater variation in mood from moment-to-moment suggesting that general retrospective mood assessment is not sensitive to the fluctuations. CGS may also be a concept that fluctuates momentarily.

Results from the current study suggest that NA and PA fluctuated considerably from moment-to-moment and so justify the ESM approach, which captures these within-person fluctuations as well as the between-person differences. Current clinical practice and mood measures often enquire about mood more generally (i.e. "*over the last two weeks*" in the case of the Patient Health Questionnaire-9 (PHQ-9) (Kroenke, Spitzer, & Williams, 2001) for example). Assessing mood this way is subject to recall bias and does not accurately reflect the fluctuations that occur over time and even moment to moment. In assessing mood in a more momentary way, we can also look at the factors which influence mood in the moment. If a person is not continually experiencing one type of affect to the same degree – what is causing these fluctuations and how can we use this information to predict and modify mood? In this particular study the focus has been on goal pursuit as a possible influencer of mood. In comparison to the cross-sectional research, the current literature examining goal pursuit and mood is new and quite limited. The concepts examined (i.e. goal processes and goal cognitions) are dependent on the researchers' particular aims and hypotheses and the area of work (for example, business). Results from the current study suggest that not only is it

important to consider amount of perceived goal progress in relation to momentary mood, but also to consider the impact of a person's perceived level of effort they are expending in pursuit of their goal and the impact this may have on their mood in the moment. These results add support to other ESM research in this area that have found a significant relationship between perceived levels of goal progress and mood experiences (e.g. Alliger & Williams, 1993; Uy, 2009). Perceptions of events or moods are discussed more widely in the depression and mood literature. For example, rumination on perceptions of mood symptoms, causes of low mood or life stresses and past negative events, has been found to significantly contribute to negative affect and negative thoughts (e.g. Lyubormirsky & Nolen-Hoeksema (1995). Rumination has been studied from a trait-level perspective and can be seen as an important vulnerability factor for the onset and maintenance of depression (Nolen-Hoeksema, 1991, 2000) and also from a real-time perspective. Moberly & Watkins (2010) used an ESM approach and found that rumination in the moment was also a vulnerability factor for negative affect in the moment. The current study explores perceptions of goal progress and goal effort and their relation to momentary mood. Exploring the role of rumination in perceptions of goal progress and momentary mood may be a useful and insightful addition to this area.

Descriptive statistics in this analysis show that participants generated personally important goals at the beginning of the study. Participants' perceived goal progress and goal effort were not perceived as particularly high on average. This raises further questions for future research: are there other variables that get in the way of goal progress? What factors explain the rest of the variance in mood fluctuation? If goals are important and the desire to achieve them is there, what prevents goal progress and effort from being maximised? Are people aware of these 'obstacles'? Future research could look at expectations of goal progress

and effort and the impact this has on goal pursuit and mood. Prior research using ESM has examined the role of goal disruptive events and their impact on momentary mood (Auerbach, 2002) and cognitive energy expenditure in relation to dealing with these disruptive events (Zohar et al., 2003). This research has been conducted in relation to work-related goals and tasks and could therefore be explored in mood disorders research.

### **Clinical Implications**

For clinicians and their clients, gaining insight into the specific intricacies of goal pursuit and their impact on mood over time can potentially assist with thinking about the way mood disorders may develop and to tailor our interventions to this. Extensive previous cross-sectional research has identified this link and data from ESM studies sheds further light on the conceptual frameworks surrounding motivation and mood.

Asking clients to reflect on their goal progress throughout the day and in the moment, monitoring the impact this has on their mood may create an increased awareness and insight into their mood difficulties. Encouraging clients to “*check in*” with themselves when their mood changes and being aware of what they are thinking in relation to their personally meaningful goals may enable a person to make a change of direction in relation to their goal pursuit. For example, if a person notices a shift in mood to more NA and reflects that they feel they are making less than expected progress towards their goal or desired state, they then may choose to direct their energies towards another goal they feel they can progress in or to think about and perhaps problem solve different ways of approaching their goal. These strategies could be discussed with clients in therapy and incorporated into goal-focused work. Many therapies include an aspect of goal setting and in particular exploring motivation to work towards personally meaningful goals in line with a person’s values.

Mindfulness-based approaches and therapies such as Mindfulness Based Cognitive Therapy (MBCT) (e.g. Williams, & Kuyken, 2012) and Acceptance and Commitment Therapy (ACT) (e.g. Hayes, Strosahl, & Wilson, 1999) encourage people to focus more on the present moment. Studying mood in the moment may help to further contribute to these new therapeutic approaches. Using ESM in treatment approaches could be helpful for encouraging people to reflect in the moment when they receive an alert. Feedback from this momentary assessment could be used by people and their clinicians to gauge how treatment is progressing and to make modifications if necessary (Wichers et al., 2011).

Momentary approaches to measuring mood could also inform diagnostic and assessment tools for mood disorders by incorporating momentary assessments in an attempt to capture the true nature of a person's experience. Taking a more individualised and ecologically valid approach to assessment of mood disorders including things like goal pursuit cognitions in the moment may help to reduce recall bias and aim to capture as near as possible the rich description and true nature of a person's lived experience.

### **Limitations**

This study sampled participants who were undergraduate research students with an average age of 22.9 years. It is recognised that participants within this sample are not representative of the population as a whole. Goals generated within this sample may vary greatly from the types of goals generated by non-students or people of a different age. However, goal importance was measured at the start of the study to ensure that whatever goal a person generated that it was personally meaningful to them, therefore the differences between the content of the goals per se may not be of importance. It could be argued that participants in this sample may represent a particularly driven or motivated group given that

they were studying in higher education. Whilst male and female participants took part in the study, the sample was 88% female and was not very ethnically diverse with the majority of participants identifying as White British.

