

**Online Support Groups for
Depression and Anxiety: Outcome
and Process**

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I, Jeremy Howard Dean, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signed:

A handwritten signature in black ink, appearing to be 'J. Howard Dean', written in a cursive style.

Date: 03/12/2013

Abstract

The studies described in this thesis aimed to investigate the potential benefits of an online support group (OSG) for participants experiencing depression and anxiety. After a review of the literature (Chapter 1), the first experiment (Chapter 2) analyses the validity of a commonly used text analysis software called Linguistic Inquiry and Word Count (LIWC), which is used later in the RCT to examine the correlates of the outcome measures. In order to prepare for the RCT, two pilot studies were carried out (Chapter 3), one to test the OSG arm and another to test the placebo control condition, an expressive writing task. The main RCT (Chapter 4) adopted a six-month randomised control trial design, with participants randomised to either (1) an OSG or (2) an expressive writing placebo control condition. The hypothesis was that participants randomised to the OSG would show greater improvement on the main outcome measures (reduced depression and anxiety, increased satisfaction with life and social support) than those in the expressive writing comparison group. The results for all four primary outcomes--depression, anxiety, satisfaction with life and social support --showed an improvement with time over the six months of the study. But participants responded similarly to the expressive writing and the OSG, so no evidence was found for the experimental hypothesis. However, the OSG had much higher drop-out rates than the expressive writing condition, suggesting that acceptability was lower. Finally, participants' feedback on the OSG and expressive writing was investigated qualitatively (Chapter 5). The main problems participants perceived with the OSG were a lack of comfort and connection with others, negative social comparisons and the potential for receiving bad advice. In comparison, participants were broadly positive about the expressive writing task. The conclusion

is that little positive evidence was found for the benefits of using an OSG for depression and anxiety. Recommendations for clinicians and policy-makers are discussed (Chapter 6).

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Presentations

The results of the RCT reported in Chapter 4 were presented at the BPS Annual Conference 2012 and Medicine 2.0 2013, both in London.

Table of Contents

1	Chapter 1: Literature Review	17
1.1	Depression.....	18
1.2	Anxiety.....	22
1.3	Theoretical effects of OSGs.....	25
1.3.1	Social support.....	26
1.3.2	Empowerment.....	26
1.3.3	Helper-therapy principle.....	27
1.3.4	Universality.....	28
1.3.5	Personal disclosure.....	28
1.3.6	Social comparison.....	29
1.3.7	Dangers of OSGs.....	30
1.4	Outcome studies.....	32
1.5	Attrition and adherence.....	37
1.6	OSG process research.....	38
1.6.1	Linguistic markers of psychological change.....	41
1.7	Aims and objectives.....	47
2	Chapter 2: Manual and Computerized Text Analysis in Four Online Support Groups	49
2.1	Introduction.....	49
2.2	Method.....	53

2.2.1	Sampling.....	53
2.2.2	Ethical Issues	54
2.2.3	Software.....	55
2.2.4	Procedure.....	56
2.3	Results.....	57
2.3.1	Description of Messages Analyzed	57
2.3.2	Comparing LIWC Analysis with Human Ratings.....	58
2.4	Discussion	63
3	Chapter 3: RCT Pilot Studies	68
3.1	Introduction.....	68
3.1.1	Choosing an OSG.....	69
3.1.2	The control group	70
3.1.3	Attrition and adherence in online interventions	72
3.1.4	Testing the technology	72
3.2	Pilot 1: The online support group condition	73
3.2.1	Method.....	73
3.2.2	Results	76
3.2.3	Discussion	76
3.3	Expressive writing condition pilot study	77
3.3.1	Method.....	78
3.3.2	Results	79

3.3.3	Discussion	80
4	Chapter 4: A Randomised Controlled Trial of Online Support Groups for Depression and Anxiety	81
4.1	Introduction	81
4.2	Method	83
4.2.1	Design.....	83
4.2.2	Recruitment	83
4.2.3	Participants	84
4.2.4	Dropout rates	89
4.2.5	Ethics	91
4.2.6	Interventions	91
4.2.7	Sample size and randomisation	93
4.2.8	Outcome measures	93
4.2.9	OSG process measures	95
4.3	Results	97
4.3.1	OSG engagement.....	97
4.3.2	Outcome: OSG versus expressive writing.....	102
4.3.3	Outcome: Engagers versus expressive writing.....	107
4.3.4	Outcome: Engagers versus non-engagers.....	110
4.3.5	Intention-to-treat analysis.....	113
4.3.6	Engagement analysis	113

4.3.7	Expectations analysis	115
4.3.8	Satisfaction data	120
4.3.9	Word count analysis	120
4.4	Discussion	123
4.4.1	Outcomes.....	123
4.4.2	Attrition and engagement	129
4.4.3	Word count analysis	131
4.4.4	Limitations and future directions	132
5	Chapter 5: Qualitative Analysis of Online Support Group and Expressive Writing Feedback	134
5.1	Methods.....	135
5.1.1	Participants	135
5.1.2	Data collection.....	136
5.1.3	Data analysis.....	136
5.2	Results - Online Support Group.....	137
5.2.1	Theme 1: Comfort and connection.....	138
5.2.2	Theme 2: Social comparisons.....	142
5.2.3	Theme 3: Need guidance using the site.....	147
5.2.4	Theme 4: Advice	148
5.3	Results - Expressive Writing.....	150
5.3.1	Theme 1: Clarification.....	151

5.3.2	Theme 2: Emotional effects.....	153
5.3.3	Theme 3: Task tweaks	156
5.4	Discussion	158
5.4.1	OSG feedback.....	159
5.4.2	Expressive writing feedback	161
5.4.3	Limitations.....	162
5.4.4	Conclusion.....	162
6	Chapter 6: Discussion.....	164
6.1	Summary of findings.....	164
6.2	Limitations	168
6.3	Future directions.....	169
6.4	Conclusions and clinical implications.....	171
7	References	175
8	Appendices	201
8.1	Appendix A: Center for Epidemiologic Studies Depression Scale....	201
8.2	Appendix B: Medical Outcomes Study Social Support Survey.....	203
8.3	Appendix C: Satisfaction with Life Scale	205
8.4	Appendix D: Brief Illness Perception Questionnaire.....	207
8.5	Appendix E: State-Trait Anxiety Inventory	209
8.6	Appendix F: U.S. National Institute of Health clinical trial registration	

8.7	Appendix G: Participants recruitment advert for main RCT	215
8.8	Appendix H: Participant information sheet	217
8.9	Appendix I: Introduction to the OSG for participants	221
8.10	Appendix J: 'Hints and tips' for participants	222
8.11	Appendix K: Expressive writing instructions	224
8.12	Appendix L: Generalised Anxiety Disorder Questionnaire	226
8.13	Appendix M: Online Support Group Questionnaire	228
8.14	Appendix N: OSG usage questionnaire	230
8.15	Appendix O: Email requesting expressive writing submission	232
8.16	Appendix P: Expressive writing participant information sheet	233
8.17	Appendix Q: Ethics approval for the randomised controlled trial	236
8.18	Appendix R: Ethics approval for online expressive writing pilot.....	237
8.19	Appendix S: Participants recruitment advert for pilot OSG study.....	238
8.20	Appendix T: Participants recruitment advert for pilot OSG study	240

List of Tables

Table 1: <i>Word counts per message and percentage of words recognized by LIWC in each of the four OSGs.</i>	58
Table 2: <i>Spearman correlations between LIWC analysis and human coding across all four OSGs and interrater reliability (N = 160).</i>	60
Table 3: <i>Spearman correlations between LIWC analysis and human coding for each of the four OSGs (N = 40).</i>	60
Table 4: <i>Degree of human-rated process variables for each of the four OSGs (mean rating on 5-point scale).</i>	62
Table 5: <i>Degree of LIWC-rated process variables for each of the four OSGs (median percentage of total of words detected in each category).</i>	63
Table 6: <i>Demographics for (1) all participants who completed the baseline measures and (2) for all participants who were eligible for analysis, by condition.</i> ..	85
Table 7: <i>How participants found the study</i>	89
Table 8: <i>Number of times per fortnight the OSG was accessed, whether to browse or post a message (response frequency)</i>	99
Table 9: <i>Amount of time in minutes spent accessing the OSG, on each separate occasion (response frequency)</i>	99
Table 10: <i>Number of posts to the OSG in the last two weeks (response frequency)</i>	99

Table 11: <i>Number of times per fortnight the OSG was accessed, whether to browse or post a message for engagers versus non-engager (response frequency)</i>	100
Table 12: <i>Amount of time in minutes spent accessing the OSG, on each separate occasion for engagers versus non-engagers (response frequency).</i>	101
Table 13: <i>Number of posts to the OSG in the last two weeks for engagers versus non-engagers (response frequency).</i>	102
Table 14: <i>Outcome measures by condition</i>	104
Table 15: <i>Demographic variables for engagers versus non-engagers.</i>	114
Table 16: <i>Participants expectations about their condition and the intervention at baseline, three months and six months.</i>	118
Table 17: <i>Satisfaction with the online support group at the end of the study</i>	120
Table 18: <i>Spearman correlations between improvement on outcome measures and facets of language use in the OSG over the first 3 months.</i>	122
Table 19: <i>Spearman correlations between improvement on outcome measures and facets of language use in the OSG over the full 6 months of the study.</i>	122
Table 20: <i>Comparison control groups in computer-based psychological treatments for depression which have used the CES-D.</i>	126
Table 21: <i>Summary of themes and sub-themes identified in participants' OSG feedback.</i>	138

Table 22: *Summary of themes and sub-themes identified in participants' expressive writing feedback.*151

List of Figures

Figure 1: <i>Spearman correlations between LIWC word count scores and human raters, and interrater reliability between the two human raters, across all four OSGs.</i>	61
Figure 2: <i>CONSORT-R participant flow chart</i>	90
Figure 3: <i>Mean depression scores on the CES-D at intake, three, and six months for all participants eligible for analysis.</i>	105
Figure 4: <i>Mean depression social support scores on the MOSSS at intake, three, and six months for all participants eligible for analysis.</i>	105
Figure 5: <i>Mean satisfaction with life scores on the SWLS at intake, three, and six months for all participants eligible for analysis.</i>	106
Figure 6: <i>Mean anxiety scores on the GAD=7 intake, three, and six months for all participants eligible for analysis.</i>	106
Figure 7: <i>Mean depression scores on the CES-D at intake, three, and six months excluding those who did not engage with the OSG.</i>	108
Figure 8: <i>Mean social support scores on the MOSSS at intake, three, and six months excluding those who did not engage with the OSG.</i>	108
Figure 9: <i>Mean satisfaction with life scores on the SWLS at intake, three, and six months excluding those who did not engage with the OSG.</i>	109

Figure 10: <i>Mean anxiety scores on the GAD-7 at intake, three, and six months excluding those who did not engage with the OSG.</i>	109
Figure 11: <i>Mean depression scores on the CES-D at intake, three, and six months for engagers versus non-engagers.</i>	111
Figure 12: <i>Mean social support scores on the MOSSS at intake, three, and six months for engagers versus non-engagers.</i>	111
Figure 13: <i>Mean satisfaction with life scores on the SWLS at intake, three, and six months for engagers versus non-engagers.</i>	112
Figure 14: <i>Mean anxiety scores on the GAD-7 at intake, three, and six months for engagers versus non-engagers.</i>	112
Figure 15: <i>Expectation of the intervention's utility at intake, three and six months for all participants eligible for analysis.</i>	119
Figure 16: <i>Expectation of the intervention's utility at intake, three and six months for engagers versus non-engagers in the OSG condition.</i>	119

Chapter 1: Literature Review

The Internet has opened up pathways of communication between people around the world, and the barriers to access in affluent societies are relatively low: computers, tablets and phones along with Internet access now being relatively ubiquitous and comparatively cheap. With the rise of social media like Facebook, Twitter and other services, people have never had more ways to communicate with each other electronically. Facebook, especially, has become the outstanding success of the so-called 'social web', where users can maintain contact with social groups who they know offline and many others they have never met in real life. Techno-optimists tell us that the social web allows humanity to work together and to help each other as never before; while techno-pessimists wonder if we are substituting real-world intimacy for a simulacrum which is inferior in many important regards. Whichever side emerges as most prescient, there is no going back. With the continued development and uptake of Internet-enabled services plugging more and more people into the social web, psychologists are bound to ask what this revolution in how we communicate is doing to our minds and our social relationships.

Even before the latest innovations online, online support groups (OSGs) based around shared topics such as cancer or addictions had begun to appear (Ferguson, 1996; Madara, 1997; Salem, Bogat & Reid, 1997); the earliest OSGs were online in 1982 and possibly even the late 1970s (Potts, 2005). OSGs have a number of advantages over their offline counterparts. People can get peer support across geographic boundaries at any time of the day or night and their anonymity can provide a protective shield against the stigma attached to sensitive issues such as sexual orientation or suicidal thoughts.

There seems little doubt that OSGs are popular (Pew, 2005). A Google search will reveal hundreds of these groups, many of which have thousands, perhaps tens of thousands of members and posts from people all around the world about all manner of subjects and issues. Indeed, Barak, Boniel-Nissim and Suler (2008) estimate there may be several hundred thousand of these groups. Many of these OSGs centre around mental health problems, particularly depression and anxiety. To take one example, as of August 2013, Yahoo! Groups lists 8,714 groups in its 'support' section of the 'health and wellness' directory (<http://uk.dir.groups.yahoo.com/dir/1600061498>).

This literature review examines why, both practically and theoretically, OSGs may be useful for people dealing with depression and anxiety. It starts with an overview of the conditions themselves and some of the factors that may mean OSGs can be useful for those who are experiencing these conditions. Then the outcome literature is examined to assess what we already know about whether OSGs can be useful for people with depression and anxiety, and some of the problems that researchers have faced in trying to evaluate them. Finally, the research on the types of processes found in OSGs is reviewed to outline what is already known about how people use OSGs and what types of processes may be psychologically beneficial.

1.1 Depression

The symptoms of depression are heterogeneous, however, they usually revolve around low mood and a loss of pleasure in most activities (NICE, 2009). Cognitively they may include feelings of guilt, low self-esteem and worthlessness along with recurrent negative thoughts. Behaviourally, it can include irritability, low libido,

tiredness, anxiety and, in more severe cases, self-harm and suicide. Physically, depression may affect muscle tension, sleep processes (either increased or decreased), activation (higher or lower) and is also often associated with physical health problems.

The mixture and severity of these symptoms, along with their time course are used in the reaching a diagnosis. Depression can be clinically categorised into sub-threshold (fewer than 5 symptoms), mild depression (about 5 symptoms), moderate depression (between mild and severe) and severe depression (most symptoms) -- although the number of symptoms required for each threshold varies slightly between the two major diagnostic systems, the Diagnostic and Statistical Manual of Mental Disorders and the International Statistical Classification of Diseases and Related Health Problems (American Psychiatric Association, 2013; World Health Organization, 1993). While these categorisations can be useful broad descriptions, depression is considered to exist on a continuum of severity and fewer more severe symptoms may be more concerning than a greater number of mild symptoms (Lewinsohn, Solomon, Seeley & Zeiss, 2000). There are no widely agreed cut-offs between what is considered 'normal' depression and 'clinically significant' depression' (Kessing, 2007).

Depression is a major problem in developed countries. Data from the World Health Survey has found that across 60 countries, the 1-year prevalence for major depressive disorder was 3.2% (Moussavi, Chatterji, Verdes, Tandon, Patel & Ustun, 2007). Among non-fatal diseases, depression has been rated as creating the largest overall disease burden (Üstün, Ayuso-Mateos, Chatterji, Mathers & Murray, 2004).

Women are more likely to suffer depression than men, with prevalence rates between 1.5 and 2.5 times higher (McDowell et al., 2004).

Depression is a chronic condition, with bouts frequently recurring over the lifetime (Andrews, 2001). For example, the US National Comorbidity Study found that three-quarters of participants who had been clinically depressed at some point in their lives had more than one episode (Kessler, Zhao, Blazer & Swartz, 1997). In addition, the risk of recurrence is likely to increase each time a person suffers a major depressive episode (Solomon et al., 2000). Similarly, data from the World Health Organization on 10 countries with a sample size of over 37,000 has also found that the most commonly occurring type of major depressive disorder has a chronic-intermittent course (Andrade et al., 2003).

The two main treatments for depression which have the strongest evidence to support them are antidepressant medication and cognitive-behavioural therapy (CBT). Both of these have an extensive evidence-base and are recommended by the National Institute for Health and Care Excellence (NICE, 2009). However, due to the lesser side-effects from CBT and patient preference, psychological therapies are often preferred (Riedel-Heller, 2005). The mechanism for action in CBT for depression -- which actually includes a variety of overlapping techniques -- is focussed on changing cognitions. The therapy attempts to identify negative automatic thoughts about the world, the self and others. The aim is to challenge these assumptions so that thoughts and emotions are changed. In more recent formulations of CBT, however, the emphasis has moved towards changing the patient's relationship towards their thoughts rather than changing those thoughts themselves (Hunot et al., 2013).

Depression comes with significant stigma attached to it (e.g. Pescosolido, Medina, Martin & Long, 2013). This includes both the stigma that those with depression believe others will view them and self-stigmatisation (Corrigan & Watson, 2002). Generally people worry that others will think less of them if they admit to a mental health problem (e.g. Britt, 2000). And, according to some research, they may well be right to fear that others will think less of them: Ben-Porath (2002), for example, found that people were viewed as being more unstable when they sought help for depression.

Links have been made between the stigmatisation of mental health problems and a reluctance to seek help (Aromaa, Tolvanen, Tuulari & Wahlbeck, 2011). Research in an Australian community sample, for example, has found that people were embarrassed to seek help for depression and even thought that mental health professionals would respond negatively to their requests for help (Barney, Griffiths, Jorm & Christensen, 2006). This is not; however, a consistent finding in the literature, with some studies finding that stigma is not a barrier to help-seeking. Another Australian study found that attitudes towards depression did not predict their own help-seeking behaviour (Jorm, Medway, Christensen, Korten, Jacomb & Rodgers, 2000). Similarly, discounting the link between stigmatisation and lack of help-seeking, research by Blumenthal and Endicott (1996) points towards a feeling among non-help seekers that they could deal with the problem themselves or that they did not recognise that it was an illness.

Of course stigmatisation is not the only issue affecting people's engagement with mental health services. These issues around why people do or do not engage with mental health care have been dealt with theoretically using the Health Belief Model

(Becker, 1974). It has been hypothesised that in order to make the decision about whether to enter the mental health system a person asks themselves: (a) How severe are my symptoms? (b) Can the professionals help me? (c) What are the barriers to help-seeking? and (d) Can I make the necessary change? (Henshaw & Freedman-Doan, 2009).

In any case, whatever the cause, those with depression frequently do not reach out to mental health services. For example, one European study covering Spain, Netherlands, France, Belgium, Italy and Germany found that often less than half of those who required treatment for mental health disorders sought professional help (Alonso, Codony, Kovess, Angermeyer, Katz, Haro & Vilagut, 2007). Similarly low levels of help-seeking for mental health problems have been found in the UK (e.g. Bebbington, Meltzer, Brugha, Farrell, Jenkins, Ceresa & Lewis, 2000). People are also likely to wait a long time after onset of depression until they do seek help: in Germany, one study found the median delay from onset is two years (Wang et al., 2007).

Even if people do seek help from mental health services, it is questionable whether they will receive all the support they need. Depression is often unrecognised and may be managed suboptimally (NHS Centre for Reviews and Dissemination, 2000). In particular, patients in the UK, in certain areas of the country, can find it difficult to access psychological services and GPs find they lack confidence in dealing with it and in providing the right management (Barley, Murray, Walters & Tylee, 2011).

1.2 Anxiety

While having many definitions, Barlow (2004) defines anxiety as a mood-state in which the person is preparing for upcoming negative events. While anxiety is a natural response to stressful events, it is considered pathological when it becomes difficult to control and disabling. One of the most commonly used diagnostic categories for anxiety is Generalised Anxiety Disorder (GAD). Like depression, GAD is a very common mental health problem that is highly prevalent, disabling and chronic (Tyrer & Baldwin, 2006). It is typically characterised by hyper-arousal, restlessness, fatigue, sleep problems, amongst other symptoms (American Psychiatric Association, 2013). The most commonly used treatments that have been found to be effective are pharmacotherapy and psychological therapies, however, psychological therapies -- often one of the family of cognitive behavioural therapies -- are usually preferred by both clinicians and patients (Tyrer & Baldwin, 2006). Meta-analysis of the considerable number of clinical trials of psychological therapies like CBT have found it is an effective treatment (Hunot, Churchill, Teixeira & Silva de Lima, 2007; Mitte, 2005).

The mechanism of action of CBT for anxiety is two-fold. The cognitive element targets thoughts which are irrational and/or anxiety provoking (Beck, 1979). Negative automatic thoughts are challenged, as are underlying beliefs which are dysfunctional. The behavioural component often revolves around relaxation techniques and becoming more aware of the body.

While some consider anxiety to be a largely or partly separate category of mental disorder, others have pointed to the considerable overlap between depression and anxiety, while questioning whether the separation between the two is defensible (Mergl, Seidscheck, Allgaier, Möller, Hegerl & Henkel, 2007). Over 50% of those

presenting to their primary care physician with a depressive or anxiety disorder will also be suffering from another co-morbid second depressive or anxiety disorder (Hirschfeld, 2001). Indeed in 2001 the most common mental health problem reported was mixed anxiety and depressive disorder (Office for National Statistics, 2001). This survey suggested that this mixed disorder has a prevalence of around 12% in women and about 7% in men. Generalised anxiety disorder meanwhile has an estimated prevalence of around 4-5%. More recent data from a NHS primary care sample has put the overall prevalence at 4.9% for men and 9.2% for women (Martín-Merino, Ruigómez, Wallander, Johansson & García-Rodríguez, 2010).