Reasons for missing data were provided by participants in a space in the back of each diary. For all reasons participants provided, all would be considered to fall under the category of ‘missing completely at random’ (Snijders & Bosker, 2012) with examples such as “*left at home while out*” or “*unable to complete during a lecture*”. Multilevel modelling analyses are adept to handling this kind of missing data. It is impossible to know why other data was missing if the participant did not give a reason in their diaries. This may bias results if this data was missing not a random and perhaps related to their apathy about filling questionnaires in due to low mood for example. Potentially, if data is missed this could be due to a significant mood event thus not capturing the level of affect experienced in that moment. Similarly, as alerts were signal-contingent and sent at pseudo-random times, some alerts may fail to capture salient emotional events in time periods between alerts. Other ESM studies have used event-contingent alerts where a participant is required to fill out their diary following the occurrence of a specific event. It was decided that for the purposes of this study, signal-contingent ESM was appropriate as I was interested in exploring mood and goal progress occurring within a day aiming to minimise retrospective recall which signal-contingent ESM is suitable for (Alliger & Williams, 1993).

All data provided in the study was dependent on self-report measures, which is subject to bias in that they may overestimate observed correlations. Additionally, the use of diaries with multiple questions all presented in the same way for every alert and for every day may increase the chances of rote responding as the participant gets used to filling them out every day multiple times. Thirdly, researchers using paper diaries for collecting data cannot be sure

that data has not been ‘backfilled’ rather than filled out within the alert time-frame. To overcome some of these potential biasing practices, items could be presented in a random order at each alert and electronic data recording systems can be used that prevent backfill. For the purposes of this thesis, this was not a viable option due to cost and from a practical point of view random presentation order of the measures would be very time consuming for the researchers assembling measures and completing data entry.

Participants taking part in this study were considered to be a non-clinical sample. At the beginning of the study participants were required to complete the Beck Depression Inventory-II (BDI-II) (Beck, Steer, & Brown, 1996). The average score was 10.4 which falls in the lower category or ‘minimal’ range. The standard deviation was 7.6 and the maximum score was 38, which is considered to be in the ‘severe’ range. In this sample, there were 6 participants who would meet clinical levels of depression as they scored 20 or above on the BDI-II (Beck, Steer & Brown, 1996). However, as indicated previously, levels of NA were positively skewed across the sample.

### **Future Research**

This study looked at the particular aspects of goal progress and goal effort in the moment and their relation to momentary mood. Further research could explore other goal pursuit profiles. Other moderating variables could be considered such as whether there is a significant difference between approach and avoidance goals in how they impact on goal progress and affect in the moment.

Future research could also expand analysis of the data gathered in this study and look at the variables of goal importance, difficulty and expectancy in relation to goal pursuit and momentary mood. In this study, variables such as goal importance and goal expectancy were

measured at baseline, however goal expectancy was not included in the analysis for simplicity at this stage. These could also be fluctuating concepts that could be studied using ESM. Conditional Goal Setting could perhaps be adapted to be assessed in the moment to examine whether, just as with mood, this also fluctuates over time rather than being a static trait. Future research could also aim to study a more diverse sample of participants across age ranges and cultures. Replicating this research in a clinical sample may yield different results in relation to the association between mood, goal progress and CGS.

### **Conclusion**

Experience Sampling Methodology can capture the within-person and also between-person fluctuations in mood over time. The findings of this study suggest that NA and PA fluctuated considerably from moment-to-moment over time. Examining momentary mood changes from a goal pursuit perspective found that perceived goal progress and perceived amount of goal effort account for some of the variance in these fluctuations. Extensive previous cross-sectional research has identified this link between goal progress and affective experiences and data from ESM studies sheds further light on the conceptual frameworks surrounding motivation, goal pursuit and mood. Taking a more individualised and ecologically valid approach to assessment of mood disorders, including constructs such as goal pursuit cognitions in the moment, may help to reduce recall bias and aim to capture as near as possible the rich description and true nature of a person's lived experience.

## References

- aan het Rot, M., Hogenelst, K., & Schoevers, R. A. (2012). Mood disorders in everyday life: A systematic review of experience sampling and ecological momentary assessment studies. *Clinical Psychology Review, 32*(6), 510-523.  
<http://dx.doi.org/10.1016/j.cpr.2012.05.007>
- Affleck, G., Tennen, H., Urrows, S., Higgins, P., Abeles, M., Hall, C., . . . Newton, C. (1998). Fibromyalgia and women's pursuit of personal goals: a daily process analysis. *Health Psychology, 17*(1), 40. <http://psycnet.apa.org/doi/10.1037/0278-6133.17.1.40>
- Alliger, G. M., & Williams, K. J. (1993). Using signal-contingent experience sampling methodology to study work in the field - a discussion and illustration examining task perceptions and mood. *Personnel Psychology, 46*(3), 525-549. doi:10.1111/j.1744-6570.1993.tb00883.x
- Auerbach, M. A. (2002). *The Dynamic Cycle Of External Task Interruptions: An ESM Study Of Multiple Role Management*. (63), ProQuest Information & Learning, US.  
Retrieved from  
<http://search.ebscohost.com.ezproxy.liv.ac.uk/login.aspx?direct=true&db=psyh&AN=2002-95022-238&site=ehost-live&scope=site> Available from EBSCOhost psyh database.
- Austin, J. T., & Vancouver, J. B. (1996). Goal constructs in psychology: Structure, process, and content. *Psychological Bulletin, 120*(3), 338. <http://dx.doi.org/10.1037/0033-2909.120.3.338>
- Beck, A. T. (1963). Thinking and depression: I. Idiosyncratic content and cognitive distortions. *Archives Of General Psychiatry, 9*(4), 324.  
doi:10.1001/archpsyc.1963.01720160014002

- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). Beck depression inventory-II. *San Antonio, TX: Psychological Corporation*, b9.
- Boden, M. A. (1973). The structure of intentions. *Journal for the Theory of Social Behavior*, 3(1), 23-46.
- Bower, B., Bylsma, L. M., Morris, B. H., & Rottenberg, J. (2010). Poor reported sleep quality predicts low positive affect in daily life among healthy and mood - disordered persons. *Journal Of Sleep Research*, 19(2), 323-332. doi: 10.1111/j.1365-2869.2009.00816.x
- Brunstein, J. C. (1993). Personal goals and subjective well-being: A longitudinal study. *Journal Of Personality And Social Psychology*, 65(5), 1061.  
<http://psycnet.apa.org/doi/10.1037/0022-3514.65.5.1061>
- Cantor, N., Norem, J., Langston, C., Zirkel, S., Fleeson, W., & Cook-Flannagan, C. (1991). Life tasks and daily life experience. *Journal of Personality*, 59(3), 425-451.  
doi:10.1111/j.1467-6494.1991.tb00255.x
- Carver, C. S. (1979). A cybernetic model of self-attention processes. *Journal Of Personality And Social Psychology*, 37(8), 1251. <http://psycnet.apa.org/doi/10.1037/0022-3514.37.8.1251>
- Carver, C. S., Avivi, Y. E. & Laurenceau, J. P. (2008). Handbook of approach and avoidance motivation. In A. J. Elliot (Ed.), *Handbook Of Approach And Avoidance Motivation*: 385-397. New York: Psychology Press.
- Carver, C. S. & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review*, 97(1), 19.  
<http://psycnet.apa.org/doi/10.1037/0033-295X.97.1.19>

- Carver, C. S. & Scheier, M. F. (1998). *On the Self-Regulation of Behavior*. [electronic book]: Cambridge : Cambridge University Press, 1998.  
<http://dx.doi.org/10.1017/cbo9781139174794>
- Champion, L., & Power, M. (1995). Social and cognitive approaches to depression: Towards a new synthesis. *British Journal of Clinical Psychology*, 34(4), 485-503.  
<http://dx.doi.org/10.1111/j.2044-8260.1995.tb01484.x>
- Cousins, J. C., Whalen, D. J., Dahl, R. E., Forbes, E. E., Olino, T. M., Ryan, N. D., & Silk, J. S. (2011). The bidirectional association between daytime affect and nighttime sleep in youth with anxiety and depression. *Journal Of Pediatric Psychology*, 36(9), 969-979.  
doi: 10.1093/jpepsy/jsr036
- Csikszentmihalyi, M., & Larson, R. (1987). Validity and reliability of the Experience-Sampling Method. *The Journal Of Nervous And Mental Disease*, 175(9), 526-536.  
<http://dx.doi.org/10.1097/00005053-198709000-00004>
- Dickson, J. M., & MacLeod, A. K. (2004). Approach and avoidance goals and plans: Their relationship to anxiety and depression. *Cognitive Therapy and Research*, 28(3), 415-432. doi: 10.1023/B:COTR.0000031809.20488.ee
- Dickson, J. M., & Moberly, N. J. (2013). Reduced Specificity of Personal Goals and Explanations for Goal Attainment in Major Depression. *PloS one*, 8(5), e64512. doi: 10.1371/journal.pone.0064512.
- Dickson, J. M., Moberly, N. J., & Kinderman, P. (2011). Depressed people are not less motivated by personal goals but are more pessimistic about attaining them. *Journal Of Abnormal Psychology*, 120(4), 975. <http://psycnet.apa.org/doi/10.1037/a0023665>
- Diener, E. (2000). Subjective well-being: The science of happiness and a proposal for a national index. *American Psychologist*, 55(1), 34-43. doi:10.1037/0003-066X.55.1.34

- Diener, E., & Iran-Nejad, A. (1986). The relationship in experience between various types of affect. *Journal Of Personality And Social Psychology*, *50*(5), 1031.  
<http://psycnet.apa.org/doi/10.1037/0022-3514.50.5.1031>
- Elliot, A. J., Sheldon, K. M., & Church, M. A. (1997). Avoidance personal goals and subjective well-being. *Personality and Social Psychology Bulletin*, *23*(9), 915-927.  
<http://dx.doi.org/10.1097/00005053-198709000-00004>
- Emmons, R. A. & Diener, E. (1986). A goal-affect analysis of everyday situational choices. *Journal of Research in Personality*, *20*(3), 309-326. [http://dx.doi.org/10.1016/0092-6566\(86\)90137-6](http://dx.doi.org/10.1016/0092-6566(86)90137-6)
- Emmons, R. A. & King, L. A. (1989). Personal striving differentiation and affective reactivity *Journal of Personality and Social Psychology*, *56*(3), 478-484.  
doi:10.1037//0022-3514.56.3.478
- Emmons, R. A. (1986). Personal strivings: An approach to personality and subjective well-being. *Journal of Personality and Social Psychology*, *51*(5), 1058-1068.  
doi:10.1037/0022-3514.51.5.1058
- Fisher, C. D., Minbashian, A., Beckmann, N., & Wood, R. E. (2013). Task appraisals, emotions, and performance goal orientation. *Journal of Applied Psychology*, *98*(2), 364-373. doi:10.1037/a0031260
- Fisher, C. D., & To, M. L. (2012). Using experience sampling methodology in organizational behavior. *Journal of Organizational Behavior*, *33*(7), 865-877.  
<http://dx.doi.org/10.1002/job.1803>
- Fleeson, W., & Cantor, N. (1995). Goal relevance and the affective experience of daily life: Ruling out situational explanations. *Motivation and Emotion*, *19*(1), 25-57.  
doi:10.1007/BF02260671

Fowles, D. C. (1994). *A Motivational Theory Of Psychopathology*. Paper presented at the Nebraska symposium on motivation.

Gere, J., Schimmack, U., Pinkus, R. T., & Lockwood, P. (2011). The effects of romantic partners' goal congruence on affective well-being. *Journal of Research in Personality, 45*(6), 549-559. doi:10.1016/j.jrp.2011.06.010

Gollwitzer, P. M. (1993). Goal achievement: The role of intentions. *European Review Of Social Psychology, 4*(1), 141-185.

Gray, J. (1982). *The Neuropsychology Of Anxiety: An Investigation Into The Functions Of The Septo-Hippocampal System*: Oxford, England: Oxford University Press.

Greenberg, J., Pyszczynski, T., Burling, J., & Tibbs, K. (1992). Depression, self-focused attention, and the self-serving attributional bias. *Personality and Individual Differences, 13*(9), 959-965.

Hadley, S. A., & MacLeod, A. K. (2010). Conditional goal-setting, personal goals and hopelessness about the future. *Cognition and Emotion, 24*(7), 1191-1198.

Hayes, S. C., Strosahl, K. D., & Wilson, K. G. (1999). *Acceptance And Commitment Therapy*: New York: Guilford Press.

Hofmann, W., Finkel, E. J., & Fitzsimons, G. M. (2015). Close relationships and self-regulation: How relationship satisfaction facilitates momentary goal pursuit. *Journal of Personality and Social Psychology, 109*(3), 434-452. doi:10.1037/pspi0000020  
10.1037/pspi0000020.supp (Supplemental)

Johnson, S. L., Carver, C. S., & Fulford, D. (2010). Goal dysregulation in the affective disorders. *Emotion Regulation And Psychopathology: A Transdiagnostic Approach To Etiology And Treatment, 204-228*.

- King, L. A. (2008). Interventions For Enhancing Subjective Well-Being: Can We Make People Happier And Should We?
- Klinger, E. (1975). Consequences of commitment to and disengagement from incentives. *Psychological Review*, 82(1), 1.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The Phq - 9. *Journal Of General Internal Medicine*, 16(9), 606-613.
- Lam, D., Green, B., Power, M., & Checkley, S. (1994). The impact of social cognitive variables on the initial level of depression and recovery. *Journal Of Affective Disorders*, 32(2), 75-83.
- Larson, R., & Csikszentmihalyi, M. (1983). *Naturalistic Approaches To Studying Social Interaction*: San Francisco: Jossey-Bass Inc.
- Lazarus, R. S. (1991). Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist*, 46(8), 819.
- Lyubormirsky, S., & Nolen-Hoeksema, S. (1995). Effects of self-focused rumination on negative thinking and interpersonal problem solving. *Journal of Personality and Social Psychology*, 69(1), 176.
- McCabe, K. O., & Fleeson, W. (2012). What is extraversion for? Integrating trait and motivational perspectives and identifying the purpose of extraversion. *Psychological Science*, 23(12), 1498-1505. doi:10.1177/0956797612444904
- McIntosh, W. (1996). When does goal nonattainment lead to negative emotional reactions, and when doesn't it?: The role of linking and rumination. *Striving And Feeling: Interactions Among Goals, Affect, And Self-Regulation*, 53-77.

- Moberly, N. J., & Watkins, E. R. (2010). Negative affect and ruminative self-focus during everyday goal pursuit. *Cognition and Emotion, 24*(4), 729-739.  
doi:10.1080/02699930802696849
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals Of Internal Medicine, 151*(4), 264-269.
- Mokros, H. B. (1993). Communication and psychiatric diagnosis: Tales of depressive moods from two contexts. *Health Communication, 5*(2), 113-127.
- Nolen-Hoeksema, S. (1991). Responses to depression and their effects on the duration of depressive episodes. *Journal of Abnormal Psychology, 100*(4), 569.
- Nolen-Hoeksema, S. (2000). The role of rumination in depressive disorders and mixed anxiety/depressive symptoms. *Journal of Abnormal Psychology, 109*(3), 504.
- Palys, T. S., & Little, B. R. (1983). Perceived life satisfaction and the organization of personal project systems. *Journal Of Personality And Social Psychology, 44*(6), 1221.
- Peeters, F., Nicolson, N. A., Berkhof, J., Delespaul, P., & deVries, M. (2003). Effects of daily events on mood states in major depressive disorder. *Journal Of Abnormal Psychology, 112*(2), 203.
- Pekrun, R., Goetz, T., Titz, W., & Perry, R. P. (2002). Positive Emotions in Education. Meeting Goals, Visions, and Challenges, 149–174.  
doi:10.1093/med:psych/9780198508144.003.0008
- Pomerantz, E. M., Saxon, J. L., & Oishi, S. (2000). The psychological trade-offs of goal investment. *Journal Of Personality And Social Psychology, 79*(4), 617.
- Roseman, I. J. (2013). Appraisal in the emotion system: coherence in strategies for coping. *Emotion Review, 5*(2), 141–149. doi:10.1177/1754073912469591

- Russell, J. A., & Carroll, J. M. (1999). On the bipolarity of positive and negative affect. *Psychological Bulletin, 125*(1), 3.
- Schimmack, U., & Grob, A. (2000). Dimensional models of core affect: A quantitative comparison by means of structural equation modeling. *European Journal of Personality, 14*(4), 325-345.
- Sheeran, P., Webb, T. L., & Gollwitzer, P. M. (2005). The interplay between goal intentions and implementation intentions. *Personality and Social Psychology Bulletin, 31*(1), 87-98.
- Sheldon, K. M., Kasser, T., Smith, K., & Share, T. (2002). Personal goals and psychological growth: Testing an intervention to enhance goal attainment and personality integration. *Journal of Personality, 70*(1), 5-31.
- Snijders, T. A., & Bosker, R. J. (2012). *Multilevel Analysis: JSTOR*.
- StataCorp. (2015). *Stata Statistical Software: Release 14*. College Station, TX: StataCorp LP
- Street, H. (2001). Exploring the role of conditional goal setting in depression. *Clinical Psychologist, 6*(1), 16-23.
- Street, H. (2002). Exploring relationships between goal setting, goal pursuit and depression: A review. *Australian Psychologist, 37*(2), 95-103.
- To, M. L., Fisher, C. D., Ashkanasy, N. M., & Rowe, P. A. (2012). Within-person relationships between mood and creativity. *Journal of Applied Psychology, 97*(3), 599-612. doi:10.1037/a0026097
- Tubbs, M. E., Boehne, D. M., & Dahl, J. G. (1993). Expectancy, valence, and motivational force functions in goal-setting research: An empirical test. *Journal of Applied Psychology, 78*(3), 361.