US data suggests that despite the high prevalence of anxiety disorders, it does not receive as much attention as other mental health problems and, in fact, frequently goes untreated (Kroenke, Spitzer, Williams, Monahan & Löwe, 2007). One study found general practitioners only spotted depression or anxiety in 36% of cases (Kessler, Lloyd, Lewis & Gray, 1999). It is unsurprising, then, that a study in six European countries has found that no treatment was given to 74.5% of patients with a pure anxiety disorder and, similarly, 67.7% of patients with any type of anxiety disorder also received no treatment (Lecrubier, 2007). In general, it seems anxiety lags behind depression in terms of its public profile, the resources that are allocated to deal with it, its identification in general practice, and the treatments used to address it.

Along with the effective treatments that are already available for both anxiety and depression, there is still scope for adjunct interventions. In addition, the stigmatisation of mental health problems means that people are often unwilling to admit their problems to a health care professional. Perhaps both because of an unmet

need and a desire for anonymity, it is inevitable that some will turn to the Internet for help and support. But can people with depression and anxiety really find some benefit from using OSGs? Before addressing the outcome data, we first examine the theoretical mechanisms that may link OSG usage with beneficial psychological outcomes.

1.3 Theoretical effects of OSGs

A whole range of overlapping theoretical suggestions have been made about why peer support, and, therefore, potentially OSGs, may be beneficial. The therapeutic factors which are often cited by Yalom and Leszcz (2005) provide a good foundation for the processes seen in a group therapy environment. They identified eleven therapeutic factors--not all of which are relevant to peer support--that are important in the power of group therapy: universality, imparting of information, existential factors, catharsis, interpersonal learning, group cohesiveness, altruism, instillation of hope, the corrective recapitulation of the primary family group, development of socialisation techniques and imitative behaviour.

Overlapping with some of these, and providing a more mechanistic approach, Dennis (2003) has argued that peer support has four methods for beneficial effects. Firstly it has a buffering effect, reducing the impact of stressors on participants. Secondly it may work directly to decrease isolation. Both of these are common ideas in social support (Cohen, 2004). Thirdly, it encourages participants to share information about their condition with each other. Fourthly it provides a role modelling effect, where participants can learn imitatively. These second two ideas overlap with those suggested by Yalom and Leszcz (2005).

Integrating some of these different ideas and focusing on those that have been most frequently referred to in the literature; the following factors are addressed in turn: social support, empowerment, the helper-therapy principle, universality, personal disclosure, and social comparison.

1.3.1 Social support

The idea that OSGs might provide social support to their users is not hard to grasp: in stressful times we can all do with a little help from our friends. Indeed, research on face-to-face social support has repeatedly demonstrated an association between greater levels of social support and better physical and mental health (Cohen, 2004; Cohen, Gottlieb & Underwood, 2000; House, Landis & Umberson, 1988). Many people receive this social support from friends and family but, unfortunately, sometimes friends cannot provide - or we do not want to ask for - the kind of support required. Factors that may limit social support from friends and family members include an expectation of reciprocity and reluctance to discuss personal problems (Cummings, Sproull & Kiesler, 2002). More specific limitations of friends and family may be that they simply do not understand, or cannot empathise with, the problem itself. For some with relatively uncommon problems, it can be difficult to find anyone else who has had a similar experience (Mickelson, 1997). Fortunately, one place where it is easy to find others who share our experience, and are willing to interact, is online. Certainly, when posts in OSGs are examined, there is evidence in these interactions of various different types of social support being enacted (e.g. Coulson & Greenwood, 2011).

1.3.2 Empowerment

A factor often remarked on as being important in support groups is that they are mostly controlled by their members (Humphreys & Rappaport, 1994). In OSGs the implicit power structures are flat, or at least open to negotiation. An OSG user can gain respect and standing within an OSG by consistently answering other posts, or by taking on the role of moderator.

Indeed, emerging evidence has suggested that OSGs can be empowering for their participants. Empowering outcomes claimed by participants taking part in OSGs for breast cancer, fibromyalgia, arthritis, prostate cancer and a variety of other chronic illness groups, include increased control and optimism, higher social well-being, feeling more confident dealing with their physician, and overall feeling better informed (Bartlett & Coulson, 2011; Campbell, Coulson & Buchanan, 2013; Mo & Coulson, 2012a; Van Uden-Kraan, Drossaert, Taal, Shaw, Seydel & van de Laar, 2008). Even those who simply 'lurk' in these groups without taking part report increased levels of empowerment in some areas (Van Uden-Kraan, Drossaert, Taal, Seydel & van de Laar, 2008).

1.3.3 Helper-therapy principle

In some ways, the helper-therapy principle mirrors the possible benefits of social support. While social support focuses on the potential benefits of being helped by others, the helper-therapy principle posits that people gain specific benefits through the act of helping others (Maton, 1988; Riessman, 1965). Taking part in an OSG may provide a feeling of reciprocation, an increased sense of interpersonal competence and an enhanced sense of self (Schwartz & Sendor, 1999). Despite being an attractive and intuitive idea, there is little evidence that this mechanism is one way that OSGs may be useful for their members, although in face-to-face support

groups, Roberts, Salem, Toro, Luke and Seidman (1999) found that those who gave the most help to others experienced the largest improvements in psychosocial adjustment.

1.3.4 Universality

Universality is the realisation that a problem or condition is shared with others and that the sufferer is not alone. Yalom and Leszcz (2005) describe this as sometimes being a revelatory experience for those in group therapy: many assume that their problems are unique and so they feel isolated. The discovery that their problems are not unique helps enable a reconnection with others. This is one of the theoretical benefits of OSGs as they allow participants to share their problems and, hopefully, find that they are not alone. One examination of OSG users has found that participants perceived universality as one of the important therapeutic factors operating within the group (Vilhauer, 2009; Weinberg, Uken & Schmale, 1996).

1.3.5 Personal disclosure

Talking, or in this case writing, about personal problems may well be beneficial, especially if they are of the kind that are stigmatised and so difficult to discuss. In research looking at the processes ongoing in OSGs, personal disclosure is usually found to be the most common category of communication (Winzelberg, 1997). Whether or not the disclosure in OSGs itself may be beneficial, there is little doubt that this is one of the main activities in which people participate. One relevant line of research is that conducted by Pennebaker and colleagues on the effects of expressive writing (e.g. Pennebaker, 1993; discussed in more detail below). This suggests that when people write about their innermost thoughts and feelings for even relatively

short periods of time, it can have a small but measurable therapeutic effect. This is tangential evidence that the act of written personal disclosure in OSGs may be beneficial.

1.3.6 Social comparison

Social comparison theory points to how a sense of normalcy can be obtained by interacting with those who share similar experiences (Festinger, 1954). Social learning theory suggests that peers with similar experiences provide each other with more creditable role models (Solomon, 2004). The question is whether these theoretical and practical benefits are really as effective in the online environment as many scholars claim (Barak & Bloch, 2006; Stofle, 2002; Suler, 2004).

Whether social comparisons are beneficial likely revolves around the exact circumstances of how they are made and what motivations drive them. Wills (1981), for example, suggested that people who are suffering are more likely to make downward comparisons--i.e. with those doing worse than themselves--in order to make themselves feel better. This received some support from research on those suffering from cancer (e.g. Van der Zee, Buunk & Sanderman, 1995). However, other studies have found the opposite: that people under stress have a tendency to make upward comparisons (e.g. Molleman, Pruyn, & Van Knippenberg, 1986). It seems likely that different motivations impel different types of comparison: downward comparisons may boost self-esteem, while upward comparisons can provide hope and clues about how to cope (Taylor & Lobel, 1989). Exactly how, or even whether, these different types of comparisons might affect participants in an OSG is not yet known.

1.3.7 Dangers of OSGs

Set against some of the potentially beneficial mechanisms are some reasons that OSGs may be less effective, perhaps even damaging for users. Online communities may lead to weaker ties between people (Cummings, Butler & Kraut, 2002). And, although some have claimed it has positive benefits, the "online disinhibition effect", while helping OSG users to open up, may also mean they experience unsupportive, perhaps even aggressive behaviour, from others (Kayany, 1998; Suler, 2004). The information people find on OSGs may be inappropriate, based on limited evidence or and sometimes unconventional in nature (Culver, Gerr & Frumkin, 1997). Recent discussion have focussed on 'pro-anorexia' OSG which may be seen to encourage disordered behaviours (Tierney, 2006). Similarly, studies have looked at the phenomenon of pro-suicide websites, which may also encourage self-destructive behaviour (Baker & Fortune, 2008). Empirical support for these fears has begun to emerge with users experiencing lower social self-esteem, greater negative affect and other troubling outcomes as a result of using them (Bardone-Cone & Cass, 2007).

Others have pointed out that social interactions can create both rewards and costs. Rook (1984), for example, in a sample of older widowed women found that negative social outcomes showed a stronger linkage with wellbeing than did positive social outcomes. In addition, participants may experience negative modelling: for example, some groups may encourage suicide or anorexia.

The literature on OSGs for physical health has provided very useful insights into the major fears which people experience about OSGs and evidence about whether

they are supported by their experience. Qualitative analysis of the perceived disadvantages of seeking support online found that many were worried about reading about the negative experiences of others and getting inaccurate information (Malik & Coulson, 2010). This fear makes up one of four general categories of fears pointed to by van Uden-Kraan et al. (2008). A second relates to the nature of the internet, in that it is an asynchronous method of communication, so body language is not available and time lags will likely occur between posting and any response. A third category of fear is that OSGs may cause problems with people's use of health care services. For example, people may delay seeking help as a result of being part of an OSG (cf. Coulson & Shaw, 2013), or they may criticise health care professionals. A fourth fear relates to the posts on OSGs themselves, in that negative posts may cause negative feelings amongst participants, especially if negative feelings are reflected by other users and a 'destructive thread' is created. What van Uden-Kraan et al. (2008) found when they looked at a random sample of 1500 postings from OSGs for fibromyalgia, breast cancer and arthritis, was that they only detected the disadvantages in a very small minority of posts. In the face of these fears, the authors concluded that OSGs could be a potential option for receiving support.

However, not all the research in physical OSGs about their dangers has been so positive. Malik and Coulson (2010), for example, found that users of an OSG for infertility had experienced a considerable number of concerns. Overall in their sample of 295 participants, they found that 57.9% reported that they had experienced some disadvantages in using an OSG. Most commonly mentioned was being exposed to negative experiences (10.9%). Other disadvantages included reading inaccurate information (7.8%) and finding the OSG addictive (5.8%). In a similar negative vein, users of an OSG for HIV/AIDS found problems with not being able to

connect physically, declining real-world relationships and information overload (Mo & Coulson, in press). These negative aspects were, however, balanced against other, more positive process.

More broadly, then, in an OSG, the question is whether damaging social processes may have a much greater effect on participants' well-being than positive social processes. Whether the net effect of these positive and negative processes ongoing in OSGs has a beneficial, or detrimental, effect for participants has yet to be determined. While there has been more theoretical focus on the potential positives of OSGs, this reflects a greater interest by scholars in those potential positives, rather than hard evidence one way or the other. It is now, then, that the outcome studies on OSGs are examined.

1.4 Outcome studies

Although OSGs have been rapidly proliferating, relatively little is known about their effectiveness, or indeed, the psychosocial processes involved which might bring about benefits. This is surprising given both the number of people already using them and the potential benefit to health services. The NICE (2009) guidelines, for example, recommend the development of accessible help and support for people with common mental health problems like depression and anxiety (Pilling et al., 2009). NICE also put forward a 'stepped-care' model for those with common mental health disorders like depression and anxiety. Within this stepped-care model, after the initial identification and assessment of the problem, the second step includes the use of peer support and self-help groups. NICE already acknowledge the potential benefits of self-help groups. Certainly OSGs have the potential to be a useful adjunct to other types of more intensive treatment like CBT or, potentially, a standalone low-

intensity intervention. Should they prove effective, OSGs could be incorporated into everyday clinical practice as a highly cost-effective measure.

Although OSG usage data is sparse, one US research group estimates that almost one in five Americans over the age of 18 (36 million) with Internet access has become a member of an OSG (Pew Internet Research Institute, 2005). Extrapolating these data to the UK suggests that there could be millions of OSG users.

Originally, the suggestion that OSGs might be useful for people comes from the evidence from face-to-face support groups. The effectiveness of face-to-face support groups generally, while difficult to evaluate because of their nature, has received some support in the literature (Humphreys & Rappaport, 1994). Reviewing 12 recent outcome studies on face-to-face support groups specifically for mental health problems, Pistrang, Barker and Humphreys (2008) found that seven demonstrated psychological benefits while the remaining five did not, and none showed negative outcomes. Similarly a meta-analysis, which included 7 RCTs of peer support interventions for depression, found that face-to-face support groups can reduce the symptoms of depression (Pfeiffer, Heisler, Piette, Rogers & Valenstein, 2011).

Moving from face-to-face support groups to OSGs, the evidence from well-designed evaluations remains relatively thin, but does exist. Ciliska and Valaitis (2000) reviewed 16 studies on OSGs and found only one study had a strong design, two moderate, and the remaining were weak. They found evidence that social support can be provided through OSGs and no evidence that users suffered any harm. A systematic review of 38 studies on OSGs was conducted by Eysenbach, Powell, Englesakis, Rizo and Stern (2004). They examined the social and health outcomes of OSGs used to discuss mainly physical health related issues; the

outcomes variables included diabetes control, weight loss as well as depression and social support. They concluded there was no strong evidence for the effectiveness of OSGs, however, improvements in health variables may be more difficult to obtain and most of the studies included were not pure OSG interventions, but were carried out at the same time as other complex interventions by health professionals. In addition, many studies reviewed had relatively few participants and may not have had the requisite power. For these reasons the lack of positive findings may not hold for those unmoderated peer-to-peer groups not substantially run by health professionals. Overall, Eysenbach et al. (2004) noted that the paucity of pure OSG evaluations is striking.

More broadly, a Cochrane review systematically reviewed the potential benefits of Interactive Health Communication Applications (IHCAs), defined by Murray, Burns, See, Lai and Nazareth (2005) as "computer-based, usually web-based, information packages for patients that combine health information with at least one of social support, decision support, or behaviour change support (p. 1). Their findings from these relatively preliminary studies suggested that IHCAs can be beneficial for self-efficacy, social support and behavioural outcomes.

A more recent systematic review has looked specifically at depression outcomes, has separated single from multi-component studies and includes research conducted in the interim. Griffiths, Calear and Banfield (2009) included 31 papers in their review, which reported 28 trials. These papers examined OSGs which were targeted at people with breast cancer, mental disorder, diabetes, renal problems and finally those with no specific disorder. All of the studies had a depression measure as at least one outcome and the designs varied, but only two of the studies included a

control group. The authors analysed the single and multi-component studies separately. Sixteen studies used a single-component intervention (an OSG) and 10 of these reported a positive effect on depression outcomes. Five of these studies involved breast cancer, of which four reported significant effect sizes in the moderate to large range (Lieberman et al., 2003; Lieberman & Goldstein, 2005; Lieberman & Goldstein, 2006; Winzelberg et al., 2003). The study carried out by Lieberman et al. (2003) was, however, the only one with a controlled design. There were two other single-component studies carried out which involved OSGs focused on medical conditions (renal patients on dialysis and diabetics), but neither found effects on depression (Glasgow, Boles, McKay, Feil & Barrera, 2003; McKay, Glasgow, Feil, Boles & Barrera, 2002). Only two studies included looked specifically at OSGs for depression. Houston, Cooper and Ford (2002) found a positive effect, but had no control group, while Andersson et al. (2005) did include a control group but found no significant improvement with the use of a bulletin board. This, however, was not a pure-OSG intervention, but rather one arm of an RCT evaluating online cognitive behavioural therapy. A further study not included in this review compared an OSG condition with an information-only condition (Freeman, Barker & Pistrang, 2008). In this student sample, participants showed improvements in both conditions on depression and satisfaction with life but there were no differences between conditions.

Griffiths et al. (2009) also reviewed six studies (reporting seven separate samples) in which participants had no diagnosed physical or psychological disorder. It was concluded from these that there was some evidence that chatroom use could decrease depression, but that the research designs were poor. The remainder of the studies examined by Griffiths et al. (2009) were multi-component rather than pure

OSG evaluations and only two from 17 samples (reported in 12 papers) showed a positive effect. Griffiths et al. (2009), like Eysenbach et al. (2004), point out the lack of high quality studies on the outcomes of depression OSGs.

Since Griffiths et al. (2009) published their systematic review, the same research group have conducted an RCT of a depression OSG (Griffiths, Mackinnon, Crisp, Christensen, Bennett & Farrer, 2012), which is the most methodologically sound study so far conducted in this area. Their design involved four groups, two of which included access to two separate moderated OSG that were purpose-built for the study. It was a closed bulletin-board that was not accessible to members of the public, only to those who were in the study. In the control condition, participants were given access to a website which asked general questions about participants' general health and wellbeing. This was designed to be only of minimal use and therefore a placebo-control condition. A third intervention involved an online self-help intervention called 'e-couch' (<http://ecouch.anu.edu.au>). The fourth offered access to both the e-couch and OSG. The results showed that over six months and twelve months, the OSG and the OSG combined with the 'e-couch' produced a significantly greater reduction in depressive symptoms than the control condition. Despite problems with attrition and dropouts, this provides the best evidence yet that OSGs may be beneficial in the treatment of depression and anxiety.

However, while this provides encouraging evidence that an OSG can be effective when moderated and when involving a selected group of participants, it still does not answer the question of whether existing OSGs, which are publicly available, can be effective for their participants.

1.5 Attrition and adherence

Perhaps part of the reason that OSGs have not been evaluated systematically is the difficulties inherent in doing so. One of the most obvious problems in trials of online behaviour in general is the rates of attrition and adherence. In comparison to traditional offline trials, attrition is high and adherence rates are very low (Eysenbach, 2005). High attrition and low adherence rates are traditionally considered a bad sign--perhaps suggesting the trial has been a failure and that the results are not worth publishing. On the contrary, though, Eysenbach (2005) argued that high attrition and low adherence are probably markers of online studies: in other words they should be considered normal aspects of online studies. For example, one study of a panic disorder self-help site found that only about 1% of participants completed the 12-week program (Farvolden, Denisoff, Selby, Bagby & Rudy, 2005). In a study of MoodGym, an online depression program, only 0.5% completed all 5 modules (Christensen, Griffiths, Korten, Brittliffe & Groves, 2004). These may not be typical as the participants were using an open website rather than taking part in a specific trial. Still, when MoodGym was evaluated as part of a trial, still only 22.5% completed all 5 modules (Christensen, Griffiths & Jorm, 2004).

In a systematic review, Christensen, Griffiths & Farrer (2009) examined RCTs of Internet interventions to assess levels of dropout and adherence. They included 18 studies, which covered depression, anxiety, stress, Post Traumatic Stress Disorder, social phobias and panic disorder. All of these were RCTs where the trial was conducted online. They found that retention rates varied enormously from 1% to 50% and that all the studies had higher rates of attrition in the experimental as opposed to the control group. Note, however, that these were quite different types of

Internet interventions, not just OSGs. For comparison, an earlier study of computerised cognitive behaviour therapy found there was a median dropout rate for depression interventions of 60% (Waller & Gilbody, 2009).

People reported a variety of reasons for their non-completion in the study. Most commonly cited were that they were short of time (e.g. Spek, Nyklícek, Smits, Cuijpers, Riper, Keyzer & Pop, 2007; Warmerdam, van Straten, Twisk, Riper & Cuijpers, 2008). A perceived lack of effectiveness was also a relatively common complaint (e.g. Klein, Richards & Austin, 2006). Other commonly cited problems were preferring to take medication (e.g. Richards, Klein & Austin, 2006), the lack of face-to-face contact (e.g. Lange, Rietdijk, Hudcovicova, Van De Ven, Schrieken & Emmelkamp, 2003), technical problems (e.g. Carlbring, Gunnarsdóttir, Hedensjö, Andersson, Ekselius & Furmark, 2007) and the time the intervention took up (e.g. Andersson, Strömgren, Ström & Lyttkens, 2002).

Methods for decreasing attrition and increasing adherence are not yet tested, although some clues have been provided by existing studies. The main method so far shown to reduce attrition and improve adherence is tracking and monitoring. Typically this involves frequent email or telephone contact to follow-up with the participants and check that they are taking part in the trial (Clarke, Eubanks, Reid, O'Connor, DeBar, Lynch, Nunley & Gullion, 2005).

1.6 OSG process research

Moving from outcome studies to an exploration of the processes ongoing in OSGs, the literature has begun to examine exactly how people try to help each other in online environments. Initial research examined the general characteristics of

helping interactions that occur online, often by using relatively broad methods of categorisation. Klaw, Dearmin, Huebsch and Humphreys (2000), investigating online support for problem drinkers, found communication in OSGs is generally warm and supportive. They coded the messages into a series of categories and found that 66% of messages contained self-disclosure, 37% provided information or advice to others, 29% provided emotional support to others and 22% were humorous. Salem, Bogat and Reid (1997) also identified warm and supportive communication in an OSG for those suffering from depression. Johnsen, Rosenvinge and Gammon (2002) identified the characteristics of posts to OSGs using a forced choice method with the following categories: constructive/positive, neutral, negative and destructive. They found that 45% of replies were constructive/positive and 45% were neutral. Although this is encouraging in terms of the way in which people responded, this methodological technique places a large analytic burden on the researcher in deciding which posts are considered 'constructive' and which ones 'destructive'.