- Uy, M. A. (2009). *The Roller Coaster Ride: Affective Influences In Entrepreneurial Efforts*. (70), ProQuest Information & Learning, US. Retrieved from <http://search.ebscohost.com.ezproxy.liv.ac.uk/login.aspx?direct=true&db=psyh&AN=2009-99190-536&site=ehost-live&scope=site> Available from EBSCOhost psyh database.
- VandeWalle, D., Brown, S. P., Cron, W. L., & Slocum Jr, J. W. (1999). The influence of goal orientation and self-regulation tactics on sales performance: A longitudinal field test. *Journal of Applied Psychology, 84*(2), 249.
- Watson, D., & Clark, L. A. (1984). Negative affectivity: the disposition to experience aversive emotional states. *Psychological Bulletin, 96*(3), 465.
- Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *Journal Of Personality And Social Psychology, 54*(6), 1063.
- Watson, D., & Tellegen, A. (1985). Toward a consensual structure of mood. *Psychological Bulletin, 98*(2), 219.
- Wichers, M., Hartmann, J., Kramer, I., Lothmann, C., Peeters, F., van Bemmelen, L., . . . Simons, C. (2011). Translating assessments of the film of daily life into person - tailored feedback interventions in depression. *Acta Psychiatrica Scandinavica, 123*(5), 402-403.
- Williams, J. M. G., & Kuyken, W. (2012). Mindfulness-Based Cognitive Therapy: A Promising New Approach To Preventing Depressive Relapse. *FOCUS*.
- Williams, J. W., Plassman, B. L., Burke, J., Holsinger, T., & Benjamin, S. (2010). Preventing Alzheimer's disease and cognitive decline.

Wrosch, C., Scheier, M. F., Carver, C. S., & Schulz, R. (2003). The importance of goal disengagement in adaptive self-regulation: When giving up is beneficial. *Self and Identity*, 2(1), 1-20.

Zohar, D., Epstein, R., & Tzischinski, O. (2003). Effects of Energy Availability on Immediate and Delayed Emotional Reactions to Work Events. *Journal of Applied Psychology*, 88(6), 1082-1093. doi:10.1037/0021-9010.88.6.1082

## **Appendices**

## Appendix A

### Quality Assessment Tool

#### Quality of observational studies (adapted by Emma Weymouth)

General instructions: Grade each criterion as “Yes,” “No,” “Partially,” or “Can’t tell.”

Factors to consider when making an assessment are listed under each criterion.

#### 1. Unbiased selection of the cohort?

Factors that help reduce selection bias:

- Inclusion/exclusion criteria
  - Clearly described
- Recruitment strategy
  - Clearly described
  - Sample is representative of the population of interest selected for the study

#### 2. *Sample size calculated*

Factors to consider:

- Did the authors report conducting a power analysis or describe some other basis for determining the adequacy of study sample sizes for the Experience Sampling Method? (Did they consider power at all relevant levels to determine the number of responses per participant and the number of participants needed, accounting for the effect of missed signals?)
- Did the eventual sample size deviate by  $\leq 10\%$  of the sample size suggested by the power calculation?

#### 3. Adequate description of the cohort?

- Consider whether the cohort is well-characterized in terms of baseline demographics
- Consider key demographic information such as age, gender and ethnicity.
- Information regarding education or socio-economic characteristics is also important.

**4. Validated (or clear descriptions) of constructs for defining and/or measuring goals?**

Factors to consider:

- How do they ask participants to generate goals?
- Short, reliable and construct valid measures?
- Is the time interval on which to report clearly defined (e.g. “right now”, “since the last signal”) and does it match the time frame in which the construct being measured would be expected to vary?

**5. Validated method for ascertaining momentary mood?**

- Short, reliable and construct valid measures
- Is the time interval on which to report clearly defined (e.g. “right now”, “since the last signal”) and does it match the time frame in which the construct being measured would be expected to vary?
- Were outcomes assessed using valid and reliable measures?

**6. Data collection schedule**

- Is there a data collection schedule (reports per day, for how many days, etc.) and approach (interval, signal-contingent, event-based) that balances participant willingness to respond with the nature of the phenomenon being studied?

## 7. **Missing data**

Factors to consider:

- Have the researchers described how they handle missing data (i.e. is the missing data missing systematically rather than randomly).

## 8. **Analytic methods appropriate?**

Factors to consider:

- Was the kind of analysis done appropriate for the kind of outcome data?
- Do the authors justify their use of multilevel modelling or other statistical analyses based on the variables/levels involved?

## Appendix B



### Participant Information Sheet

#### Psychological difficulties in the moment: The role of shame, social comparison and goal progress

You are being invited to take part in a research project. Before you decide whether you would like to take part, it is important for you to know why the research is being done and what it will involve. Please read the following information carefully, with others if you wish. Please feel free to speak to the researchers about any questions you have or if you would like more information.

Thank you for your time.

#### What is the research for?

This research project is interested in using a technique called 'Experience Sampling Methodology (ESM)'. ESM is a relatively new methodology which looks at people's thoughts and feelings on a *moment-by-moment* basis. This is done by asking participants to answer some questions in their ESM diaries at random time points throughout the day. The aim of the research is to understand how a number of common psychological difficulties may be related to particular emotions and thinking patterns that occur in our day-to-day lives.

#### What will I be asked to do?

This study will involve answering some questions about your thoughts, feelings, behaviour and experiences. Initially, we will meet you at a location of mutual convenience. You will be asked for some personal details (e.g. age, ethnicity, phone number) and to fill in some questionnaires (e.g., "Do you restrict your eating to control your weight?"). The researcher will also ask to take your weight and height. This initial session will take no longer than one hour.

Following the initial assessments, we'd like you to fill in two pages in a paper diary when prompted by text messages sent to your mobile phone (example question: "I feel sad" rated on a scale from 'Not at all' to 'Very'). This will occur at six semi random-times per day between 10AM and 10PM for six days. Each complete entry should take no longer than one minute to fill in and we will go through some practice questions with you before you start.

We will meet with you following completion of the diaries to retrieve your responses and give you some further questionnaires to complete. This second session will take no longer than one hour.

**Who is doing the research and who has approved it?**

The research is being carried in collaboration between the University of Liverpool and University of Manchester. This work is being supervised by Dr Peter Taylor (Clinical Psychologist and lecturer at the University of Liverpool) and Dr Joanne Dickson (Senior lecturer and research director at the University of Liverpool) and Dr Sandra Bucci (Lecturer and Clinical Psychologist at the University of Manchester). The research is being undertaken by trainee clinical psychologists from the University of Liverpool and postgraduate Research Assistants from the University of Manchester.

**Why have I been offered the chance to take part?**

You have been offered the chance to take part because you are currently a student at either the University of Liverpool or the University of Manchester.

**Do I have to take part?**

No, it is up to you whether you would like to take part. If you do decide to participate you are free to withdraw at any time without a reason.

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

As part of the research, participants will be asked to complete measures relating to their mood and feelings. For some individuals completing such measures may be uncomfortable or lead to feelings of distress. Participants have the option to withdraw from the research at any point and do not need to answer any questions they do not wish to. All participants will be offered information about sources of support should they need it. Dr Peter Taylor and Dr Sandra Bucci are qualified Clinical Psychologists and will be able to discuss any concerns participants may have.

**Will there be benefits to taking part?**

Taking part in this research will allow you to try out a new and exciting research methodology: Experience Sampling Methodology (ESM). The results of the research will help inform interventions (e.g. talking therapies) that would therefore benefit future generations of students as well as the wider population.

Participants will be given £15 worth of Amazon vouchers to say thank you for taking part. Participants will also be offered the chance to win a £50 Amazon voucher.

If you are a University of Manchester Psychology student you may, alternatively, receive eight research credits for taking part.

**What will happen if I want to stop taking part?**

You have the right to leave the study at any point, without needing to give any explanation. Should you wish to do this, simply tell the researcher (either by phone, email or face-to-face). If you choose to leave the study you will also have the option of having the data you supplied destroyed. However, once you have

completed the study it will not be possible to ask for your data to be removed, as we will have no way of identifying which sets of answers are your own.

**What if I am unhappy or there is a problem?**

If you wish to complain or have any concerns about any aspect of the way you have been treated during this study, you can approach the study supervisor Dr Peter Taylor (0151 794 5530 or [pjtay@liv.ac.uk](mailto:pjtay@liv.ac.uk)). Alternatively, you can contact the Research Governance Officer (0151 794 8290 or [ethics@liv.ac.uk](mailto:ethics@liv.ac.uk)). When contacting the Research Governance Officer, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

**Will my taking part in this research be confidential?**

Yes it will. Upon completion of the study, or withdrawal from the study, all responses will be anonymised, which means that no one will know your identity or which responses are yours. Personal information which identifies you (for example, your contact details) will be stored separately to any other information you supply (e.g., completed questionnaires) and will be destroyed once you either complete or withdraw from the study.

The only exception to this is if you wish to hear about the results of the study. In this instance contact details will be stored securely in a locked filing cabinet, but it will not be possible to link these contact details to any other information you have supplied as part of the study.

Your responses will only be viewed by the researchers involved in the study. All information collected for this research project will be kept safely and securely on a University of Liverpool password-protected computer for 10 years in a central file store in line with University of Liverpool policy for the storage of research data. Anonymous hard copies of completed questionnaires and diaries will be stored in a locked filing cabinet on University grounds for no more than 10 years. Access to data by researchers not involved in the current study will be subject to further ethical review.

**What will happen when the research ends?**

Data will be analysed and the results will be written up. You will be contacted by the research team if you have told us that you would like to be kept informed of the results of the research.

**Who can I contact for further information?**

Suzanne Jakeman [sjakeman@liverpool.ac.uk](mailto:sjakeman@liverpool.ac.uk)  
Ray Manning [rmanning@liverpool.ac.uk](mailto:rmanning@liverpool.ac.uk)  
Emma Weymouth: [e.weymouth@liverpool.ac.uk](mailto:e.weymouth@liverpool.ac.uk)

Thank you for taking the time to read this. You should keep this information sheet for future reference.

**Appendix C**

Participant Identification Number:

**CONSENT FORM**

Title of Project: Psychological difficulties in the moment: The role of shame, social comparison and goal progress

Name of Researcher:

		Please initial the box
1	I confirm that I have read and understand the information sheet dated..... (version.....) for the above study. I have had the chance to think about the information, ask questions and have my questions answered.	
2	I understand that taking part is voluntary and that I can change my mind at any time without giving any reason, and without consequence.	
3	I give permission for the researchers to have access to my personal information, as detailed in the information sheet dated..... (version.....) including measuring my height and weight.	
4	I agree to take part in the above study.	
5	I would like to receive a summary of the findings at the end of study.	

Name of participant	Date	Signature
Name of person taking consent	Date	Signature

When completed: 1 for participant; 1 for researcher site file

## Appendix D

### VERBATIM GOAL INSTRUCTIONS

**Please read the following to the participant verbatim:**

In this task I am going to ask you to think of some personal goals that currently matter to you. Personal goals represent experiences we are striving to attain in the future.

For example:

*To become more confident in myself*

*To improve my 5-mile running time.*

Personal goals could relate to **any time in the future** (e.g., the next few days, next week, next month)

Your **goals could relate to any aspect of your life**, such as personal qualities you'd like to develop, financial issues, relationships with others, social life, leisure pursuits, academic pursuits etc.

It does not matter whether you think you'll be **successful or not** in achieving your goals. Rather the emphasis in this study is on the **TRYING** aspect, that is, goals that represent **desirable experiences** you think you'll be **trying** to accomplish.

Please describe four goals that are currently on your mind and matter to you. It doesn't matter how small some of these goals might seem, so long as they are important to you.

There are **no right or wrong responses** - the best responses are those that are **'real'** for you.

When you describe your goals in this activity you only need to write **short single statements** (just enough to give the 'gist' of what you mean). Please write one goal on each line.

**Students complete the task when they are clear about the task requirements.**

-----

#### **ON COMPLETION OF THE GOAL TASK AT BASELINE:**

Ratings are made for the **4** self-generated goals at baseline in relation to goal importance, goal likelihood and goal difficulty.

**Please read the following instructions to the participant verbatim:**

Now I am going to ask you to think about your goals in more detail.