Response mode categories have also been used to identify the types of help that are being offered or requested in OSGs. In an OSG for eating disorders, Winzelberg (1997) analysed responses using categories including requesting emotional support, providing emotional support, requesting or providing information, and requesting or providing personal disclosure. Self-disclosure was found to be the largest category, followed by requests for information and provision of emotional support. Haker, Lauber and Rossler (2005), in a study of people with schizophrenia using an OSG, again found that self-disclosure and the provision of information to others were the most frequently coded categories.

A further approach used is the qualitative analysis of interactions within an OSG. In the context of OSGs for families affected by cancer, Coulson and Greenwood (2011) have broken down the types of social support found in messages posted there. Based on a typology by Cutrona and Suhr (1992), Coulson and Greenwood (2011) find evidence for five main categories of social support: information support, emotional support, network support, esteem support and tangible assistance. Similar findings have been reported in an OSG for Huntington's disease (Coulson, Buchanana & Aubeeluckb, 2007).

Alongside the research using response mode categories or qualitative analyses, has been that using automated computer programs to study natural language use. Broadly speaking, methods for studying natural language use can be split into qualitative and quantitative methods. Three types of quantitative analysis are identified by Pennebaker, Mehl and Niederhoffer (2003): judge-based thematic content analysis, word pattern analysis and word count strategies. The last of these strategies, simple word counting, despite apparently being the least sophisticated, has become popular in recent years, particularly within social and health psychology (Alpers et al., 2005; West, 2001). Word count strategies place words into standard grammatical categories such as prepositions and pronouns, as well as into categories on the basis of their psychological relevance, for example words which express positive and negative emotion or words which represent cognitive processes like 'think' or 'because'. The basic assumption of a word count strategy is that, over and above their contextual and literal meaning, words convey psychologically-relevant information. The disadvantage of the approach is that in practical terms it is relatively crude since it cannot interpret phrases, sentences and paragraphs as its level of analysis is limited to the individual words. For example, if a person were to

write: "I'm feeling really good", the adjective 'really' is not understood as a modifier of 'good' when using a word count strategy. This is only an example of the most basic level of crudity the strategy necessitates; clearly it cannot probe the subtleties of meaning which human language contains.

However, reviewing the analysis of natural language use, Pennebaker et al. (2003) found that it has been beneficial in a wide variety of contexts: for example, as a reflection of social processes and situational variables, as a reflection of physical and psychological health changes and even in the measurement of psychopathology. Particularly in the area of online support groups (OSGs), the analysis of natural language with word count software is potentially extremely useful in analysing psychological changes, particularly when these are linked to outcomes.

1.6.1 Linguistic markers of psychological change

Some evidence of the links between language use and physical and psychological health changes comes from research carried out in the expressive writing paradigm developed by Pennebaker in the 1980s (Pennebaker & Beall, 1986). This involves asking participants to write about "a traumatic experience" for between 15 and 20 minute per day over a period of 3 to 5 days. In the last two decades, over 200 expressive writing studies have been published. A recent meta-analysis suggested that expressive writing is effective in reducing psychological distress and increasing physical health, although the aggregated effect size is very small: .075 (Frattaroli, 2006). Pennebaker (1997) summarises the types of word use that were associated with improved physical health in six studies in the expressive writing paradigm. It was found that improvements in health were associated with the use of positive emotion words and a moderate number of negative emotion words - both extremely

high and low usage of emotion words were associated with poorer outcomes. Pennebaker and Francis (1996) explained these findings in terms of a 'summed emotion' model which suggested that improvements in physical and mental health would be associated with greater use of the sum of positive and negative emotions words. However this model was not supported in a further study (Pennebaker, Mayne & Francis, 1997) that found that a greater use of positive emotion words relative to negative emotion words was associated with better health. Nevertheless the idea that the expression of emotions is associated with changes in psychological health will come as no surprise to psychotherapy researchers. Expressing negative emotion has long been associated with a variety of positive outcomes in the psychotherapy literature (e.g. Greenberg & Foerster, 1996; Greenberg, Ford, Alden & Johnson, 1993). Consonant with this notion is the finding that emotional suppression is frequently associated with worse psychological outcomes (Classen et al., 2001; Iwamitsu et al., 2003; Stanton et al., 2002).

Along with emotion words, a second category that Pennebaker (1997) found had strong associations with improved physical health was the use of causal insight words such as 'understand' and 'realise'. Support for this was found in three studies: in the first, Pennebaker (1993) had students carrying out a version of the expressive writing paradigm as well as carrying out an analysis on participants' writing about bereavement. The results showed that a greater use of causal words was associated with improvements in physical and mental health. It seemed that people tended to improve when they were trying to make sense of what had happened to them. This provides an interesting parallel to what has been suggested as one of the fundamental processes in therapeutic interactions: making meaning (Power & Brewin, 1997). In the second of the two studies, Pennebaker and Francis (1996) found that when

participants used more causal or insight-based words, they were also more likely to show improvements in physical and psychological health. The pattern of findings suggested that this was a result of an attempt to build a coherent narrative. In the third study, Pennebaker et al. (1997) again found that the use of causation and insight words was associated with improvement in adaptive behaviours and physical health.

The limitation with the studies based on the expressive writing paradigm is whether they are generalisable to other types of writing behaviours, such as those carried out over longer periods and by users of OSGs. Fortunately there is a small but growing literature examining the linguistic markers associated with improvements in the context of OSGs. Like the work conducted within the expressive writing paradigm, the linguistic aspects of this research are correlational so causal directions cannot be imputed, but this research does provide a starting point. Lieberman and Goldstein (2006) examined changes in depression of 52 members of a breast cancer support group over six months and analysed their messages over that period. Negative emotional expression in the OSG was found to be associated with improvements in psychosocial quality of life. However it was actually two sub-categories of negative emotion - sadness and anger - that were associated with lower levels of depression while increased expression of anxiety was associated with higher levels of depression after six months.

Similar to the studies in the expressive writing paradigm, research into OSGs has also looked at whether the use of insight words is associated with improvements in psychological health. Again within the context of breast cancer OSGs, Shaw, Hawkins, McTavish, Pingree and Gustafson (2006) examined language use over five months in a longitudinal design. Utilising word counting software for words

suggestive of insight, they analysed the association over time with physical and emotional wellbeing. It was found that the percentage of emotion words used over the five-month period of the study was predictive of emotional wellbeing, although the same was not true of physical wellbeing. This study was replicated by Lieberman (2007) who recruited 77 members of breast cancer OSGs and again used word count software to analyse the number of insight and causation words used as well as measuring depression, emotional and physical wellbeing. While depression and physical wellbeing only showed a trend towards significance, both an increase in functional wellbeing and decrease in breast cancer concerns were associated with insightful disclosure.

A different line of studies has presented two more linguistic variables which may be important to changes in psychological wellbeing: the focus on either the self or on others in an OSG or other setting. In particular, excessive focus on the self has been associated with worse mental health outcomes although, as in much of the extant literature, the causal direction remains unclear. For example, Matsuoka et al. (2002) found that breast cancer patients with intrusive thoughts about their condition were more likely to become preoccupied with their illness. Sakamoto, Tomoda, Iwata, Aihara and Kitamura (1999) found that those experiencing a large number of major depressive episodes were more likely to be highly self-focused than those who experienced fewer major depressive episodes. Further rumination is thought to be associated with more prolonged depressive episodes (Nolen-Hoeksema, 1991). This is corroborated by findings from Rude, Gortner and Pennebaker (2004) that drew on the cognitive model of depression put forward by Pyszczynski and Greenberg (1987) that posits an important role for self-focused attention in depression. Rude et al. (2004) compared writing samples of currently-depressed participants with the

formerly-depressed and the never-depressed. They found that those who were currently depressed used significantly more first-person singular pronouns than those who had never been depressed. Shaw, Han, Hawkins, McTavish and Gustafson (2008) examined the linguistic characteristics of 231 users of a breast cancer OSG in the context of focus on the self or on others. They found no relationship between first-person pronoun use and reduced breast cancer concerns, but did find a relationship between first-person pronoun use and the expression of negative emotions. However there was no relationship between the use of relational pronouns and a reduction in negative emotions.

Further evidence that focus on the self and use of the first-person singular pronoun is associated with poor psychological wellbeing comes from studies examining suicidality. In an archival study, Stirman and Pennebaker (2001) examined the poems of 18 suicidal and nonsuicidal poets and found that those who were suicidal used more first-person singular than first-person plural pronouns. Barak and Miron (2005), however, looked specifically at people writing on OSGs that were openly available on the Internet aimed at second generation Holocaust survivors and those who had been victims of sexual assault. In one study the researchers examined the degree of self-focus in 600 messages written by participants in three groups: those who were suicidal, those who were nonsuicidal but depressed, and those who were not distressed. The results showed an association between those who were suicidal and a greater use of the 'self-voice' (i.e. use of the words 'I', 'me', 'mine'). The percentage of self-voice used by the suicidal group was twice that used by those who were not distressed (9.9% versus 4.4%), with the other groups falling in between. Those who were suicidal were also found to respond to others by writing more about themselves.

A theoretical impetus for the accurate measurement of focus on the self and on others comes from the 'helper-therapy' principle and, more broadly, from the mooted positive associations between social ties and wellbeing. The helper-therapy principle posits that there are specific psychological benefits for people when they come to the aid of others (Riessman, 1965). In particular, Skovholt (1974) argues that helping others produces a strong sense of reciprocation and, consequently, an enhanced sense of self and an increase in interpersonal competence. Scholars thinking about the concept of altruism have wondered whether the helper-therapy principle might be the mechanism at work in the apparent relationship between social ties and health. Since the influential review article published by House, Landis and Umberson (1988) marshalling evidence for a positive relationship between social ties and health, researchers have tended to assume that benefits accrue from receiving social support from others. But Brown, Nesse, Vinokur and Smith (2003) point out that the evidence has actually been much more equivocal and that the psychological benefits of receiving support have been overstated (e.g. Bracke, Christiaens & Verhaeghe, 2008); there is even tentative evidence that receiving support from others may increase suicidal ideation (Brown & Vinokur, 2003). A series of studies have examined the relationship between providing support to others and psychological wellbeing. Brown, Brown, House and Brown (2008) found that recent widows who provided instrumental support to others were less likely to report depressive symptoms than those who did not provide this support while controlling for factors such as physical health, personality traits and social contact. Schwartz, Meisenhelder, Ma and Reed (2003) also found, in a stratified random sample, that giving help to others showed a greater association with better mental health than

receiving help. For all these reasons, it may be important to understand the extent to which participants focus their energies on themselves versus others in an OSG.

1.7 Aims and objectives

At present there is a real paucity of rigorous research into how effective and acceptable OSGs might be for those experiencing depression and anxiety. Given how many OSGs currently exist and the large numbers of people using them, this seems like a surprising omission. This thesis addresses the question of the effectiveness of an existing OSG for those asked to join it. In addition it will examine the linguistic markers of psychological change.

Therefore, the overall research questions are:

1. Are OSGs effective in ameliorating self-reported symptoms of depression and anxiety and increasing perceived social support?

2. What linguistic process variables (e.g. expression of emotions, or focus on self or other using a word count strategy) are associated with positive outcomes in OSGs?

3. What are participants' experiences of, and reactions to, using an OSG?

In order to answer these questions, the second chapter reports an evaluation of the LIWC software which is used to evaluate the language used in the OSGs. This is designed to test whether it is a valid tool for assessing the processes in OSGs. The main study reported in this thesis is an RCT of an OSG. In order to prepare for this larger piece of research, Chapter three reports two pilot studies testing each arm of the RCT: an expressive writing condition versus the OSG. Chapter four reports the

main outcomes of the RCT, while Chapter five summarises the participant's experiences of, and satisfaction with, the OSG and the expressive writing. Finally, in Chapter six the research is summarised and limitations, future directions and clinical implications are discussed.

Chapter 2: Manual and Computerized Text Analysis in Four Online Support Groups

2.1 Introduction

One of the major challenges with research in OSGs is in examining how people go about helping each other. A variety of approaches have been adopted, including various types of qualitative analysis and the categorisation of posts. Given the large amounts of data that the participants engaged in OSGs tend to produce, however, an approach that may prove useful involves the analysis of natural language use. Among the quantitative methods employed is the use of relatively simple word counting programs which are designed to assess the number of words that fall into categories with psychological relevance.

The piece of software most often used in social and health psychology is the Linguistic Inquiry and Word Count software (LIWC, Pennebaker, Booth & Francis, 2007). The potential problem with using this software, however, is its validity; at the broadest level: does word frequency tell us anything meaningful about the psychological state of the person who wrote it? While this study does not attempt to answer a question as broad as that; it is concerned with a part of the answer to this question, namely: is there agreement between the software and a human being in rating OSG posts? In other words: can the software tell us anything meaningful about the psychological impression that a piece of writing is giving to the reader (whether or not these are the intentions of the writer)?

The Linguistic Inquiry and Word Count software has a dictionary of 4,500 words and word-stems which captures over 86% of words commonly used in writing and speech. Each word is assigned to one or more categories, 32 of which have clear psychological relevance (for example positive and negative affect and cognitive processes). The initial examination of LIWC's psychometric properties was carried out by the authors of the program (Pennebaker, Chung, Ireland, Gonzales & Booth, 2007; Pennebaker & Francis, 1992). To assess the reliability of the program, use of words that fell into particular categories (for example the positive emotion word, 'happy') was correlated with other words that fell into the same category (for example another positive emotion word, 'elated'). Alpha reliability for categories of particular interest in the current research ranged from .62 for first-person singular pronouns to .97 for positive emotions and negative emotions (these figures used a binary method for calculation). To assess construct validity, LIWC analyses were compared with human raters on essays produced by participants who were either instructed to write about their deepest thoughts and emotions or any object or event in an unemotional way (Francis & Pennebaker, 1992). Pearson correlations were typically in the low to moderate range: .31 for negative emotions and .52 for first-person singular pronouns.

The validity of LIWC has been examined in the context of OSGs by Alpers et al. (2005) who analysed 521 messages written by 9 participants in a breast cancer OSG. The messages were analysed by LIWC and human raters on psychological categories including positive emotions, negative emotions, social processes and cognitive processes. In this study, overall ratings were assigned to each OSG message on a scale of 0 to 3. Agreement between the human and LIWC rating was taken as evidence for the concurrent validity of LIWC. Spearman correlations ranged from

.24 for 'anger' up to .52 for the broader category of 'negative emotions'. Human interrater reliabilities were in the moderate to high range. This study provided a starting point for examining the validity of LIWC and assessing its potential for analysing online communication, but does suffer two shortcomings. Firstly the number of participants from which messages were sampled was small. Secondly, the messages only came from one OSG.

The small sample size of the Alpers et al. (2005) study has been addressed in the only other known published study examining the validity of LIWC, carried out by Bantum and Owen (2009). This study also examined a breast cancer OSG but this time included a sample size of 63. Bantum and Owen examined another piece of text analysis software alongside the LIWC: the Psychiatric Content Analysis and Diagnosis system (PCAD), which is based on the Gottschalk-Gleser scales (Gottschalk et al., 1969). This study was mainly concerned with emotional expression and therefore uses a human coding system designed to be comparable to the positive and negative emotion scales (and subscales) of LIWC and PCAD. A further difference from the Alpers et al. (2005) research was the development of a more low-level coding system. While Alpers et al. (2005) coded the overall impression given to human raters by messages, Bantum and Owen (2009) used individual words as their unit of analysis. Their theoretical basis was in signal-detection as developed by Green and Swets (1966) which looks at the ratio of signal (in this case emotional expression) to noise (in this case lack of emotional expression). In order to calculate this ratio, individual words that were coded as containing either positive or negative emotions by LIWC were second-coded by human raters.

The main finding of Bantum and Owen (2009) was that LIWC significantly over-reported the number of words that had emotional content in comparison with the human coding. For positive emotions only 24% of words identified by LIWC as having emotional content were also manually coded as having emotional content. The same figure for negative emotions was 43%. The performance of PCAD was worse with the corresponding figures for positive and negative emotions being 15% and 16% respectively. Pearson correlations between LIWC and human raters, however, for positive emotions were higher than those reported by either Francis & Pennebaker (1992) or Alpers et al. (2005) at .75 and similar to previous research for negative emotion at .54. Again, PCAD did not perform to the same level in this test with hardly any of the correlations significant, and those that were, being between categories in which positive correlations would not be expected, such as between positive feeling and anger (.33). One important caveat to the findings from LIWC was that Bantum and Owen (2009) used the 2001 version of LIWC, whereas a 2007 version has now been released which has yet to be evaluated in the published literature (Pennebaker, Booth & Francis, 2007).

In summary, until now the validity of the LIWC software has been examined by two studies, Alpers et al. (2005) and Bantum and Owen (2009). Alpers et al. (2005), however, had a relatively limited sample size and Bantum and Owen (2009) focused purely on the expression of positive and negative emotions. In addition, both studies used the 2001 version of the software, while there is now an updated 2007 version available. The present study, therefore, using the new version of the software, is designed to test the validity of the LIWC software by comparing it with human coding of a range of OSGs. This study will also extend the categories of words tested.

2.2 Method

2.2.1 Sampling

Messages were sampled from four publicly available websites. Each site had several forums for discussing different subjects: one forum from each was chosen. None required registration in order to view the messages. The rationale for selecting these particular OSGs was to include two which focused on psychological problems (depression and suicide), one focused on a physical problem (cancer) and a neutral control (carpentry). The carpentry control group was chosen because the discussions therein were generally not emotional in nature and so provided a good comparison for the depression, suicide and cancer groups which did contain much emotional writing. To be useful the software would need to be able to pick up these differences. Three of the groups chosen were based in the USA, the fourth was a UK group: while there are differences in the use of language between the USA and the UK, these subtleties were unlikely to affect what is a relatively crude word count strategy.

a. **Depression:** Psych Central (depression forum) is an international, US-based forum for the discussion of depression, but with the expression of suicidal thoughts prohibited (<http://forums.psychcentral.com/forumdisplay.php?f=6>).

b. **Suicide:** Take This Life Support community (suicide forum) is an international, US-based forum for those who are depressed to discuss thoughts of suicide (<http://www.takethislife.com/suicide-forum/>).

c. **Cancer:** Breastcancer.org (stage IV breast cancer forum) is an international, US-based forum for women with advanced breast cancer to discuss their treatment (<http://community.breastcancer.org/forum/8>).

d. **Control:** DIYnot.com (carpentry forum) is a UK-based forum for the discussion of practical problems in woodwork and carpentry (<http://www.diynot.com/forums/viewforum.php?f=14>).

Forty messages were sampled from each OSG, giving a total of 160 individual messages. A two-step sampling procedure was used. First, a starting point was taken in September of 2009 and ten threads from each OSG were taken in chronological order, then one message from each thread was randomly selected for inclusion in the analysis. Messages were randomly selected by generating a random number in Excel from the number of messages in the post. Messages that did not include any text capable of being analyzed were discarded and another message was randomly selected from the same thread. The next batch of forty messages was selected using the same procedure but by moving the start-point back a month earlier for each group; however because of different activity levels in each of the groups the time-period was greater than a month in some groups, in order to avoid sampling the same thread twice. This procedure was then repeated twice more to sample the 160 messages.

2.2.2 *Ethical Issues*

Ethical questions are raised by the collection from OSGs of messages written by people who have not provided consent for their data to be included in a research study. The only circumstance under which this is ethically permissible is if the data

are taken from a public arena. Therefore it is necessary to decide whether OSGs can be considered public arenas. Although one might consider anything found on a publicly available website to be in the public arena, the experience of OSG participants may be otherwise, considering their conversations to have a degree of privacy. Eysenbach and Till (2001) have proposed three criteria to help researchers navigate this quandary. First, those OSGs that do not require a subscription or registration to gain access are more likely to be considered public. Second, the larger the OSG, the more likely it is to be considered a public space. Third, the individual group and social norms of the group must be considered. For example, some forums make it clear that messages are private. In the current study, the forums chosen were all large, did not restrict users from viewing messages (although all require registration to post) and did not explicitly restrict the use of messages in research. Since the procedure for this study involved publicly available data, ethical approval was not required. All data were analyzed anonymously and no identifying information was used.

2.2.3 Software

The text analysis software was Linguistic Inquiry and Word Count, version v. 1.08 (LIWC; Pennebaker et al., 2007). It has a dictionary of 4,500 words and word-stems which captures over 86% of words commonly used in writing and speech. Each word is assigned to one or more of 64 categories. Of particular relevance are the 32 categories associated with psychological constructs, such as positive and negative affect. LIWC outputs a list of the total number of words which correspond to each of the categories as a percentage of the total number of words recognized. The unit of analysis in the present study is the individual message, so LIWC results

will be presented in terms of the percentage of words in each category in each message.

2.2.4 Procedure

2.2.4.1 Computerized Coding

Messages were copied and pasted from the OSGs into master files, which were cleaned up using the spell-checker in Word 2007 and by visual checks. They were anonymized by removing any references to both actual names and online nicknames and then saved as ASCII text files for processing in LIWC.

Nine LIWC categories were used: positive emotions, negative emotions, social processes, cognitive processes, self-focus and other-focus (aggregating four LIWC categories). All except the last are directly provided by LIWC. Self-focus was implied from the usage of first-person singular pronouns - one of the existing categories. 'Other-focus' was created by summing the non-relational-I pronouns: first-person plural, second-person singular and plural, and third person singular and plural, i.e. we, you, he, she, they.

2.2.4.2 Human Coding

All messages were also coded by two human raters on the corresponding categories in order to assess the convergent validity of the software. Coding rules were written for each of the categories based on LIWC categories so that, for example, the positive emotions category asks: "to what extent does the message communicate positive feeling states such as happiness, contentment, pride or energy?" Coders rated each of the messages on a 5-point scale from 0 (not at all) to 4 (intensely) based on their overall judgment of the message. They were instructed that

moderate inferences were permitted, but not to go much beyond what was explicitly stated in the message. Further, they were instructed to focus on what people were expressing, not how they should be feeling, as well as on coding on the basis of the quality of the words used and not the quantity. This was important as messages ranged considerably in length.

The author trained a second rater on a set of messages that were not included in the current study. Training continued until acceptable levels of agreement were reached. A small subset of messages was also coded by one of the author's supervisors as an additional validity check. Then the data were analyzed in four separate batches each containing 40 messages (10 from each group). Messages were coded in a random order to eliminate carry-over effects. After each batch of 40 messages was coded, the interrater reliability was calculated to assess any rater drift. Raters then discussed messages on which the ratings were two or more points apart so that this information could be used in coding the next batch of 40 messages. Sometimes this resulted in better understandings; at other times the message coded was simply ambiguous. However, no codes were changed retrospectively.

The overall interrater reliability was calculated using Spearman correlations to assess agreement between the two raters, then the agreement between the human raters and LIWC was assessed. Non-parametric statistical tests were used since the data did not meet the criteria of Normality (the data were positively skewed).

2.3 Results

2.3.1 Description of Messages Analyzed

Table 1 shows that the percentage of words recognized by the software was similar across the four OSGs (Kruskal-Wallis test; $\chi^2(3) = 6.22$, $p = 0.10$). However there was considerable variability in message length, with the median word count in the suicide OSG almost twice that in the control OSG.

Table 1: *Word counts per message and percentage of words recognized by LIWC in each of the four OSGs.*

	Median	IQR	Min	Max	Recognized by LIWC
Depression	49.5	146.0	5	433	94.1%
Suicide	67.5	127.0	5	708	92.8%
Cancer	54.0	66.0	6	256	86.6%
Control	37.0	47.0	5	215	77.8%
Average	52.0	96.5	5	403	87.8%

2.3.2 *Comparing LIWC Analysis with Human Ratings*

To examine the relationship between the human coding and the LIWC analysis, Spearman correlations were calculated (see Table 2) between the LIWC variables and human coding in each of the six categories: positive emotions, negative emotions, social processes, cognitive processes, focus on the self and focus on others. All correlations between corresponding categories were statistically significant ($p < 0.01$), although those in the social processes and cognitive processes categories were weaker.

Table 2 also shows the human interrater reliabilities, which ranged between .66 and .81, with the exception of cognitive processes which was .53, indicating that it was not possible to rate this latter category very reliably. Figure 1 shows the

correlations between the LIWC analysis and two human raters alongside the interrater reliabilities between the two human coders.

Table 3 shows the Spearman correlations between the LIWC analysis and human coding broken down across the four OSGs. It can be seen that some of the correlations within individual groups are weaker, possibly due to restrictions in range.

Table 2: Spearman correlations between LIWC analysis and human coding across all four OSGs and interrater reliability (N = 160).

	PosEmo	NegEmo	SocPro	CogPro	Self	Other
Interrater reliability	.73**	.76**	.66**	.53**	.81**	.70**
LIWC Pos	.58[†]**	-.02	.04	-.04	-.06	.37**
LIWC Neg	.05	.53**	.25**	.43**	.26**	.06
LIWC Soc	.33**	.01	.40**	.02	-.19*	.56**
LIWC Cog	.15	.11	.16*	.24**	.17*	.16*
LIWC Self	-.01	.49**	.21**	.15	.76**	-.30**
LIWC Other	.36**	.03	.30**	.10	-.29**	.68**

* p < .05. ** p < .01

[†]Bold correlations highlight corresponding categories.

Table 3: Spearman correlations between LIWC analysis and human coding for each of the four OSGs (N = 40).

	Depression	Suicide	Cancer	Control	Overall
Pos	.49**	.71**	.47**	.39*	.58**
Neg	.59**	.31*	.56**	.13	.53**
Soc	.31*	.24	.35**	.38*	.40**
Cog	.03	.16	.30	.11	.24**
Self	.61**	.77**	.74**	.78**	.76**
Other	.71**	.68**	.70**	.45**	.68**

* p < .05. ** p < .01

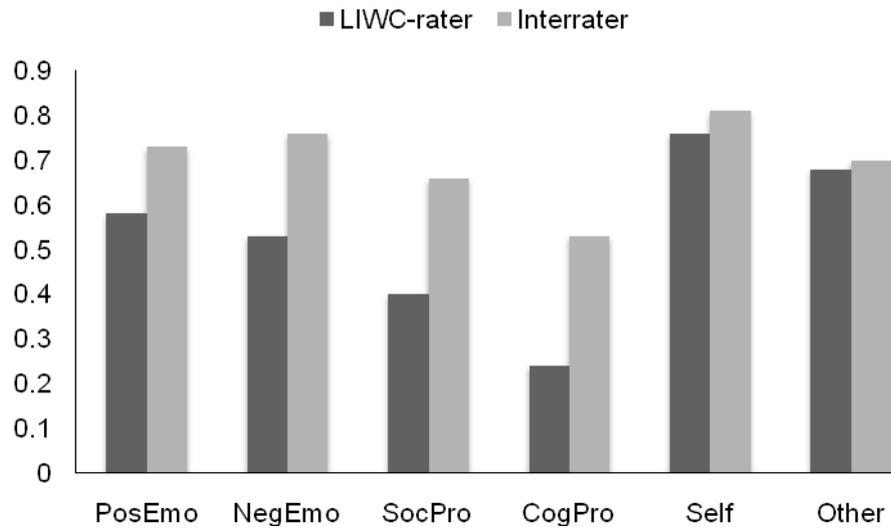


Figure 1: *Spearman correlations between LIWC word count scores and human raters, and interrater reliability between the two human raters, across all four OSGs.*

Table 4 shows the degree of human-rated process variables for each of the four OSGs, i.e. their mean ratings on the 5-point scale. Linguistic profiles differed between the four groups in all of the categories. Post-hoc Mann-Whitney tests using Bonferroni corrections revealed that these differences were, as expected, generally greatest between the control OSG and the other OSGs. However, unexpectedly users of the depression and suicide OSGs expressed more negative emotion than those in the cancer OSGs.

Table 4: Degree of human-rated process variables for each of the four OSGs (mean rating on 5-point scale).

	Depression	Suicide	Cancer	Control	$\chi^2(3)$	p
PosEmo	1.28 ^a	0.96 ^a	1.20 ^a	0.25	31.9	< .001
NegEmo	1.28 ^{ab}	1.5 ^{ab}	0.53	0.18	38.7	< .001
SocPro	0.80 ^a	0.88 ^a	0.63 ^a	0.14	24.3	< .001
CogPro	1.13 ^a	1.25 ^{ab}	0.59	0.39	21.6	< .001
Self	1.51 ^a	1.89 ^a	1.41 ^a	0.56	22.5	< .001
Other	1.89 ^a	1.49	1.51 ^a	0.76	20.5	< .001

^a Different from control at $p < .0083$ (Bonferroni correction)

^b Different from cancer at $p < .0083$ (Bonferroni correction)

Table 5 shows the degree of LIWC-rated process variables for each of the OSGs (i.e. median percentage of total of words detected in each category). The significant Kruskal-Wallis tests in all the linguistic categories, bar positive emotions, suggests LIWC also picked up linguistic differences between the OSGs. The follow-ups and lower χ^2 values, however, show that LIWC was not quite as consistent at picking up the differences between OSGs as human raters. For example, the differences between the control and the other OSGs were not as consistent. While there is a trend in the same direction, significance was reduced by corrections for multiple comparisons.

Table 5: Degree of LIWC-rated process variables for each of the four OSGs (median percentage of total of words detected in each category).

	Depression	Suicide	Cancer	Control	$\chi^2(3)$	p
LIWC Pos	4	3.3	4.1	1.8	6.1	.109
LIWC Neg	3 ^{ab}	3.4 ^{ab}	1.2	0	19.9	< .001
LIWC Soc	9.2 ^a	10.6 ^a	8.4	4.2	14.9	.002
LIWC Cog	20.1 ^b	20.7 ^{ab}	15.3	16.9	16.4	.001
LIWC Self	6.7 ^a	7.8 ^a	5.9 ^a	3.2	23.3	< .001
LIWC Other	5.2 ^a	5.4 ^a	3.8	1.2	11.7	.008

^a Different from control at $p < .0083$ (Bonferroni correction)

^b Different from cancer at $p < .0083$ (Bonferroni correction)

2.4 Discussion

The study examined the validity of the 2007 version of the LIWC software in four OSGs and by extending the categories of words examined. The findings broadly supported its use in the analysis of OSGs, although there was variation across categories of words. In the two important categories of positive and negative emotions, correlations between the human raters and LIWC were in the medium range and were similar to those obtained in previous work (Alpers et al., 2005; Bantum & Owen, 2009). Both the present study and Alpers et al. (2005) used the message as the unit of analysis on the assumption that this provided a good comparison with the way people tend to operate in OSGs, i.e. by reading and writing individual messages, whereas Bantum and Owen (2009) focused on individual words. It is useful for triangulation, however, that all these studies discovered similar correlations despite using different methods. One potential problem, however, is that the human rating of negative emotion, as well as correlating with the LIWC category

of negative emotion, also correlated to almost the same degree with the LIWC category of focus on the self. This association, however, is consistent with previous research (Shaw et al., 2008).

Correlations between LIWC and human raters were weaker for both social processes and cognitive processes. This may result from these being relatively broad and difficult to define categories in comparison to the others tested by the software. For example, while a positive emotion is relatively easy to define, a 'cognitive process' is a more nebulous category. In addition, cognitive processes may not be so easily measured with a word count strategy since just using the word 'think' might simply denote a statement that has been qualified (e.g. "I think I'm unhappy") rather than a cognitive process *per se*. Certainly, the low correlation for cognitive processes and pattern of correlations suggests that the words included in this category are not effectively capturing the concept of insight and causative processes. Consequently studies which rely on the detection of words in these categories - and subsequent conclusions about their association with physical or psychological wellbeing - may have cause to be cautious (e.g. Lieberman, 2007). The conclusions to be drawn about the social processes category are also muddied by correlations across categories other than those expected (negative emotions, cognitive processes, focus on the self and focus on others). These correlations suggest that the social processes category may be less useful in analyzing OSGs.

The final two linguistic categories examined were focus on the self and focus on others. Human coding was strongly correlated with the LIWC count of first-person singular pronouns and the other correlations were as expected: for example focus on the self with LIWC coding of negative emotions, and the human coding of focus on

others with the LIWC category of positive emotions. This was encouraging for the possibility of using word count software to effectively measure these concepts in OSGs.

Most differences between groups were as expected, for example that the expression of emotions would be higher in the depression, suicide and cancer groups than the carpentry control group. What was unexpected was the lower levels of negative emotions expressed in the breast cancer group compared with the depression and suicide group. This may reflect a difference in the breast cancer OSG where group norms dictated lower expression of negative emotions. Interactions in OSGs focused on physical issues can take on a more matter-of-fact tone with the exchange of technical details of conditions, rather than their emotional impact. What might lead to these differences in group climates has yet to be examined systematically.

These differences between the groups were seen more clearly by the human raters than the LIWC analysis. For example the LIWC analysis of positive emotions did not exhibit the same pattern perceived by the human raters, with the control group rated at a similar level to the other categories. One interpretation of this result that is consistent with Bantum and Owen (2009) is that LIWC is over-estimating the degree of positive emotion in the control group. This may be related to this specific OSG and would require further research.

One of the main limitations of the current study was that it was not possible to collect demographic data about the participants and so individual differences could not be examined. It is plausible that there is a considerable variation in the degree to which some people's language use is efficiently coded by word counting software.

Future research, therefore, should attempt to examine individual differences. A further limitation of the current study is that it did not examine the criticism of LIWC made by Bantum and Owen (2009) that the software over-reports both positive and negative emotions. It is possible that the validity of the LIWC can be significantly increased with a closer analysis of how and why this happens. One approach to this would be analyzing text at the word-by-word level. Using this method Bantum & Owen (2009) report that some words are inaccurately categorized by LIWC as conveying positive emotions (these are 'good', 'hope', 'like', 'beautiful' and 'best'). However when these words were removed from the positive emotion category in the current sample, correlations between LIWC and human ratings were reduced. This suggests that extending this low-level strategy beyond this category may not produce hoped for increases in accuracy. One way to resolve this impasse is to return to the ultimate arbiter of what a message means: the person who wrote it in the first place. Triangulation between the author of a message, LIWC's interpretation and an observer's interpretation may provide the necessary insight to refine the software. A final limitation was that lower interrater reliability was found between human and computer than was found between two humans. This might suggest another reason why an alternative approach, such as the use of triangulation, may be beneficial in increasing sensitivity.

In conclusion, this study provided further support, and in some cases stronger support, for the use of LIWC software. However, less support and conflicting results were found for the categories of social and cognitive processes, suggesting these may not be LIWC categories that can be relied on when examining OSGs. Nevertheless, the stronger correlations for emotions and focus on the self or others were found across four quite different OSGs, and that is also cause for optimism

about the use of word count software to investigate the process of online support and its possible association with outcome.

Chapter 3: RCT Pilot Studies

3.1 Introduction

The main aim of this thesis is to evaluate whether an OSG for depression and anxiety can help its participants. Evaluating the effectiveness of an OSG presents a number of technical and methodological problems, many of which are common to the evaluation of complex interventions. The updated guidance from the Medical Research Council (MRC) on the development and evaluation of complex interventions refers to four phases (Craig, Dieppe, Macintyre, Michie, Nazareth & Petticrew, 2008). After assessing the evidence base and addressing theoretical matters (see Chapter 1), and before carrying out a full-blown evaluation (see Chapter 4), the attention should turn to feasibility and piloting. In particular three main concerns are highlighted: (1) testing procedures, (2) estimating recruitment and retention and (3) determining sample size. Recruitment and retention have proved a particular problem in e-health interventions: researchers have found it difficult to recruit the required number of participants (e.g. Koo & Skinner, 2005) and have found it difficult to keep those participants engaged with online intervention (Eysenbach, 2005).

To address the problem of recruitment and retention and in line with the MRC's guidance, this chapter describes two pilot studies, each to test the two arms of a planned RCT. These pilot studies aimed to evaluate the use of existing technologies in administering users, the attrition and adherence of participants, the online support group itself and the type of comparison condition that will be used. Each of these

issues is outlined in turn before the two pilot studies are described. Lessons learned from these two studies fed into an RCT that was conducted subsequently.

3.1.1 Choosing an OSG

Unlike a drug or a treatment protocol, there is relatively little standardisation between OSGs. A quick search online will reveal considerable variety. Some are relatively small and tightly focused on one issue, such as depression, others contain many sub-groups with a variety of different topics under discussion. Even within topics like depression, OSGs vary in their typical approach; whether, for example, members commonly recommend medication or psychological therapy, and how, or whether, they discuss sensitive issues like suicide.

Whilst no criteria were formally laid down about what type of OSG to use, for this research a relatively broad and all-encompassing OSG was required. Since OSG participants often flit between boards to discuss different matters, an OSG where many different topics were on discussion, including, of course, depression and anxiety, was indicated. The OSG also needed to be of sufficient size and activity levels that participants could log in at any time with the expectation that there would be others online to interact with. Finally, and most crucially, the administrators had to be willing for the research to take place on their OSG.

After surveying the available OSGs, six were closely considered but only one met all the criteria and, crucially its webmaster agreed to the research being carried out. Psych Central is a US-based website which claims to be the largest and oldest independent mental health and psychology network, online since 1995. The site is owned and overseen by a clinical psychologist, Dr John Grohol. At the time of

writing the OSG claims a membership of over 250,000, with over 3 million posts spread across 284,000 threads.

Users in the OSGs take part in 53 forums, ranging from everything from "Steps to Better Self-Esteem" to "Adult Children of Alcoholics", although many are less specific than these, such as "Bipolar" and "Coping with Emotions". However, two forums within the OSG were of particular interest: the "Depression" forum and the "Anxiety, Panic and Phobias" forum. Both of these have lively and active discussions ongoing, along with many positive features that good OSGs display, such as established members who welcome new users and a wide variety of users.

3.1.2 The control group

The selection of a control group for an online study is problematic. Traditional waitlist control groups would seem the obvious choice and in offline studies participants can be followed up face-to-face, or at least over the telephone to ensure that they stay in the study. Online, though, with only electronic contact, the temptation to drift away from the study may be too great. An active control group, acting as an attention placebo, therefore, involving regular 'expressive writing' was considered a better option.

Expressive writing is an exercise developed by Pennebaker and colleagues in the 1980s (Pennebaker & Beall, 1986). This involves asking participants to write about "a traumatic experience" for between 15 and 20 minutes per day over a period of 3 to 5 days. In the last two decades over 200 expressive writing studies have been published. A recent meta-analysis suggested that expressive writing is effective in reducing psychological distress and increasing physical health, although the

aggregated effect size is very small: .075 (Frattaroli, 2006). This small effect size suggests that expressive writing may prove a useful comparison group in that it may act as an attention placebo control. There are also some similarities between the expressive writing exercise and the interactions between OSG users: both involve the expression of upsetting thoughts and emotions. The difference in the case of expressive writing, though, is that the writing is only addressed to the self, whereas in an OSG it is addressed to the online community of the forum. In some ways, then, an OSG can be seen as expressive writing with the added benefit of human interaction, opportunity to help others and feedback from the group.

While there are similarities between the writing in OSGs and expressive writing, they should not be overstated. The expressive writing intervention is normally administered over only a few sessions, perhaps only over a week, whereas usage and membership of an OSG can and does extend over months and even years--the expressive writing paradigm has not been tested over these timescales. In addition self-presentational issues ("How will other people react to what I say?"), which are likely to be largely absent from the mind of an expressive writer, may be more to the fore in an OSG, where, despite their anonymity, participants will still be concerned what others think of them. Despite these differences, expressive writing provides a good comparison because the activity itself has some parallels with posting to an OSG.

3.1.3 Attrition and adherence in online interventions

One of the main challenges for conducting an evaluation of an OSG is the question of attrition and adherence. Online studies have consistently shown high attrition and low adherence. Indeed Eysenbach (2005) has argued that this is probably a marker of online studies. An important goal of the pilot studies, therefore, was to estimate attrition and adherence rates in both arms of an RCT. These estimates meant that a power calculation was more likely to accurately forecast the sample required to detect the expected effect size. In addition, simple methods of enhancing adherence--frequent email contact--were tested.

3.1.4 Testing the technology

Since the study was conducted wholly online, a number of systems needed to be implemented in order to administer the users. The major components required were: (1) a website as a home base for the study's participants, (2) some method of administering the measures and (3) a method of issuing email reminders. Due to a limited budget that prevented bespoke coding, existing and available technologies had to be adapted to the purpose.

A domain was registered and website set up which contained the recruitment and participant information (<http://www.onlinesupportresearch.com/>). This dealt with the first component. The second component was addressed by using software available through University College London called 'Opinio'. This allows the online gathering of survey responses and it can issue regular email reminders to users.

This appeared to provide the basic technological building-blocks for the study, but, like any new system: while it might work well in theory, the practice is

frequently different. A major component of the pilot studies, therefore, was to examine whether the website, online survey software and email reminders would work in practice.

3.2 Pilot 1: The online support group condition

3.2.1 Method

3.2.1.1 Design

The study used a three-month prospective research design, with measurement points before and after the intervention along with biweekly monitoring of usage.

3.2.1.2 Intervention

Participants were asked to join and take part in the depression OSG, Psych Central (<http://forums.psychcentral.com/>). The online support groups cover a huge range of mental health topics, including depression, anxiety, personality disorders, eating disorders and PTSD. The forums were chosen because they are highly active and have a wide variety of users from around the world. At any one moment there are thousands of members online discussing many different types of issues.

3.2.1.3 Participants

Thirty participants (18 female) were recruited online via <http://www.spring.org.uk>, my own psychology website, which describes psychological research for the lay person (see Appendix S). The inclusion criteria were that participants were over 18, living in the UK, English-speaking and experiencing depression, stress or anxiety.

3.2.1.4 Ethics

The study was approved by the University College London Research Ethics Committee (UCL Ethics Project ID Number: 1376/001; see Appendix Q). Online informed consent was obtained from all participants (Appendix H contains the participant information sheet and informed consent for the main RCT: the relevant documents for the current pilot were the same except with reference to the expressive writing condition removed).

3.2.1.5 Measures

The primary outcome measure was the *Center for Epidemiologic Studies Depression Scale* (CES-D; Radloff, 1977; see Appendix A) which is a 20 item scale that measures depressive feelings and behaviour in the last week. The items (e.g. "[in the last week] I was bothered by things that usually don't bother me.") are rated on a 5-point scale from 1 = "Rarely or none of the time (less than 1 day)" to 5 = "Most or all of the time (5-7 days)". It has been validated for online use (Ogles et al., 1998). Cut-offs for depression vary between scores of 16 and 27 (Beekman, Deeg, Van Limbeek, Braam, De Vries & Van Tilburg, 1997; Parikh, Eden, Price & Robinson, 1988; Radloff, 1977). The instrument has been well validated and shown to have good psychometric properties (Schulberg, Saul, McClelland, Ganguli, Christy & Frank, 1985).

The *Medical Outcomes Study Social Support Survey* (MOSSSS; Sherbourne & Stewart, 1991; see Appendix B) is a 19 item scale that assesses perceived functional social support. The items ask how often someone is available to give certain types of social support (e.g. "Someone to give you good advice about a crisis.") and it is rated on a 5-point scale from 1 = "None of the time" to 5 = "All of the time". It has five

subscales: emotional support, informational support, affection, tangible support and positive interaction. Analysis of the scale shows it has high internal consistency (Cronbach's alpha > 0.95; Sherbourne & Stewart, 1991)

The *Satisfaction with Life Scale* (SWLS; Diener, Emmons, Larsen, & Griffin, 1985; see Appendix C) measures global satisfaction with life. This measure has five items (e.g., "In most ways my life is close to ideal") rated on a 7-point scale, from 1 = "Strongly disagree" to 7 = "Strongly agree". It has good reliability and validity (Pavot & Diener, 1993; Weinman, Wright & Johnston, 1995).