For goal **number 1**, please rate how **important** this goal is to you. Please use the following scale to indicate your response (**show the participant the 'Goal importance Likert Scale'**)

For goal **number 1**, please rate how **likely** it is that you will achieve this goal. Please use the following scale to indicate your response (**show the participant the 'Goal Likelihood Likert Scale'**)

For goal **number 1**, please rate how **difficult** you feel this goal is to achieve for you. Please use the following scale to indicate your response (**show the participant the 'Goal difficulty Likert Scale'**)

**Please repeat this for the rest of the goals the participant has listed until for each goal there is a rating for importance, likelihood and difficulty. Record these ratings in the table.**

**Appendix E**

**Baseline Interview Measures**

**Demographics**

Age (Years):

Gender:

Ethnicity (PLEASE CIRCLE ONE):

White British

White other

Indian

Pakistani

Other Asian

Black African

Black Caribbean

Black other

Mixed

Other (please specify): \_\_\_\_\_

**GOAL TASK (INSTRUCTIONS TO BE READ TO PARTICIPANT)**

**Please list FOUR personal goals that you are currently trying to accomplish:**

**“It is important for me to try to.....”**

List 4 Personal Goal Statements on each line below	Ratings		
	Importance	Likelihood	Difficulty
1			
2			
3			
4			

**SG**

1. \_\_\_\_\_

2. \_\_\_\_\_

**Instructions**

In this next task you will be asked to **select (by ticking)** one statement which best describes you in relation to your 2 most important goals and then to rate how strongly you agree with your self-selected statements.

First,

1. In relation to **goal number 1: (key goal word)** \_\_\_\_\_

I can only be happy if I achieve this goal

OR

Even if I do not achieve this goal I can still be happy

**Now please rate how strongly you agree with the selected statement above by circling one of the following options:**

1. Very strongly
2. Strongly
3. Moderately
4. Slightly

Next,

2. In relation to this same **goal number 1: (key goal word)** \_\_\_\_\_

I can only feel *fulfilled* if I achieve this goal

OR

Even if I do not achieve this goal I can feel *fulfilled*

**Now please rate how strongly you agree with the selected statement by circling one of the following options:**

1. Very strongly
2. Strongly
3. Moderately
4. Slightly

Finally,

3. In relation to this same **goal number 1: (key goal word)** \_\_\_\_\_

I can only have a high sense of self worth if I achieve this goal

OR

Even if I do not achieve this goal I can still have a high sense of self worth

**Now please rate how strongly you agree with the selected statement by circling one of the following options:**

1. Very strongly
  2. Strongly
  3. Moderately
  4. Slightly
-

Next,

In relation to **goal number 2: (key goal word)** \_\_\_\_\_

I can only be happy if I achieve this goal

OR

Even if I do not achieve this goal I can still be happy

**Now please rate how strongly you agree with the selected statement by circling one of the following options:**

1. Very strongly
2. Strongly
3. Moderately
4. Slightly

Also, in relation to **goal number 2: (key goal word)** \_\_\_\_\_

I can only feel fulfilled if I achieve this goal

OR

Even if I do not achieve this goal I can still feel fulfilled

**Now please rate how strongly you agree with the selected statement by circling one of the following options:**

1. Very strongly
2. Strongly
3. Moderately
4. Slightly

Finally, in relation to **goal number 2: (key goal word)** \_\_\_\_\_

I can only have a high sense of self worth if I achieve this goal

OR

Even if I do not achieve this goal I can still have a high sense of self worth

**Now please rate how strongly you agree with the selected statement by circling one of the following options:**

1. Very strongly
  2. Strongly
  3. Moderately
  4. Slightly
-

## Appendix F

### HOW TO USE THIS BOOKLET:

Fill in the booklet immediately after you hear the beep.

Don't think for too long about the questions, we're interested in your spontaneous responses

Circle one digit in every line

Don't forget to fill in the last page of the booklet before you go to sleep  
**IMPORTANT INFORMATION ABOUT MOBILE PHONE TEXT ALERTS:**

Text alerts will be sent 6 times a day, between 10:00am and 10:00 pm. If you do not get these during the day for four hours, there may be something wrong with the text alert system. Please let us know!

Try to keep your phone and diary with you as much of the time as possible. It is however okay to turn your phone off if you need to (e.g., for a meeting or going to the cinema).

If you do miss a text alert or cannot complete your diary for some reason (e.g., in a meeting) you can still complete the diary up to 15 minutes after the text alert was sent. If the text alert you missed was sent longer than 15 minutes ago please ignore this and wait for the next alert before you complete the diary.

### ANY PROBLEMS WITH THE STUDY?

Contact:

**Emma Weymouth**

**[e.weymouth@liverpool.ac.uk](mailto:e.weymouth@liverpool.ac.uk)**

**07955353657**

---

Please describe your mood just before you received the most recent prompt:

I feel...

	Not at all		Moderately			Very much	
▪ Sad	1	2	3	4	5	6	7
▪ Overactive	1	2	3	4	5	6	7
▪ Miserable	1	2	3	4	5	6	7
▪ Happy	1	2	3	4	5	6	7
▪ Disgusted with self	1	2	3	4	5	6	7
▪ Tense	1	2	3	4	5	6	7
▪ Ashamed	1	2	3	4	5	6	7
▪ Elated	1	2	3	4	5	6	7
▪ Down	1	2	3	4	5	6	7
▪ Sped up inside	1	2	3	4	5	6	7
▪ Blameworthy	1	2	3	4	5	6	7
▪ Remorse	1	2	3	4	5	6	7
▪ Anxious	1	2	3	4	5	6	7
▪ Dissatisfied with myself	1	2	3	4	5	6	7
▪ Stressed	1	2	3	4	5	6	7
▪ Like a bad person	1	2	3	4	5	6	7
▪ Guilty	1	2	3	4	5	6	7
▪ Restless	1	2	3	4	5	6	7
▪ Calm	1	2	3	4	5	6	7
▪ I feel bad about something I have done	1	2	3	4	5	6	7

Right now, I feel:

	Not at all		Moderately			Very	
much							
That others dislike me	1	2	3	4	5	6	7
That others might hurt me	1	2	3	4	5	6	7
Safe	1	2	3	4	5	6	7
Suspicious	1	2	3	4	5	6	7

Before this prompt:

	Not at all		Moderately			Extremely	
I have felt in control of my eating	1	2	3	4	5	6	7
I have tried to control my eating	1	2	3	4	5	6	7

Where are you?