A modified version of the *Brief Illness Perception Questionnaire* (IPQ; Weinman, Petrie, Moss-Morris & Horne, 1996; see Appendix D) was used to assess participant's expectations. The standard scale has nine items, five of which assess cognitive illness representations, two assess emotional representations, one assesses illness comprehensibility and one assesses causal representations. Only five of these were used in the current study, in a slightly modified form to make them relevant for the study's participants (see Appendix D). The items (e.g. "How much does your condition (e.g. depression, anxiety) affect your life?") are rated on a 11-point scale from "0 (no effect at all) up to "10 (severely affects my life". The IPQ has been shown to have good reliability and validity (Broadbent, Petrie, Main & Weinman, 2006).

The trait section of the *State-Trait Anxiety Inventory* (STAI; Spielberger, Gorsuch & Lushene, 1970; see Appendix E) was used to measure anxiety. The scale has 20 items consisting of statements about the self such as "I am a steady person" which respondents rate on a 4-point scale from 1 = "Almost never" to 4 = "Almost

always". The psychometric properties of the scale are well-established (e.g. Barnes, Harp & Jung, 2002; Vautier, 2004).

3.2.2 Results

Ages ranged from 18 to 57 (mean 36, SD = 12) with a symmetric distribution. The initial sample was quite highly depressed with 22 exceeding the highest cut-off for depression on the CES-D (> 30), 3 borderline cases (20-30) and the remaining 5 below the cut-off for depression (< 20). Eighteen had consulted a healthcare professional about depression in the last 12 months, 9 at some other point in their lives. Of the 30 participants initially recruited, 20 had dropped out by the time the final measures were administered. Of the remaining 10, for which before and after measures were available, 3 consistently used an OSG, with one not using the group suggested.

Outcomes are not reported here as the small sample size did not make them meaningful.

3.2.3 Discussion

The substantial attrition rate is typical for research on online interventions (Murray, 2009). The sample recruited was much more depressed than was expected. It is thought that highly depressed participants are less likely to benefit from OSGs since their motivation to engage may be lower (Burns, Westra, Trockel and Fisher, 2013). A lower willingness to engage in an OSG, which, like other internet-based interventions, is already characterised by high levels of attrition and low levels of compliance, may lead to the OSG being less useful for those with higher levels of

depression. This suggested an adjustment to the wording of the advertisements in the second pilot study to recruit those with lower or borderline levels of depression. Leaving out the word 'depression' may help to recruit a sample with a range of depression.

The percentage of participants that actually used the OSG suggested was low. It was hoped this would be partly addressed by recruiting a less depressed sample since those who are less depressed are likely to have higher motivation.

Overall, though, the online methods used to recruit and administer participants worked efficiently and could be used again in the proposed RCT study.

3.3 Expressive writing condition pilot study

The RCT compares an OSG with an expressive writing comparison group intended as an attention placebo group. This pilot study tested the online recruitment and administration methods, as well as the acceptability of the procedures for participants.

3.3.1 Method

3.3.1.1 Design

The study used a six-week prospective research design, with measurement points before and after the intervention.

3.3.1.2 Intervention

Participants were asked to write about an upsetting experience for five minutes each week over a period of six weeks and this was submitted online via the study website. The amount of time participants were asked to write for was intended to help keep them engaged and was not intended as an intervention. It was chosen as a reasonable figure -- shorter than that usually used in expressive writing studies -- which did not seem too onerous on participants and was considered broadly similar to the minimum amount of time that participants might spend accessing an OSG in the comparison condition planned for the RCT.

3.3.1.3 Participants

Twenty-eight participants were recruited online via <http://www.spring.org.uk>, my own psychology website (see Appendix T). The inclusion criteria were that participants were over 18, living in the UK and English-speaking, and experiencing depression, stress or anxiety. The online adverts did not specifically mention depression and aimed to recruit a sample with a range of depression.

3.3.1.4 Ethics

The study was approved by the Clinical, Educational, and Health Psychology Research Department Ethics Committee (Number: CEHP/2009/023; see Appendix

R). Online informed consent was obtained from all participants (see Appendix P for participant information sheet and consent form). The pilot study was submitted to the departmental ethics committee because the scope of the pilot project was small enough for that committee to approve and at the time the full scope of the RCT had not yet been circumscribed and there was not provision within the application to the main UCL ethics committee for an expressive writing condition. The ethics application to the main UCL ethics committee was later amended to include the expressive writing for the main RCT.

3.3.1.5 Measures

Participants were administered the same standardised measures of depression, anxiety, satisfaction with life, illness perception and social support as were used in the first OSG pilot study. These were The Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), The Medical Outcomes Study Social Support Survey (MOSSSS; Sherbourne & Stewart, 1991), Satisfaction with Life Scale (SWLS; Diener, Emmons, Larson, & Griffin, 1985), the illness perception questionnaire (IPQ; Weinman, Petrie, Moss-Morris & Horne, 1996) and the State-Trait Anxiety Inventory (STAI; Spielberger et al., 1970).

3.3.2 Results

Ages ranged from 18 to 59 (mean 36, SD = 13) with a symmetric distribution. On the CES-D, 6 participants exceeded the highest cut-off for depression (> 30), 6 were borderline cases, while the remaining 16 participants were below the cut-off for depression (< 20). Twelve had consulted a healthcare professional about depression in the last 6 months, 7 at some other point in their lives, and the remaining 9 had never consulted a healthcare professional. Of the 28 participants originally recruited,

13 had dropped out by the time the final measures were administered, leaving 15 participants who submitted their expressive writing and completed the final measures.

Outcomes are not reported here as the small sample size did not make them meaningful.

3.3.3 Discussion

The fact that the attrition rate of 13/28 participants was 20% lower than for the OSG pilot suggested an important point about recruitment for the RCT: to achieve comparable group sizes at the study's conclusion, more participants would be required in the OSG arm of the RCT than the expressive writing arm to account for the differential drop-out rates. The differences in drop-out rates also suggested that participants may have found the expressive writing task more acceptable than the OSG. Alternatively, the lower drop-out could be explained by the shorter duration of the expressive writing pilot (6 weeks) in comparison to the OSG pilot (12 weeks). These questions were further addressed both qualitatively and quantitatively in the RCT.

The re-worded advert was successful in recruiting a less depressed sample, so similar wording was used for the RCT. The pilot study also showed that the methods used for recruiting, collecting data and administering the study were effective. As in the first pilot study, though, the numbers recruited were not large enough to draw any conclusions from the outcome measures.

Chapter 4: A Randomised Controlled Trial of Online Support Groups for Depression and Anxiety

4.1 Introduction

The previous chapter reported two pilot studies that were conducted to prepare for a full RCT of an OSG for depression and anxiety. These studies were designed to investigate the expected levels of attrition and adherence in a larger scale study, the use of a particular OSG and how the Internet technologies would perform. These pilot studies suggested the technologies worked adequately -- although drop-outs were high and usage of the OSG was low -- and that an OSG called 'PsychCentral' would provide a destination for participants in one arm of the RCT. The second pilot study tested the use and acceptance of an expressive writing comparison condition. This was also found to be acceptable for participants.

The mechanisms by which OSGs may be beneficial are, as yet, unknown, although social comparison theory, for example, suggests that downward comparisons may boost self-esteem, while upward comparisons may provide hope. Other theoretical mechanisms of action include the beneficial effects of personal disclosure, feeling of universality, the helper-therapy principle and empowerment (see chapter 1). Social support, meanwhile, is theorised to be increased by contact with others in an OSG while satisfaction with life is (inversely) related to depression and so may rise.

The aim of the study reported in this chapter, therefore, is to assess whether OSGs for depression and anxiety are effective for users. This study is motivated by

the NICE (2009) guidelines, which recommend the development of accessible help and support for people with common mental health problems like depression and anxiety. OSGs, which are very popular, have the potential to be a useful adjunct to other types of more intensive treatment like CBT or, potentially, a standalone low-intensity intervention. Should they prove effective, OSGs could be incorporated into everyday clinical practice.

This study is designed to address the question of the effectiveness of an existing OSG for those volunteering to join it. The design of the study was a randomised control trial and the hypothesis was that participants randomised to the OSG would show greater improvement on the main outcome measures (reduced depression and anxiety) than those in the expressive writing comparison group. In addition to the primary outcome measures, secondary outcomes were perceived social support and satisfaction with life. Since increased social support is one of the mechanisms by which OSGs are thought to benefit their users, it was hypothesised that this would improve over time. Finally, if depression decreases, then it was hypothesised that satisfaction with life may also be boosted.

In addition, a word count analysis was conducted to examine the associations between the use of words in psychologically relevant categories and the reduction in depression. The two separate hypotheses were that there would be an association between lower depression scores and participants who: (1) expressed more positive and negative emotions and (2) used more other-focused pronouns.

4.2 Method

The study was a CONSORT-R compliant RCT (Moher, Schulz & Altman, 2001). The study's protocol was registered with clinicaltrials.gov, which is a database of clinical trials on human participants that is run by the U.S. National Institute of Health. The protocol can be viewed at <http://clinicaltrials.gov/ct2/show/NCT01149265> (see Appendix F).

4.2.1 Design

A six-month randomised control trial with participants randomised to either (1) an OSG or (2) an expressive writing condition. Measurement points were at intake, at 3-months and 6-months. Participants were randomised at a 2:1 ratio in favour of the OSG condition (this was because the pilot results suggested attrition would be twice as large in the OSG condition compared with the expressive writing condition).

4.2.2 Recruitment

To recruit an online sample, adverts were placed on the popular psychology-based website "PsyBlog", which is run by myself (see Appendix G) and other potentially sympathetic individuals and organisations were contacted to spread the word online through other websites, Facebook and Twitter. This included a celebrity tweet about the study by Stephen Fry.

The inclusion criteria were that participants were over 18, had regular access to the Internet, were living in the UK, the US or Canada and were English-speaking and experiencing self-defined depression or stress. Applicants who did not meet these criteria were sent an email thanking them for their interest.

Recruitment was carried out between April and July 2010.

4.2.3 *Participants*

The demographic characteristics of (1) participants who completed the baseline measures and (2) participants who were eligible for analysis, are shown in Table 6. The ways in which participants reported finding the study are shown in Table 7. At baseline, 863 participants (628 female; 73%) were recruited, 578 (67%) from the UK, 252 (29%) from the US and 33 (4%) from Canada. Details of participant flow are given in Figure 2. Of these 204 (157 female; 76%) completed the final measures; 128 (63%) from the UK, 64 (32%) from the US and 12 (6%) from Canada. Simple randomisation with a 2:1 ratio was carried out remotely by one of my research supervisors, a qualified statistician, using random numbers generated in Excel.

Table 6: Demographics for (1) all participants who completed the baseline measures and (2) for all participants who were eligible for analysis, by condition.

Variable	Baseline (n = 863)	Expressive Writing (n = 101)	OSG (n = 103)	Total completers (n = 204)
Gender				
<i>Male</i>	235 (27%)	24 (24%)	26 (25%)	50 (25%)
<i>Female</i>	628 (73%)	77 (77%)	77 (75%)	154 (75%)
Age				
<i>Mean (SD)</i>	34 (12)	37 (12)	35 (12)	36 (12)
<i>Range</i>	18-75	18-64	18-66	18-66
Employment status				
<i>Full-time</i>	393 (46%)	36 (36%)	47 (45%)	83 (41%)
<i>Part-time</i>	110 (13%)	22 (22%)	16 (16%)	38 (19%)
<i>Student</i>	153 (18%)	9 (9%)	19 (18%)	28 (14%)
<i>Looking after home/family</i>	40 (5%)	4 (4%)	5 (5%)	9 (4%)
<i>Unemployed because of poor health</i>	60 (7%)	13 (13%)	9 (9%)	22 (11%)
<i>Unemployed for other reasons</i>	69 (8%)	11 (11%)	5 (5%)	16 (7%)
<i>Retired</i>	25 (2%)	6 (6%)	1 (1%)	7 (3%)

<i>Other</i>	13 (1%)	0 (0%)	1 (1%)	1 (1%)
Education				
<i>Some high/secondary school</i>	22 (3%)	2 (2%)	1 (1%)	3 (2%)
<i>Completed high/secondary school</i>	86 (10%)	7 (7%)	14 (14%)	21 (10%)
<i>Some college/university</i>	314 (36%)	29 (29%)	24 (23%)	58 (25%)
<i>Degree (E.g. BSc BA)</i>	282 (33%)	40 (40%)	37 (36%)	77 (38%)
<i>Advanced degree (E.g. Masters, Doctorate)</i>	159 (18%)	23 (23%)	27 (26%)	50 (25%)
Ethnicity				
<i>White</i>	753 (87%)	91 (91%)	94 (91%)	185 (90%)
<i>Asian (including Indian)</i>	38 (4%)	4 (4%)	3 (3%)	7 (3%)
<i>Black</i>	34 (4%)	0 (0%)	1 (1%)	1 (1%)
<i>Hispanic</i>	9 (1%)	1 (1%)	0 (0%)	1 (1%)
<i>Mixed</i>	13 (2%)	4 (4%)	4 (4%)	8 (4%)
<i>Other</i>	16 (2%)	1 (1%)	1 (1%)	2 (1%)
Country				
<i>United Kingdom</i>	578 (67%)	63 (63%)	65 (63%)	128 (63%)
<i>United States</i>	252 (29%)	32 (32%)	32 (31%)	64 (32%)
<i>Canada</i>	33 (4%)	6 (6%)	6 (6%)	12 (6%)

Consulted a healthcare professional				
<i>Within the last year</i>	393 (45%)	54 (54%)	50 (48%)	104 (51%)
<i>More than a year ago</i>	281 (33%)	35 (35%)	35 (34%)	70 (34%)
<i>Never</i>	181 (21%)	11 (11%)	17 (17%)	28 (14%)
<i>Not sure</i>	8 (1%)	1 (1%)	1 (1%)	2 (1%)
Seeing a therapist				
<i>Yes</i>	191 (22%)	26 (26%)	26 (26%)	52 (26%)
<i>No</i>	659 (76%)	72 (72%)	71 (71%)	143 (71%)
<i>Not sure</i>	13 (2%)	3 (3%)	3 (3%)	6 (3%)
Taking medication				
<i>Yes</i>	257 (30%)	33 (33%)	41 (40%)	74 (36%)
<i>No</i>	601 (69%)	66 (66%)	61 (59%)	127 (63%)
<i>Not sure</i>	5 (1%)	2 (1%)	1 (1%)	3 (1%)
Used a face-to-face support group before				
<i>Yes</i>	180 (21%)	19 (19%)	20 (19%)	39 (19%)
<i>No</i>	672 (78%)	80 (80%)	80 (78%)	160 (79%)
<i>Not sure</i>	11 (1%)	2 (2%)	3 (3%)	5 (2%)
Used an OSG before				
<i>Yes</i>	107 (12%)	16 (16%)	14 (13%)	30 (15%)

<i>No</i>	736 (85%)	82 (82%)	86 (84%)	168 (82%)
<i>Not sure</i>	20 (3%)	3 (3%)	3 (3%)	6 (3%)

Table 7: *How participants found the study*

Source	N
PsyBlog	187 (22%)
Twitter	412 (48%)
Gumtree	2 (< 1%)
Facebook	56 (6%)
Google Search	58 (7%)
Discussion forum	36 (4%)
Other	114 (13%)
Total	863

4.2.4 *Dropout rates*

The overall dropout rate for the study was very high at 83% but is comparable with similar studies conducted online (Eysenbach, 2005). The vast majority of participants did not indicate why they left the study. The dropout rate in the OSG condition was 85% at 3 months and 87% at six months while in the expressive writing condition it was 69% at 3 months and 75% at 6 months. The full CONSORT-R flow-chart is shown in Figure 2 (Moher, Schulz & Altman, 2001).

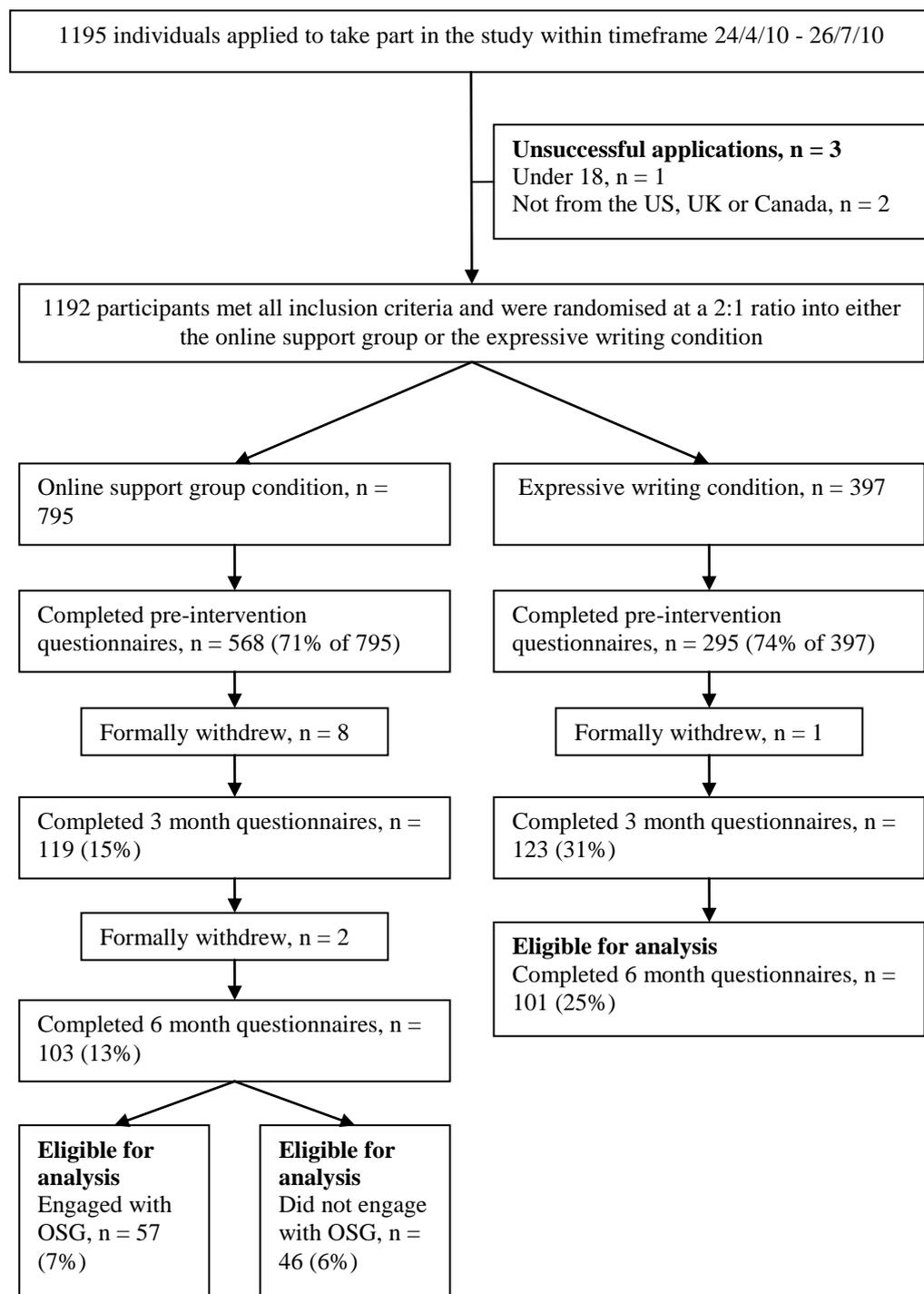


Figure 2: CONSORT-R participant flow chart

4.2.5 Ethics

The study was approved by the University College London Research Ethics Committee (UCL Ethics Project ID Number: 1376/001; see Appendix Q). Online informed consent was obtained from all participants (see Appendix H for participant information sheet and informed consent).

4.2.6 Interventions

Both groups received access to the study's website, hosted at <http://www.onlinesupportresearch.com/>. This provided a hub from where, along with email contact, the study was administered. From here, they were given detailed instructions about the study protocol depending on their experimental condition.

4.2.6.1 Online support group

The participants in the OSG condition were directed to take part in the groups hosted at Psych Central (<http://forums.psychcentral.com/>). See sections 3.1.1 and 3.2.1.2 for a full description.

The first step for the participants in the OSG condition was to register with Psych Central. All participants entered the OSG at the same time. This involved choosing a username, password, and, most importantly a screen name (see Appendix I). Registering and getting a screen name allowed them to post anonymously to the OSG--participants were reminded that it was important they did not use a screen name that personally identified them. In getting started participants were first directed to the FAQ (frequently asked questions page) at the Psych Central forums and asked to familiarise themselves with the terms and conditions. Secondly they were provided with a list of hints and tips produced by the researcher which outlined

the potential benefits and 'issues' they may face in the OSG (see Appendix J). Participants were also told they could contact the researcher at any stage if they were having any problems with the OSG. Both on the website and through email, participants were encouraged to post an introductory message in the OSG and to try and take part in the ongoing discussions or start their own threads.

4.2.6.2 Expressive writing condition

The expressive writing paradigm was developed by Pennebaker and Beall (1986). It involves participants writing about their thoughts and feelings, often upsetting ones, for a short period of time. The typical protocol involves asking participants to write about "a traumatic experience" for between 15 and 20 minutes per day over a period of 3 to 5 days. In the current study, however, participants were asked to write for only a minimum of five minutes every two weeks over the six months of the study. The instructions were slightly modified from those used by Pennebaker and Beall (1986) to make them relevant for a study with a six month, rather than one week duration (see Appendix K). Participants were asked to carry out their expressive writing any time during the two-week period and submit it securely through the study website.

4.2.6.3 Email reminders

In both conditions, participants were each sent an email every two weeks as a reminder. In the expressive writing condition, it reminded them to carry out the expressive writing task and contained instructions on how to submit it online (see Appendix O). In the OSG condition it reminded them to take part in the OSG as well as asking how much they had accessed and used the site in the last two weeks (see Appendix N).

4.2.7 *Sample size and randomisation*

A power calculation suggested that 51 participants per group would provide sufficient power to detect a medium between-groups effect size (Cohen's $d = 0.5$). The power calculation was carried out on the depression outcome (CES-D) using the G*Power 3 computer program (Faul, Erdfelder, Lang & Buchner, 2007), specifying $\alpha = 5\%$ and desired power = 80%. To reach a minimum of 51 participants per group, however, a much larger number of participants needed to be recruited. The pilot studies reported in Chapter 3 suggested a 90% attrition rate in the OSG group should be expected along with 70% attrition in the expressive writing group. Therefore to achieve the required power 1,200 participants were recruited. Because of the greater attrition in the OSG group in the pilot study, randomisation was carried out at a 2:1 ratio in favour of the OSG group condition. The 863 participants who completed the initial measures, after six months, were reduced to 103 and 101 in the expressive writing group who engaged with the task and completed the final measures (see Figure 2 above).

4.2.8 *Outcome measures*

The primary outcome measure was the *Center for Epidemiologic Studies Depression Scale* (CES-D; Radloff, 1977; see Appendix A) which is a 20 item scale that measures depressive feelings and behaviour in the last week. The *Medical Outcomes Study Social Support Survey* (MOSSSS; Sherbourne & Stewart, 1991; see Appendix B) is a 19-item scale that assesses perceived functional social support.

The *Satisfaction with Life Scale* (SWLS; Diener, Emmons, Larson, & Griffin, 1985; see Appendix C) measures global satisfaction with life.

The *General Anxiety Disorder Questionnaire* (GAD-7; Spitzer, Kroenke, Williams & Lowe, 2006; see Appendix L) measures anxiety and is a 7-item scale. The scale asks how often in the last 2 weeks the respondent has felt nervous (e.g. "worrying too much about different things"). It is rated on a 4-point scale from 0 = "Not at all" up to 3 = "Nearly every day". It has demonstrated good psychometric properties (Cronbach's alpha = 0.92; Kroenke, Spitzer, Williams, Monahan & Lowe, 2007). This scale was preferred over the STAI due to cost issues.

A slightly modified version of the *Brief Illness Perception Questionnaire* (IPQ; Weinman, Petrie, Moss-Morris & Horne, 1996; Appendix D) was used to assess participants' expectations. The standard scale has nine items, five of which assess cognitive illness representations, two assess emotional representations, one assesses illness comprehensibility and one assess causal representations. Only five of these were used in the current study, in a slightly modified form to make them relevant for the study's participants. The items (e.g. "How much does your condition (e.g. depression, anxiety) affect your life?") are rated on a 11-point scale from "0 (No effect at all) up to "10 (Severely affects my life". The IPQ has been shown to have good reliability and validity (Broadbent, Petrie, Main & Weinman, 2006).

Participants' level of satisfaction with the OSG was measured at the end of the study using the *Online Support Group Questionnaire* (OSGQ; Chang et al., 2001; Appendix M). The scale has nine items which measures satisfaction across three areas: comfort-connection, relevance and support. These measure how comfortable participants feel raising issues, the relevance of issues discussed and how much they felt supported by others. The items (e.g. "I felt satisfied with being part of the group") are rated on a 7-point scale which ranges from "0 (Not at all)" up to "7 (Very

much)". Good internal consistency and reliability has been reported for this measure (Chang et al., 2001).

4.2.9 OSG process measures

4.2.9.1 Engagement

Participants' engagement with the OSG was assessed by asking them to report their usage every two weeks (Appendix N). Firstly, they were asked how often they had accessed the OSG in the last two weeks. Responses were categorical: 0 = Not in the last two weeks; 1 = Once; 2 = Twice; 3 = Between 3 and 5 times; 5 = More than 5 times. Secondly, they were also asked how long they had spent accessing the OSG on each occasion. Responses were categorical: 0 = Not applicable/never; 1 = Less than 1 minute; 2 = Between 1 and 5 minutes; 3 = Between 5 and 10 minutes; 4 = Between 10 and 15 minutes; 5 = More than 20 minutes. Thirdly they were asked to report the number of messages they had posted in the last fortnight. Responses were categorical: 0 = None; 1 = Once; 2 = Twice; 3 = 3-5 times; 4 = More than 5 times.

4.2.9.2 OSG posts

To allow their posts to the OSG to be analysed, the posts were collected from the OSG. The text which participants wrote was collected, with their permission, by using their anonymous usernames to search the OSG's forums. Although 57 participants were classified as engagers with the study, it was only possible to collect data from 48. This was because nine participants did not provide their correct usernames, or did not provide their username at all. For the 48 users for whom posts were available, there were a total of 1,659 messages posted across the six months of the study. However, a large number of posts were written by 3 participants and one

participant posted over 250 times. With these outliers included, the mean number of posts was 34.6. To avoid these three participants being too strongly represented, for those participants who had posted more than 32 times, their messages were randomly sampled to make 32 the maximum number of posts analysed. This method led to a mean number of posts analysed of 15 for each participant. In addition, some posts were excluded from the analysis. The first category were those posts to one of the forums on the OSG called 'Games', which consisted of word games. The second category were those which were short replies to simple questions, such as "What is your favourite song?".

The text was cut and pasted and cleaned up in Microsoft Word for analysis in the word counting software, Linguistic Inquiry and Word Count, version 1.08 (LIWC; Pennebaker et al., 2007). The software uses a dictionary containing 86% of the words commonly used in speech and writing. These have been placed into one or more of 64 categories, only a handful of which are relevant to the present study. The categories which were of particular relevance in this study were positive and negative emotions words and the pronouns denoting either the first person singular and plural versus those denoting the second and third person singular and plural. The software outputs the total number of words (as a percentage) that match the categories.

4.3 Results

While the study protocol formally involved randomising to two groups, the pilot studies demonstrated that three groups were naturally created. In the pilot studies participants in the expressive writing group either continued with the expressive writing task or dropped out of the study. In the OSG group, though, the pattern was different: some participants, however minimally, engaged with the support group and some participants did not, despite remaining in the study and completing the final measures. So the OSG group was naturally split into two: engagers and non-engagers. In this case positive engagement with the OSG was defined as when participants reported having accessed or used the OSG on at least two occasions across the twenty-four weeks of the study. This figure was chosen as it split the OSG group roughly in half. Although the cut-off point is relatively low, this is against a background of low usage of the OSG in general. Therefore, the analysis involves three groups: those who engaged with the OSG, those who did not engage with the OSG and those in the expressive writing condition.

The first section of the results describes the pattern of engagement in the OSG group, demonstrating the difference between those who engaged and those who did not. The outcome measures are then analysed in a post-hoc comparison for all three groups, but inferential statistics are first carried out on the original two-group design before analysing the three-groups that have naturally been created.

4.3.1 OSG engagement

All the engagement statistics in this section are self-reported. Participants were asked to estimate these figures twelve times in the study, on each occasion covering

the last two weeks. Table 8 shows the frequency of responses to the question asking the frequency at which the OSG was accessed each fortnight for all the participants (the responses are categorical). This shows the average declining from twice a fortnight down to less than once a fortnight by the end of the study. Table 9 shows the frequency of responses for the amount of time spent accessing the OSG. This declines from around five minutes in the first week to considerably less than one minute towards the end. Table 10 shows the frequencies of responses for the number of posts participants made. This declines from about two in the first fortnight, down to little more than none by the twelfth week.

Table 11, Table 12 and Table 13 show the same engagement data but split by engager versus non-engager. Much the same decline in usage can still be seen for even those that engaged with the OSG, especially up until the sixth fortnightly questionnaire, after which all measures level off. For those defined as non-engagers, though, all three measures drop dramatically within the first four to six weeks of the study.

Table 8: *Number of times per fortnight the OSG was accessed, whether to browse or post a message (response frequency)*

Fortnight	1	2	3	4	5	6	7	8	9	10	11	12
Never	17	45	51	48	58	65	69	69	75	66	65	64
Once	15	15	16	13	5	12	5	3	3	3	10	1
Twice	10	9	10	10	8	3	7	4	4	2	3	2
3-5 times	18	13	12	7	11	10	6	8	5	6	4	4
5 +	28	17	11	11	11	5	4	6	2	4	6	4

Table 9: *Amount of time in minutes spent accessing the OSG, on each separate occasion (response frequency)*

Fortnight	1	2	3	4	5	6	7	8	9	10	11	12
Never	18	45	52	49	58	65	69	69	75	66	65	64
< 1	1	3	0	1	0	1	0	0	1	0	1	1
1-5	6	9	5	7	7	9	5	4	4	3	4	1
5-10	24	18	17	17	15	12	11	10	5	7	4	4
10 - 15	21	17	17	10	8	8	6	6	3	4	8	3
15 +	18	7	9	5	5	0	0	1	1	1	6	2

Table 10: *Number of posts to the OSG in the last two weeks (response frequency).*

Fortnight	1	2	3	4	5	6	7	8	9	10	11	12
None	36	63	71	67	73	79	82	79	84	73	79	69
1	13	16	10	10	7	6	4	5	2	2	2	2
2	11	8	7	3	5	3	0	2	2	1	2	1
3-5	16	7	9	7	5	4	2	2	0	1	3	0
5 +	12	5	3	2	3	3	3	2	1	4	2	3

Table 11: *Number of times per fortnight the OSG was accessed, whether to browse or post a message for engagers versus non-engager (response frequency)*

Fortnight	1	2	3	4	5	6	7	8	9	10	11	12
Non-engagers												
Never	13	33	37	33	37	41	39	38	39	35	37	32
Once	9	5	5	2	0	1	0	1	0	0	1	0
Twice	7	3	0	1	0	0	0	0	0	0	0	0
3-5 times	4	1	0	0	0	0	0	0	0	0	0	0
5 +	2	0	0	0	0	0	0	0	0	0	0	0
Engagers												
Never	4	12	14	15	21	24	30	31	36	31	28	32
Once	6	10	11	11	5	11	5	2	3	3	9	1
Twice	3	6	10	9	8	3	7	4	4	2	3	2
3-5 times	14	12	12	7	11	10	6	8	5	6	4	4
5 +	26	17	11	11	11	5	4	6	2	4	6	4

Table 12: Amount of time in minutes spent accessing the OSG, on each separate occasion for engagers versus non-engagers (response frequency).

Fortnight	1	2	3	4	5	6	7	8	9	10	11	12
Non-engagers												
Never	13	33	37	33	37	41	39	38	39	35	37	32
< 1	1	1	0	0	0	0	0	0	0	0	0	0
1-5	2	3	1	1	0	0	0	1	0	0	0	0
5-10	9	4	3	2	0	1	0	0	0	0	0	0
10-15	4	0	1	0	0	0	0	0	0	0	1	0
15 +	6	1	0	0	0	0	0	0	0	0	0	0
Engagers												
Never	5	12	15	16	21	24	30	31	36	31	28	32
< 1	0	2	0	1	0	1	0	0	1	0	1	1
1-5	4	6	4	6	7	9	5	3	4	3	4	1
5-10	15	14	14	15	15	11	11	10	5	7	4	4
10-15	17	17	16	10	8	8	6	6	3	4	7	3
15 +	12	6	9	5	5	0	0	1	1	1	6	2

Table 13: *Number of posts to the OSG in the last two weeks for engagers versus non-engagers (response frequency).*

Fortnight	1	2	3	4	5	6	7	8	9	10	11	12
Non-engagers												
None	23	37	41	36	37	42	39	39	39	35	38	32
1	7	3	1	0	0	0	0	0	0	0	0	0
2	1	2	0	0	0	0	0	0	0	0	0	0
3-5	3	0	0	0	0	0	0	0	0	0	0	0
5+	1	0	0	0	0	0	0	0	0	0	0	0
Engagers												
None	13	26	30	31	36	37	43	40	45	38	41	37
1	6	13	9	10	7	6	4	5	2	2	2	2
2	10	6	7	3	5	3	0	2	2	1	2	1
3-5	13	7	9	7	5	4	2	2	0	1	3	0
5+	11	5	3	2	3	3	3	2	1	4	2	3

4.3.2 *Outcome: OSG versus expressive writing*

In this analysis all the participants in the OSG and expressive writing conditions who had completed the outcome measures at six months were included as per the study protocol. Means and SDs for the four outcome measures are shown in Table 14. To assess the effects of using the OSG compared with carrying out the

expressive writing task, a series of 3 (time, within groups) x 2 (condition, between groups) mixed ANOVAs were conducted. All four outcome variables showed a significant effect of time (depression: $F(2,201) = 35.00, p < 0.001$; social support: $F(2,201) = 12.29, p < 0.001$; satisfaction with life: $F(2,201) = 16.67, p < 0.001$; anxiety: $F(2,201) = 13.39, p < 0.001$) but none of the interaction effects were significant, suggesting there were no differences in the treatment effects between conditions (depression: $F(2,201) = 1.57, p = 0.21$; social support: $F(2,201) = 0.59, p = 0.56$; satisfaction with life: $F(2,201) = 0.19, p = 0.91$; anxiety: $F(2,201) = 1.09, p = 0.34$). The marginal means for each of the four outcome measures are shown in Figure 3, Figure 4, Figure 5 and Figure 6.

Table 14: *Outcome measures by condition*

Measure	Baseline M (SD)	3 months M (SD)	6 months M (SD)	Baseline - 3 months Mean difference (95 CI)	Baseline - 3 months Effect size (95CI)	Baseline - 6 months, mean difference (95 CI)	Baseline - 6 months, effect size (95 CI)
Depression (CES-D)							
Expressive writing (n = 101)	30.2 (12.2)	26.2 (12.7)	21.5 (12.7)	4.0 (0.5 - 7.5)	0.3 (0 - 0.6)	8.7 (5.2 - 12.2)	0.7 (0.4 - 1.0)
OSG (n = 103)	28.3 (12.5)	23.9 (13.2)	21.8 (13.3)	4.4 (0.9 - 7.9)	0.3 (0.1 - 0.6)	6.5 (3.0 - 10.1)	0.5 (0.2 - 0.8)
Engagers (n = 57)	30.3 (11.8)	26.1 (13.2)	23.6 (13.7)	4.2 (-0.4 - 8.9)	0.3 (0 - 0.7)	6.7 (2.0 - 11.5)	0.5 (0.2 - 0.9)
Non-engagers (n = 46)	25.7 (13.1)	21.2 (12.7)	19.6 (12.7)	4.5 (-0.8 - 9.8)	0.4 (0.1 - 0.8)	6.1 (0.8 - 11.4)	0.5 (0.1 - 0.9)
Social support (MOSSS)							
Expressive writing (n = 101)	50.9 (16.5)	52.1 (18.2)	54.3 (19.0)	-1.2 (-6.0 - 3.6)	-0.1 (-0.3 - 0.2)	-3.4 (-8.3 - 1.5)	-0.2 (-0.5 - 0.1)
OSG (n = 103)	55.1 (17.6)	57.4 (18.6)	60.4 (18.0)	-2.3 (-7.2 - 2.7)	-0.1 (0.4 - 0.2)	-5.3 (-10.2 - -0.4)	-0.3 (-0.6 - 0)
Engagers (n = 57)	52.4 (17.3)	54.8 (18.4)	59.5 (18.4)	-2.4 (-9.0 - 4.2)	-0.1 (-0.5 - 0.2)	-7.1 (-13.7 - -0.5)	-0.4 (-0.8 - 0)
Non-engagers (n = 46)	58.4 (17.6)	60.6 (18.6)	61.4 (17.6)	-2.2 (-9.7 - 5.3)	-0.1 (-0.5 - 0.3)	-3.0 (-10.3 - 4.3)	-0.2 (-0.6 - 0.2)
Satisfaction with life (SWLS)							
Expressive writing (n = 101)	14.7 (6.9)	15.7 (7.7)	17.0 (7.0)	-1.0 (-3.0 - 1.0)	-0.1 (-0.4 - 0.1)	-2.3 (-4.2 - -0.4)	-0.3 (-0.6 - -0.1)
OSG (n = 103)	15.8 (7.5)	16.9 (8.2)	17.8 (8.0)	-1.1 (-3.3 - 1.1)	-0.1 (-0.4 - 0.1)	-2.0 (-4.1 - 0.1)	-0.3 (-0.5 - 0)
Engagers (n = 57)	15.5 (8.0)	16.9 (8.8)	17.8 (8.4)	-1.4 (-4.5 - 1.7)	-0.2 (-0.5 - 0.2)	-2.3 (-5.3 - 0.7)	-0.3 (-0.7 - 0.1)
Non-engagers (n = 46)	16.2 (7.0)	16.8 (7.4)	17.9 (7.5)	-0.6 (-3.6 - 2.4)	-0.1 (-0.5 - 0.3)	-1.7 (-4.7 - 1.3)	-0.2 (-0.6 - 0.2)
Anxiety (GAD-7)							
Expressive writing (n = 101)	9.8 (5.0)	9.0 (5.4)	7.6 (5.0)	0.8 (-0.6 - 2.2)	0.2 (-0.1 - 0.4)	2.2 (0.8 - 3.6)	0.4 (0.2 - 0.7)
OSG (n = 103)	9.6 (5.5)	8.4 (5.5)	7.9 (5.8)	1.2 (-0.3 - 2.7)	0.2 (0 - 0.5)	1.7 (0.2 - 3.3)	0.3 (0 - 0.6)
Engagers (n = 57)	11.1 (4.9)	9.4 (5.1)	8.6 (5.5)	1.7 (-0.2 - 3.6)	0.3 (0 - 0.7)	2.5 (0.6 - 4.4)	0.5 (0.1 - 0.9)
Non-engagers (n = 46)	7.8 (5.6)	7.1 (5.7)	7.2 (6.1)	0.7 (-1.6 - 3.0)	0.1 (-0.3 - 0.5)	0.6 (-1.8 - 3.0)	0.1 (-0.3 - 0.5)

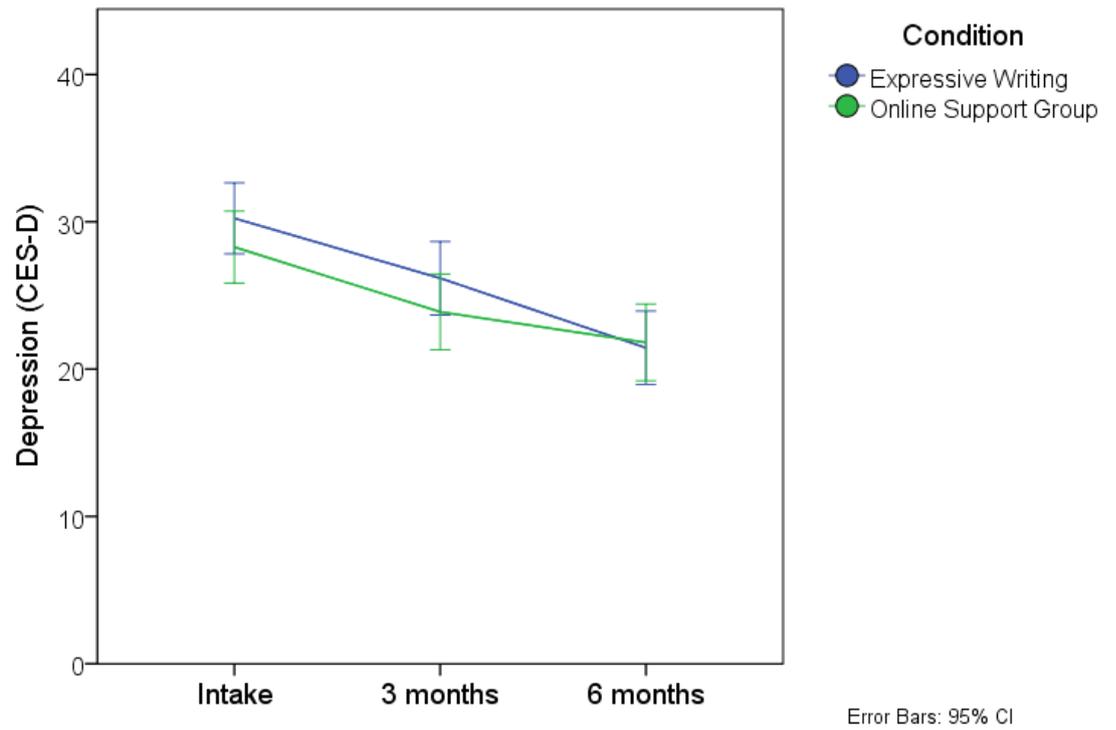


Figure 3: Mean depression scores on the CES-D at intake, three, and six months for all participants eligible for analysis.