.....  
 Are you with others? Yes / No

If so, who? Stranger(s)  Acquaintance(s)  Friend(s)  Family   
 Partner

How do you feel you compare to others at the moment?

Inferior	-3	-2	-1	0	1	2	3	Superior
Less competent	-3	-2	-1	0	1	2	3	More
Competent								
Less talented	-3	-2	-1	0	1	2	3	More
talented								
Less attractive	-3	-2	-1	0	1	2	3	More
attractive								

In the time immediately before this prompt, the most important event that happened to me was:

.....  
 ....  
 .....  
 .....

	Very Unpleasant			Moderate			Very	
Pleasant								
This was:	-3	-2	-1	0	1	2	3	

The following items relate to the personal goals you listed during the initial interview (see front of booklet)

**Goal 1:**

How much goal progress do you feel you are making?

No progress      1      2      3      4      5      6      7      A great  
deal

of progress

How much effort do you feel you are making to achieve this goal?

No effort 1      2      3      4      5      6      7      A great deal  
of effort

**Goal 2:**

How much goal progress do you feel you are making?

No progress      1      2      3      4      5      6      7      A great deal  
of progress

How much effort do you feel you are making to achieve this goal?

No effort 1      2      3      4      5      6      7      A great deal of effort

**PLEASE FILL THIS IN (ESSENTIAL): It is now exactly: ..... Hours  
..... min**

I did not fill in the booklet:

Date: .....

From: .....hrs .....min

To: .....hrs .....min

Reason: .....

.....  
.....  
.....

Date: .....

From: .....hrs .....min

To: .....hrs .....min

Reason: .....

.....  
.....

Date: .....

From: .....hrs .....min

To: .....hrs .....min

Reason: .....

.....  
.....  
.....

Date: .....

From: .....hrs .....min

To: .....hrs .....min

Reason: .....

.....  
.....

---

**Participant number:** \_\_\_\_\_

**Today's date:** \_\_\_\_\_

During the first meeting with the researcher you will have identified two personal goals that matter to you. Please record these below:

**Goal 1:**

**Goal 2:**

---

## Appendix G



D.Clin.Psychol. Research  
Department of Psychology  
Whelan Building  
Brownlow Hill  
University of Liverpool  
L69 3GB  
Suzanne Jakeman  
[sjakeman@liverpool.ac.uk](mailto:sjakeman@liverpool.ac.uk)  
Ray Manning  
[rmanning@liverpool.ac.uk](mailto:rmanning@liverpool.ac.uk)  
Emma Weymouth  
[e.weymouth@liverpool.ac.uk](mailto:e.weymouth@liverpool.ac.uk)

Thank you for taking the time to contribute to our research over the last week. Your contribution is greatly appreciated.

As you have been informed, part of this study looked at eating disorder symptoms in students. Although we cannot offer a diagnosis, some of the following symptoms are often associated with eating disorders (which include anorexia nervosa, bulimia nervosa and binge-eating disorder):

- Preoccupation with thoughts of food, eating or weight.
- Distorted body image.
- Significant weight-loss or weight-gain (although this is not necessary).
- Food restriction.
- Binge-eating and behaviours used to prevent weight gain (e.g. self-induced vomiting, excessive exercise and laxative misuse).
- Feeling 'out of control' when eating.

If you experience any of these symptoms and are concerned about your eating, it is advised that you consider talking to your GP. Please be aware that a number of behaviours that a person might engage in when they are trying to control their weight can have consequences for their health. Specifically, excessive dieting or exercise, self-induced vomiting or misuse of medication such as laxatives can all have serious health consequences, for example depleting your body of vital nutrients and electrolytes. If you are engaging in these behaviours as a result of concerns about your appearance or weight, it may be helpful to discuss this with your GP.

If you have experienced any distress in relation to your eating (or any other concerns) as a result of participating in this study, again, please consider talking to your GP. Alternatively, please contact one of the research team, and we will be happy to help you find alternative sources of support (email addresses at the top of this document). We have also provided a list of other possible sources of support on the reverse of this sheet, that you may also want to consider.

---

## **Sources of support and help**

Difficulties with distressing feelings like anxiety and depression are common in the UK but can have a huge impact upon a person's life. If you have been struggling with these experiences, either in the past, or since taking part in this study, there are a number of sources of support available to you.

- It may be helpful to talk to your GP about these feelings
  - There are a number of helplines dedicated to providing support to those struggling with depression, anxiety and other difficult emotions:
    - **Samaritans** (08457 90 90 90; open 24 hours).
    - **Saneline** (0845 767 8000; 6pm-11pm daily)
    - **B:EAT** – eating disorder helpline (Youthline [25 years old and under]: 0845 634 7650 Monday - Friday 1.30pm-4.30pm; Adult helpline [18 years old and over]: 0845 634 1414 Monday – Friday 1.30pm-4.30pm; [www.b-eat.co.uk](http://www.b-eat.co.uk)).
    - **Anxiety UK** (08444 775 774, Monday – Friday 9.30am – 5.30pm, [www.anxietyuk.org.uk/](http://www.anxietyuk.org.uk/))
  - Your University also has a Counselling service which can help
    - **University of Manchester Counselling service** (0161 275 2864, [www.studentnet.manchester.ac.uk/counselling](http://www.studentnet.manchester.ac.uk/counselling), [counselling.service@manchester.ac.uk](mailto:counselling.service@manchester.ac.uk))
    - **University of Liverpool Counselling service** (0151 794 3304, <http://www.liv.ac.uk/studentsupport/counselling>, [counserv@liverpool.ac.uk](mailto:counserv@liverpool.ac.uk))
  - You are also welcome to contact the study researchers, who will be able to suggest possible sources of support
    - Suzanne Jakeman [sjakeman@liverpool.ac.uk](mailto:sjakeman@liverpool.ac.uk)
    - Ray Manning [rmanning@liverpool.ac.uk](mailto:rmanning@liverpool.ac.uk)
    - Emma Weymouth [e.weymouth@liverpool.ac.uk](mailto:e.weymouth@liverpool.ac.uk)
-

Many thanks again for your participation in our research. Should you have any further queries, please do not hesitate to contact one of the research team.

---