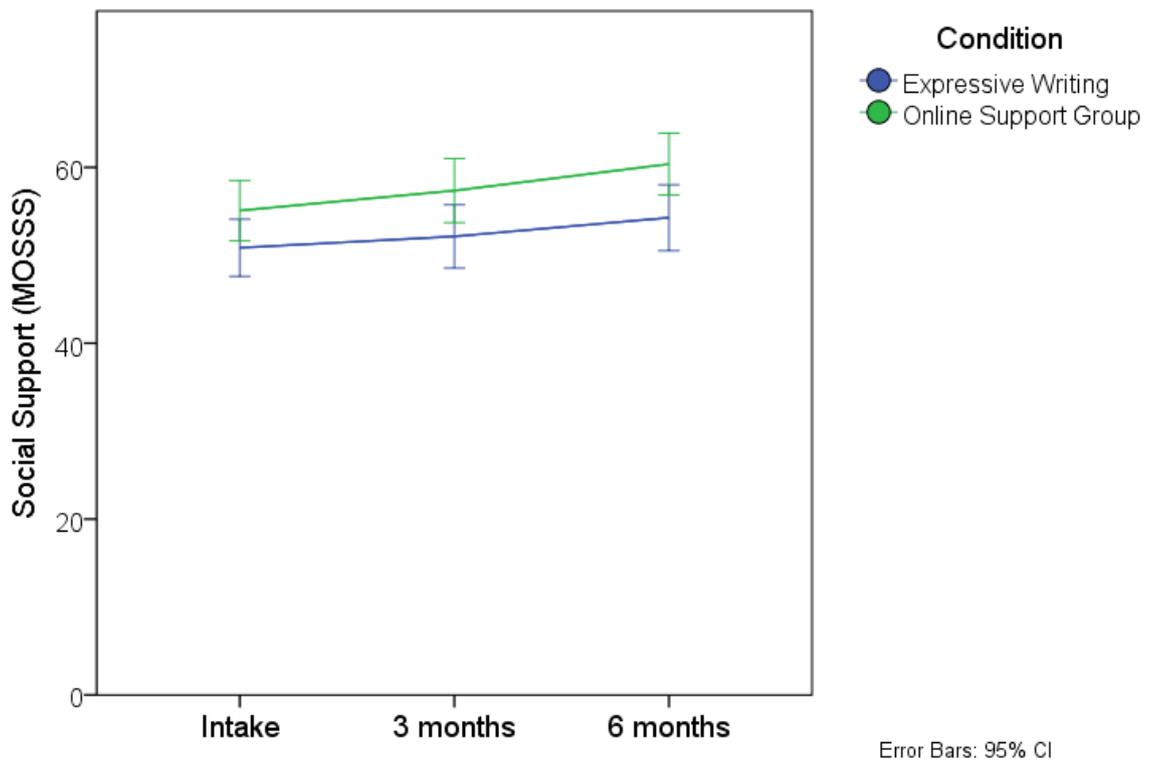


Figure 4: Mean depression social support scores on the MOSSS at intake, three, and six months for all participants eligible for analysis.

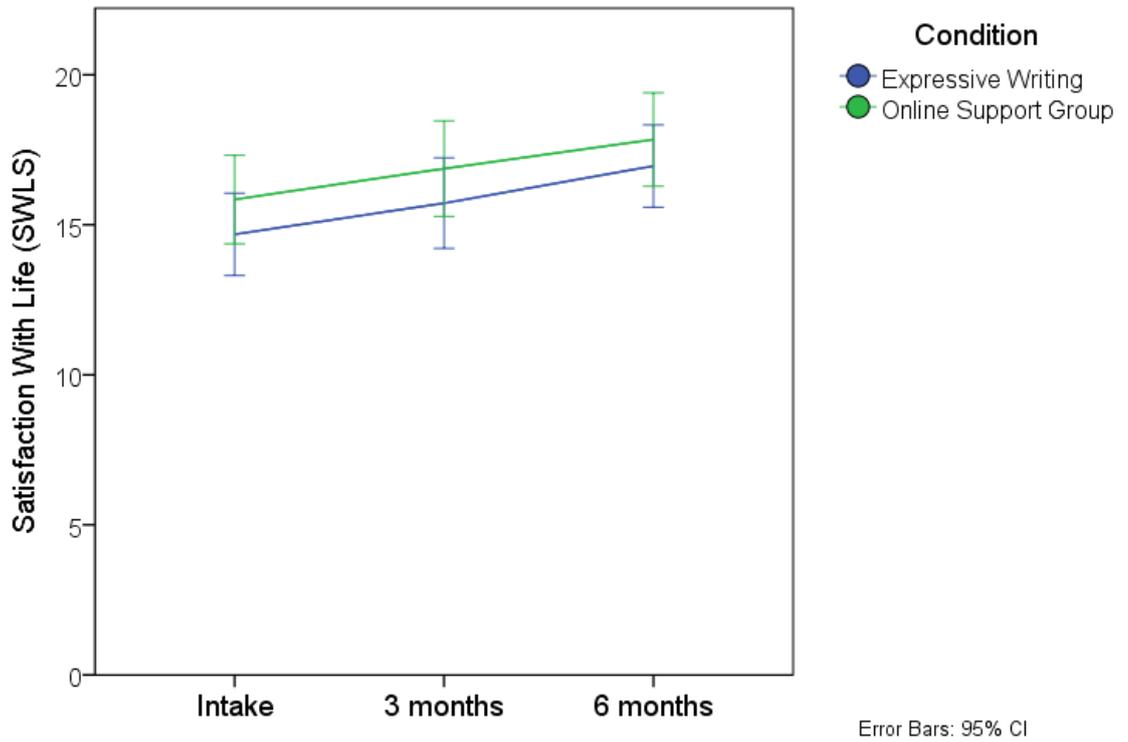


Figure 5: Mean satisfaction with life scores on the SWLS at intake, three, and six months for all participants eligible for analysis.

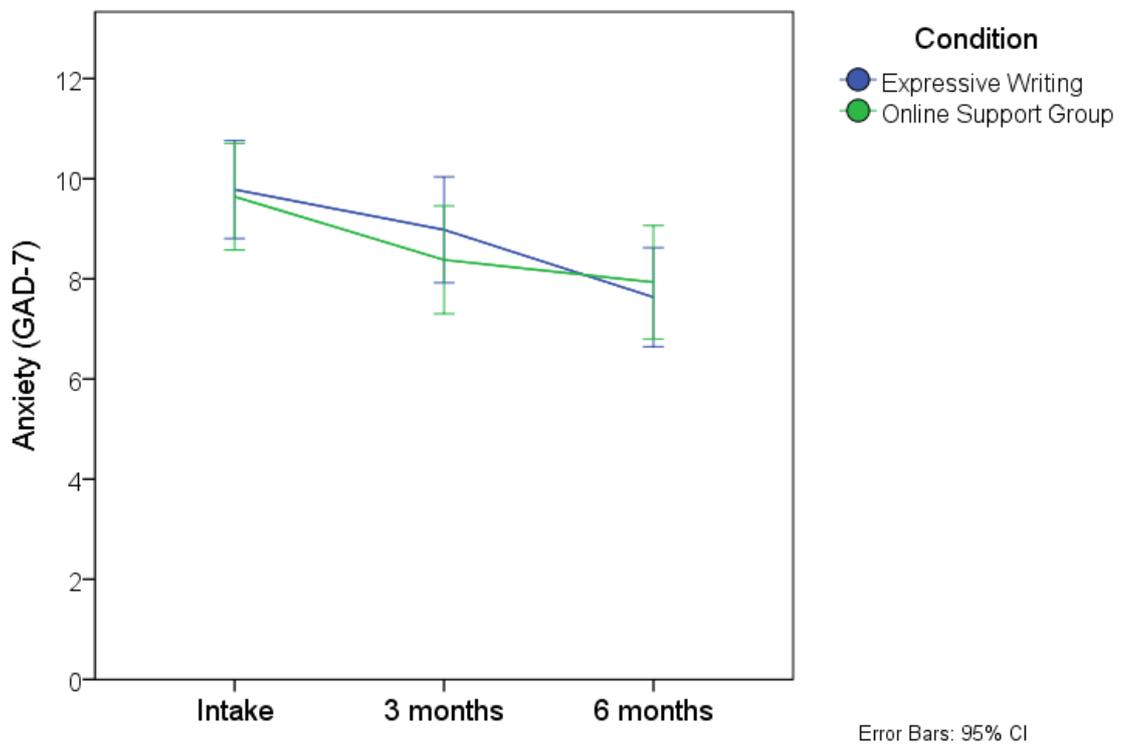


Figure 6: Mean anxiety scores on the GAD=7 intake, three, and six months for all participants eligible for analysis.

4.3.3 Outcome: Engagers versus expressive writing

Since many participants in the OSG condition did not engage with the OSG but remained in the study, a further outcome analysis was conducted in which these participants were excluded. All the participants who completed the final measures in the expressive writing condition were, therefore, compared with only those who engaged with the OSG. The criteria for an 'engager' was using the OSG on more than two occasions over the six month period. To assess the effects of using the OSG compared with carrying out the expressive writing task, a series of 3 (time, within groups) x 2 (condition, between groups) mixed ANOVAs were conducted. All four outcome variables showed a significant effect of time (Depression: $F(2,155) = 26.80$, $p < 0.001$; social support: $F(2,155) = 14.70$, $p < 0.001$; satisfaction with life: $F(2,155) = 14.05$, $p < 0.001$; anxiety: $F(2,155) = 15.74$, $p < 0.001$) but none of the interaction effects were significant, suggesting there were no differences in the treatment effects between conditions (Depression: $F(2,155) = 0.78$, $p = 0.46$; social support: $F(2,155) = 1.88$, $p = 0.16$; satisfaction with life: $F(2,155) = 0.12$, $p = 0.88$; anxiety: $F(2,155) = 0.77$, $p = 0.46$). The marginal means for each of the four outcome measures are shown in Figure 7, Figure 8, Figure 9 and Figure 10.

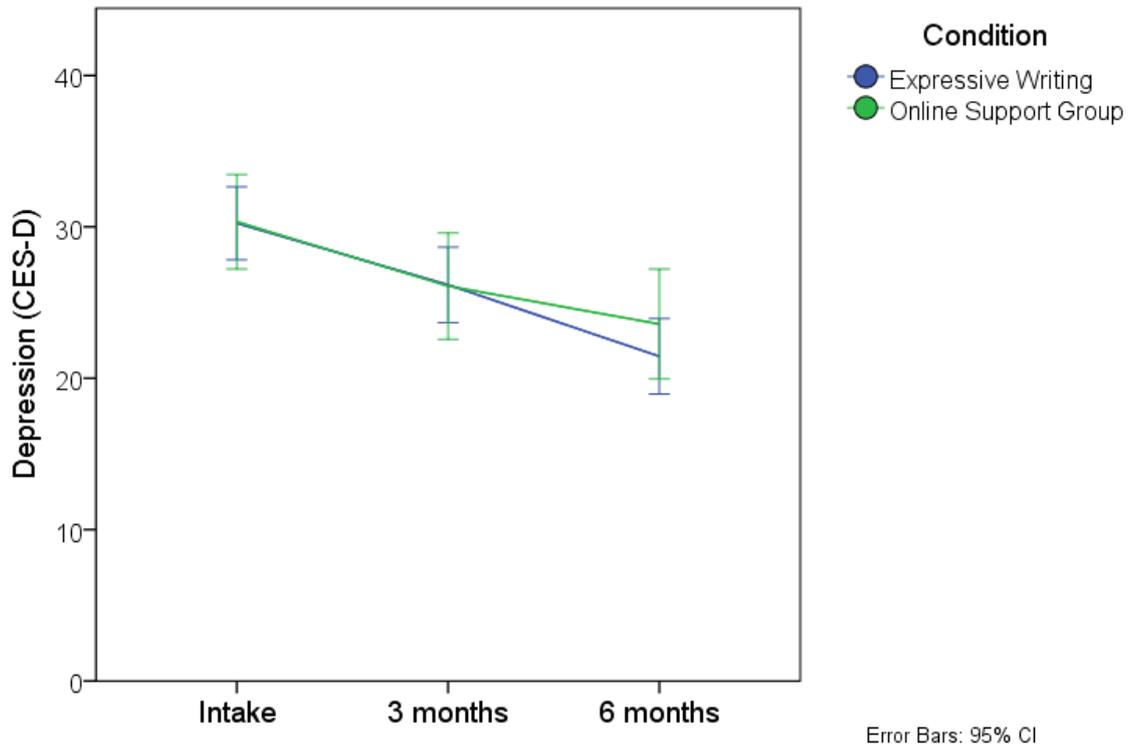


Figure 7: Mean depression scores on the CES-D at intake, three, and six months excluding those who did not engage with the OSG.

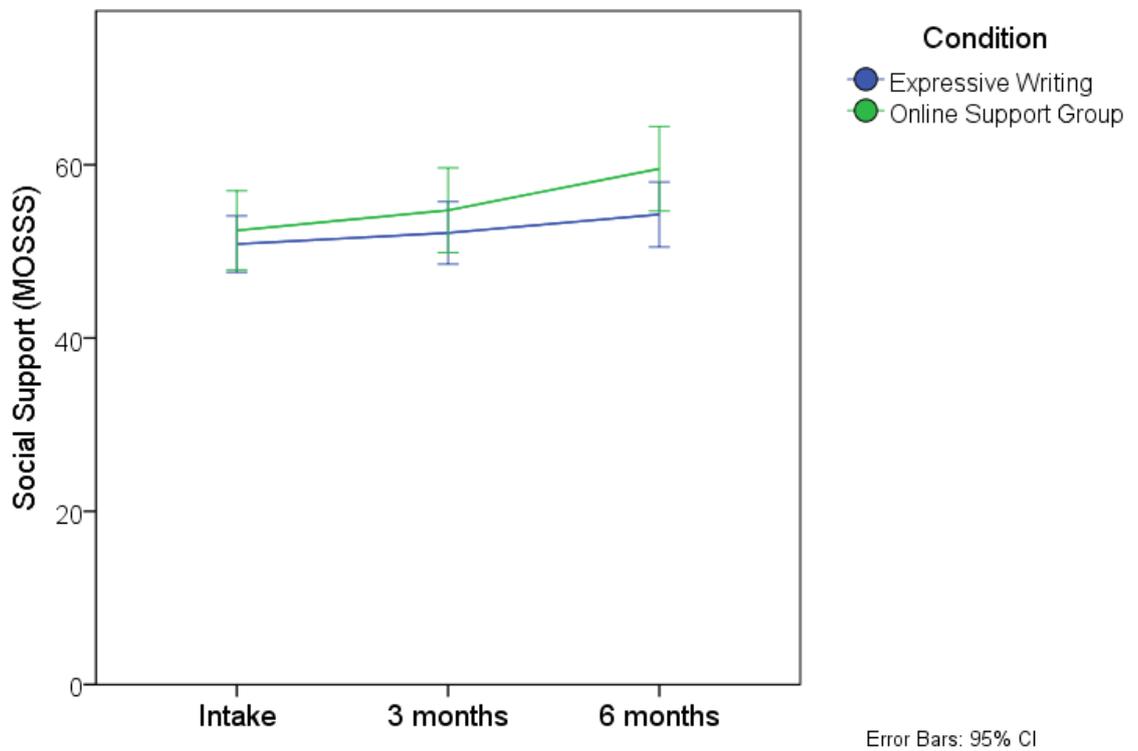


Figure 8: Mean social support scores on the MOSSS at intake, three, and six months excluding those who did not engage with the OSG.

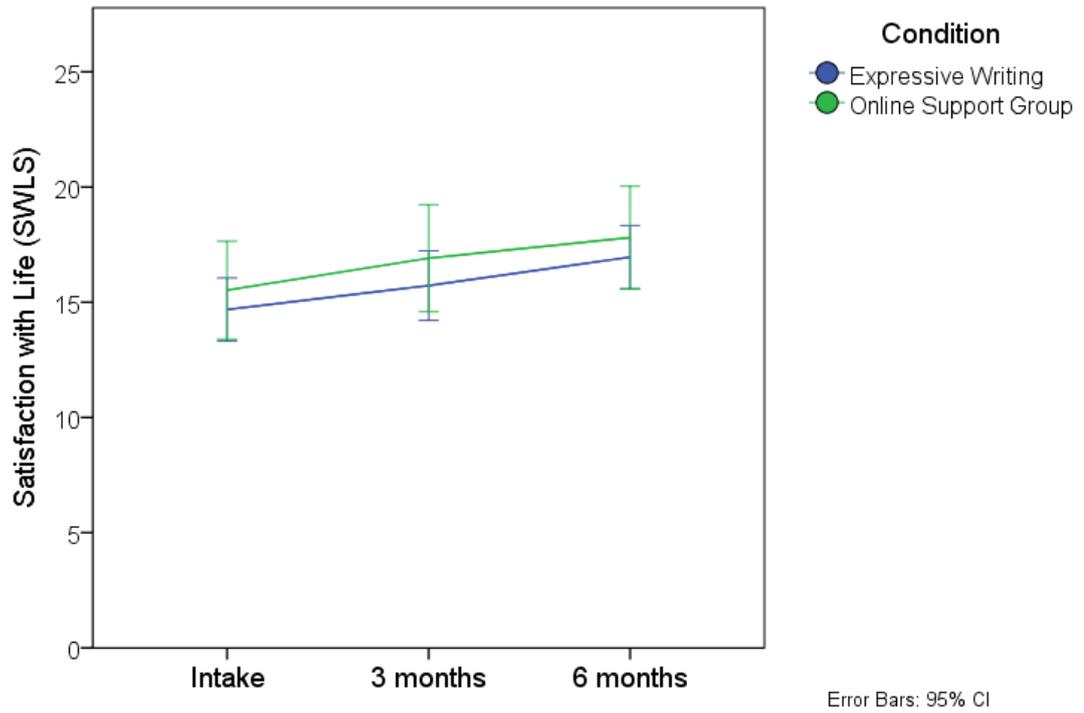


Figure 9: Mean satisfaction with life scores on the SWLS at intake, three, and six months excluding those who did not engage with the OSG.

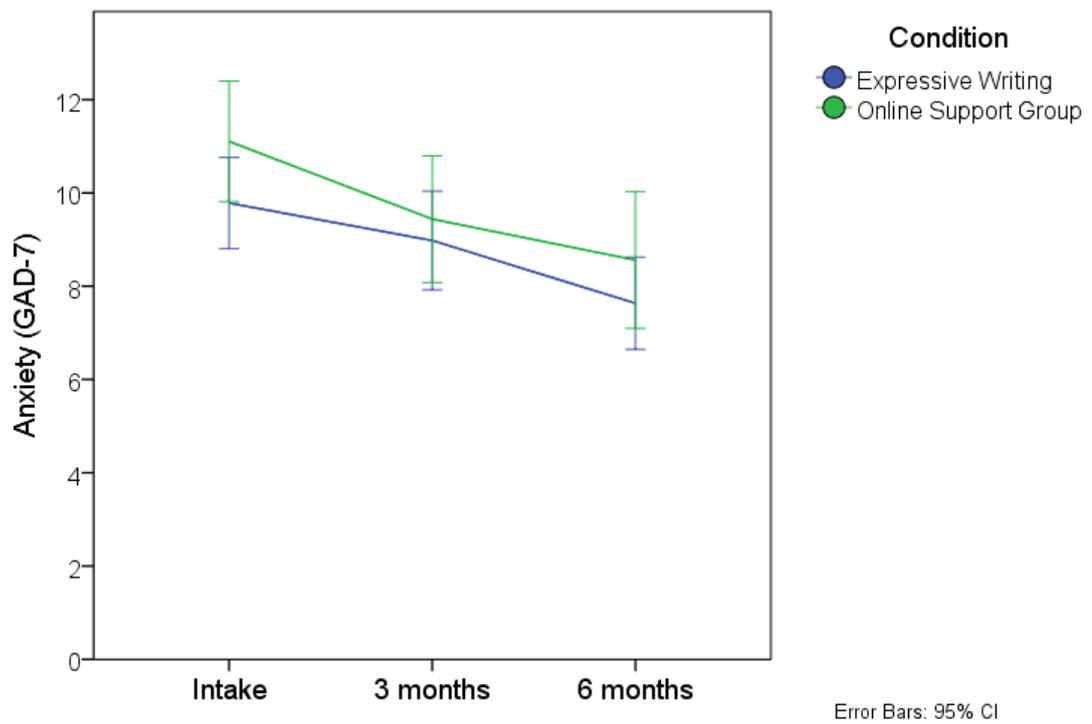


Figure 10: Mean anxiety scores on the GAD-7 at intake, three, and six months excluding those who did not engage with the OSG.

4.3.4 *Outcome: Engagers versus non-engagers*

The final analysis on the outcome measures completely removed the expressive writing condition. Instead the two groups created by the study--engagers versus non-engagers--were compared on the four outcome measures. The same criteria for an 'engager' was used as for the previous analysis: that the participant had used the OSG on more than two occasions over the six month period. To assess the effects of engaging with the OSG compared with not engaging, a series of 3 (time, within groups) x 2 (condition, between groups) mixed ANOVAs were conducted. All four outcome variables showed a significant effect of time (depression: $F(2,100) = 16.06$, $p < 0.001$; social support: $F(2,100) = 8.26$, $p < 0.001$; satisfaction with life: $F(2,100) = 7.14$, $p = 0.001$; anxiety: $F(2,100) = 4.63$, $p = 0.012$) but none of the interaction effects were significant, suggesting there were no differences between conditions (depression: $F(2,100) = 0.11$, $p = 0.89$; social support: $F(2,100) = 1.46$, $p = 0.24$; satisfaction with life: $F(2,100) = 0.45$, $p = 0.64$; anxiety: $F(2,100) = 1.47$, $p = 0.24$). The marginal means for each of the four outcome measures are shown in Figure 11 to Figure 14.

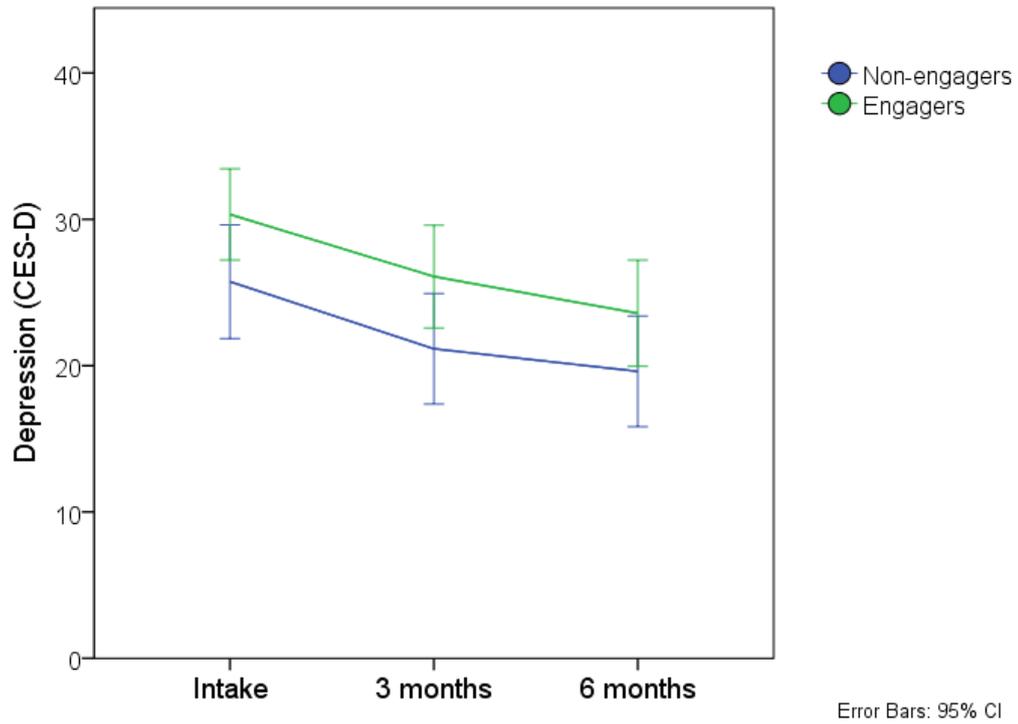


Figure 11: Mean depression scores on the CES-D at intake, three, and six months for engagers versus non-engagers.

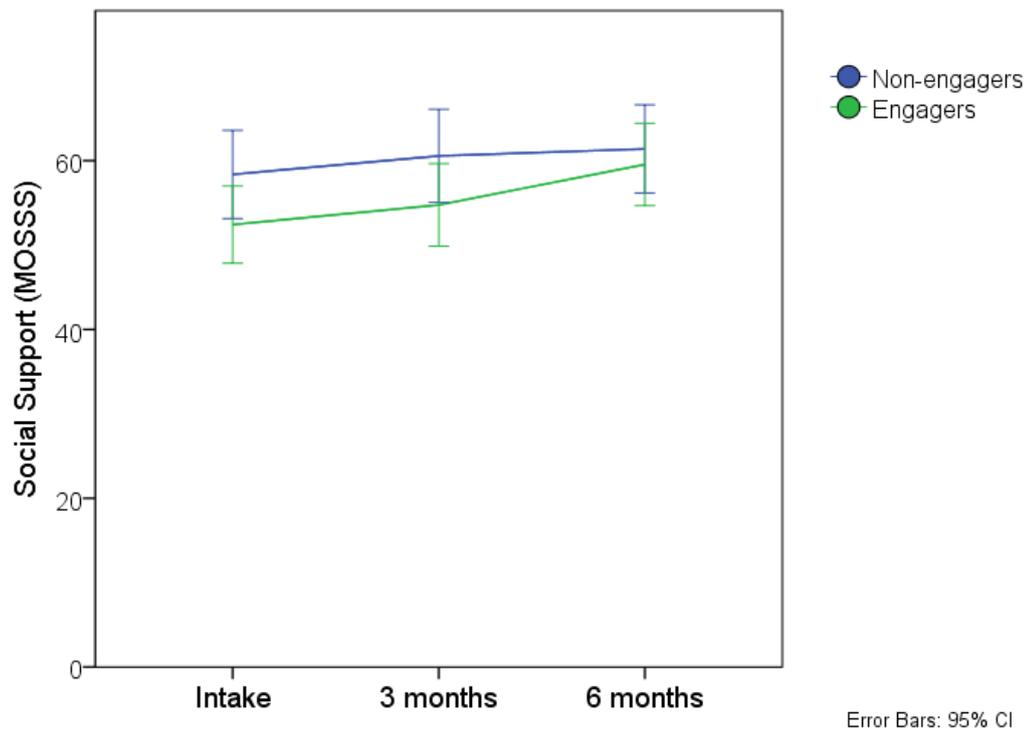


Figure 12: Mean social support scores on the MOSSS at intake, three, and six months for engagers versus non-engagers.

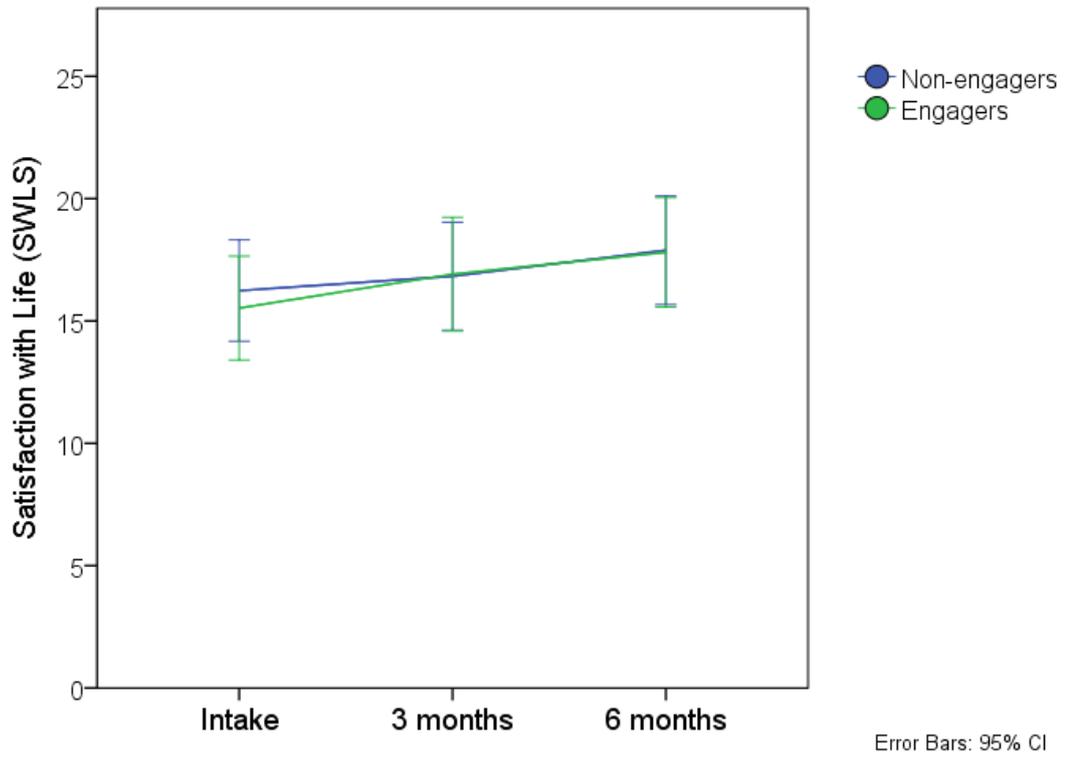


Figure 13: Mean satisfaction with life scores on the SWLS at intake, three, and six months for engagers versus non-engagers.

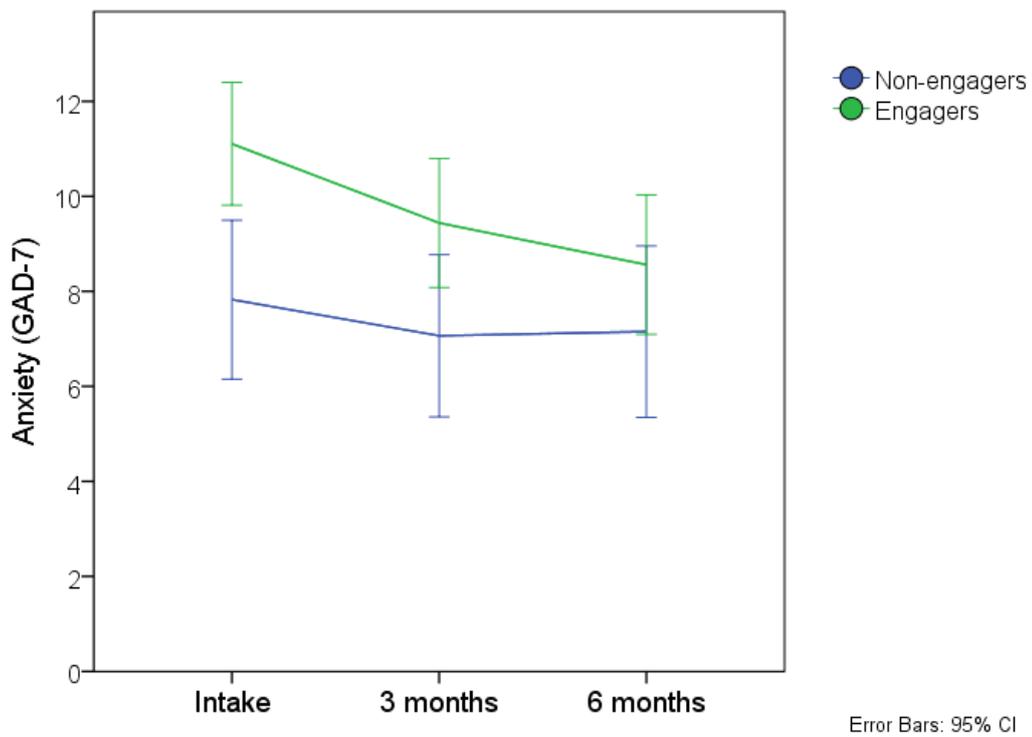


Figure 14: Mean anxiety scores on the GAD-7 at intake, three, and six months for engagers versus non-engagers.

4.3.5 *Intention-to-treat analysis*

An intention-to-treat analysis was also carried out on the outcome data. The results are not reported as they provided no additional insight. There was no evidence that participants in the OSG condition experienced improved outcomes to the expressive writing condition.

4.3.6 *Engagement analysis*

The demographic variables for the engagers versus the non-engagers are shown in Table 15. There were no differences on demographic variables between those who dropped out and those who stayed in the OSG. For example participants from the US were no more likely to engage with OSG than those from the UK or Canada ($\chi^2(2, N = 103) = 0.70, p = 0.71$). Similarly no differences for engagement were seen for gender, age, ethnicity, education, whether they were seeing a therapist or taking medication and whether they had previously taken part in an online or face-to-face support group.

Table 15: *Demographic variables for engagers versus non-engagers.*

	Engagers	Non-engagers	Diff.*
Demographic variable	N	N	
Gender			
<i>Male</i>	15 (14%)	11 (11%)	ns
<i>Female</i>	42 (41%)	35 (34%)	
Age			
<i>Mean age (SD)</i>	33 (SD = 12)	37 (SD = 12)	ns
Employment status			
<i>Full-time</i>	33 (32%)	25 (24%)	ns
<i>Part-time</i>	8 (8%)	9 (9%)	
<i>Student</i>	16 (16%)	3 (3%)	
<i>Looking after home/family</i>	3 (3%)	3 (3%)	
<i>Unemployed because of poor health</i>	4 (4%)	4 (4%)	
<i>Unemployed for other reasons</i>	2 (2%)	2 (2%)	
<i>Retired</i>	0 (0%)	0 (0%)	
<i>Other</i>	1 (1%)	0 (0%)	
Education			
<i>Some high/secondary school</i>	0 (0%)	1 (1%)	ns
<i>Completed high/secondary school</i>	10 (10%)	4 (4%)	
<i>Some college/university</i>	15 (15%)	9 (9%)	
<i>Degree (E.g. BSc BA)</i>	19 (18%)	18 (17%)	
<i>Advanced degree (E.g. Masters, Doctorate)</i>	13 (13%)	14 (14%)	
Ethnicity			
<i>White</i>	54 (52%)	40 (39%)	ns
<i>Mixed</i>	1 (1%)	3 (3%)	
<i>Asian (including Indian)</i>	1 (1%)	2 (2%)	
<i>Black</i>	1 (1%)	0 (0%)	
<i>Hispanic</i>	0 (0%)	0 (0%)	
<i>Other</i>	0 (0%)	1 (1%)	
Country			
<i>United Kingdom</i>	38 (37%)	27 (26%)	ns
<i>United States</i>	16 (16%)	16 (16%)	
<i>Canada</i>	3 (3%)	3 (3%)	
Consulted a healthcare professional			
<i>Within the last year</i>	30 (29%)	20 (19%)	ns
<i>More than a year ago</i>	15 (15%)	20 (19%)	
<i>Never</i>	11 (11%)	6 (6%)	
<i>Not sure</i>	1 (1%)	0 (0%)	
Seeing a therapist			
<i>Yes</i>	18 (18%)	8 (8%)	ns

<i>No</i>	36 (35%)	38 (37%)	
<i>Not sure</i>	3 (3%)	0 (0%)	
Taking medication			
<i>Yes</i>	22 (21%)	19 (19%)	ns
<i>No</i>	34 (33%)	27 (26%)	
<i>Not sure</i>	1 (1%)	0 (0%)	
Used a face-to-face support group before			
<i>Yes</i>	12 (12%)	8 (8%)	ns
<i>No</i>	43 (42%)	37 (36%)	
<i>Not sure</i>	2 (2%)	1 (1%)	
Used an OSG before			ns
<i>Yes</i>	9 (9%)	5 (5%)	
<i>No</i>	46 (45%)	40 (39%)	
<i>Not sure</i>	2 (2%)	1 (1%)	

*ns = non-significant.

Comparisons were made on baseline outcome measures between those who engaged with the online support group and those who did not using independent samples t-tests (means and standard deviations are shown in Table 8). These revealed that engagers were higher in anxiety ($M = 11.1$, $SD = 4.9$) than those who did not engage ($M = 7.8$, $SD = 5.6$; $t(101) = 3.2$, $p = 0.002$). For depression there was a similar trend with engagers marginally higher ($M = 30.3$, $SD = 11.8$) than non-engagers ($M = 25.7$, $SD = 13.1$; $t(101) = 1.9$, $p = 0.064$). No differences were seen for social support or satisfaction with life.

4.3.7 *Expectations analysis*

Table 16 shows participants' responses to the modified Illness Perception Questionnaire, which measures their expectations about their condition at intake, three months and six months. An analysis was carried out to assess changes in expectation of the intervention's utility over time in the OSG condition compared with the expressive writing condition. A series of 3 (time, within groups) x 2

(condition, between groups) mixed ANOVAs were conducted. There were significant effects of time on expectations of "the condition's influence on life" ($F(2, 201) = 6.1, p = 0.003$), "control over the condition" ($F(2, 201) = 8.24, p < 0.001$) and "expectations of the intervention's utility" ($F(2, 201) = 13.21, p < 0.001$), but not on "expected longevity of the condition" ($F(2, 201) = 1.98, p = 0.14$) or "understanding of condition" ($F(2,201) = 1.49, p = 0.23$). Two of the significant effects were in a psychologically positive direction, i.e. towards more control and lower effect of the condition on life but expectations of the intervention's utility declined. The interaction was only significant for expectations of the intervention's utility ($F(2, 201) = 16.69, p < 0.001$), suggesting expectations changed differentially in each group, so this was further explored.

A plot of the means (Figure 15) for expectations of the intervention's utility suggested that the source of the interaction was a drop in expectations over time in the OSG condition and not the expressive writing condition. To explore, a one-way ANOVA was conducted on the expectation scores on the OSG group, which suggested expectations had change over time ($F(2, 608) = 8.69, p < 0.001$). Post-hoc tests using the LSD correction for multiple comparisons revealed a drop in expectations between intake ($M = 4.9, SD = 2.2$) and three months ($M = 4.1, SD = 2.9; p = 0.04$) and between intake and six months ($M = 3.8, SD = 3.2; p < 0.001$).

This interaction was further broken down by only comparing the engagers with the non-engagers in the OSG condition. A 3 (time, within groups) x 2 (condition, between groups) mixed ANOVA showed a significant effect of time ($F(2, 100) = 30.8, p < 0.001$) and an interaction ($F(2, 100) = 7.9, p = 0.001$) suggesting the engagers and non-engagers responded differentially. As before, a plot of the means

(Figure 16) suggested the interaction was mostly the result of a drop in expectations amongst the non-engagers. A one-way ANOVA was conducted on the expectation scores on the engagers, and there was a non-significant trend, suggesting expectations may have changed over time ($F(2, 170) = 2.65, p = 0.07$), whereas, amongst non-engagers the difference was much clearer ($F(2, 137) = 35.9, p < 0.001$). Post-hoc tests using the LSD correction for multiple comparisons on the non-engagers revealed that expectations dropped between intake ($M = 4.5, SD = 2.0$) and 3 months ($M = 2.0, SD = 2.2; p < 0.001$), as well as between 3 months and 6 months ($M = 0.9, SD = 2.2; p < 0.001$). This suggested that non-engagers experienced a drop in their expectations that the OSG could help them, in comparison to engagers whose expectations only dropped marginally.

Table 16: *Participants expectations about their condition and the intervention at baseline, three months and six months.*

Measure	Baseline M (SD)	3 months M (SD)	6 months M (SD)
Condition's influence on life			
Expressive writing (n = 101)	6.5 (2.3)	6.4 (2.6)	6.2 (2.5)
OSG (n = 103)	6.6 (2.3)	6.3 (2.4)	5.7 (2.5)
OSG engagers (n = 57)	7.0 (2.4)	6.7 (2.3)	6.2 (2.5)
OSG non-engagers (n = 46)	6.2 (2.2)	5.7 (2.4)	5.2 (2.4)
Expected longevity of condition			
Expressive writing (n = 101)	7.7 (2.6)	7.6 (2.6)	7.2 (3.0)
OSG (n = 103)	7.6 (2.7)	7.3 (2.9)	7.4 (2.7)
OSG engagers (n = 57)	7.8 (2.5)	7.6 (2.6)	7.5 (2.8)
OSG non-engagers (n = 46)	7.5 (2.9)	6.9 (3.2)	7.2 (2.7)
Control over condition			
Expressive writing (n = 101)	4.3 (2.6)	4.3 (2.6)	5.2 (2.7)
OSG (n = 103)	4.2 (2.4)	4.4 (2.6)	4.6 (2.4)
OSG engagers (n = 57)	4.1 (2.5)	4.2 (2.7)	4.7 (2.4)
OSG non-engagers (n = 46)	4.2 (2.0)	4.7 (2.4)	4.6 (2.5)
Expectation of intervention's utility			
Expressive writing (n = 101)	5.0 (2.2)	5.2 (2.5)	5.2 (5.0)
OSG (n = 103)	4.8 (2.3)	3.1 (2.9)	2.5 (3.3)
OSG engagers (n = 57)	5.0 (2.5)	4.0 (3.1)	3.8 (3.4)
OSG non-engagers (n = 46)	4.5 (2.0)	2.0 (2.2)	0.9 (2.2)
Understanding of condition			
Expressive writing (n = 101)	7.0 (2.2)	7.1 (2.3)	7.4 (2.3)
OSG (n = 103)	6.7 (2.6)	6.9 (2.6)	6.9 (2.5)
OSG engagers (n = 57)	6.6 (2.5)	6.9 (2.5)	6.9 (2.2)
OSG non-engagers (n = 46)	6.8 (2.7)	6.9 (2.9)	6.8 (2.8)

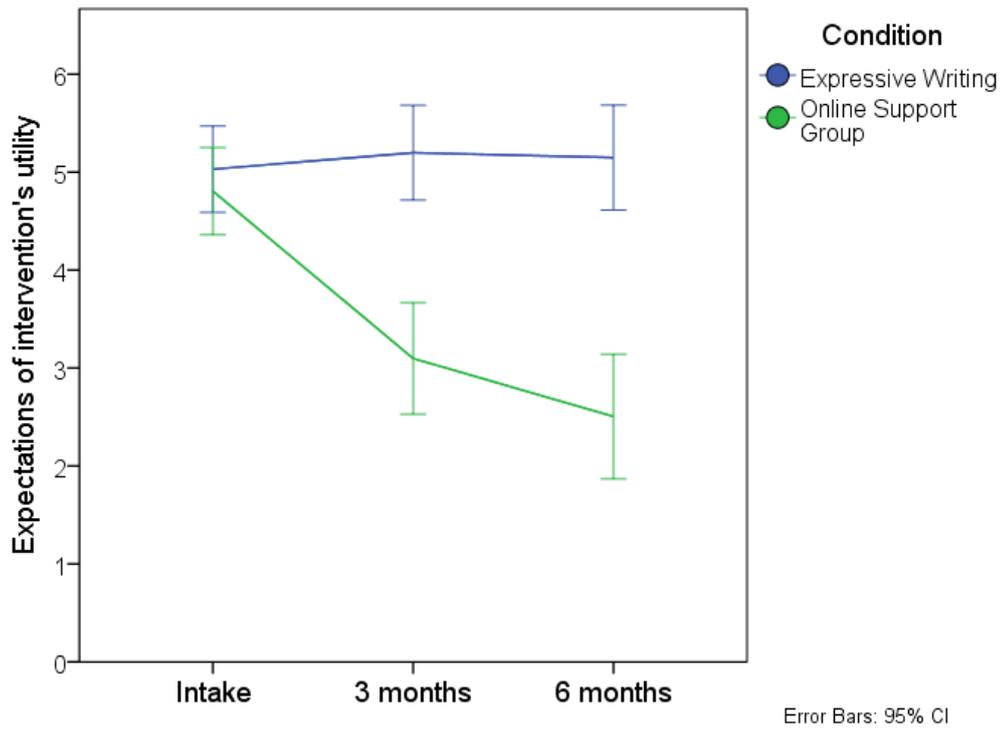


Figure 15: *Expectation of the intervention's utility at intake, three and six months for all participants eligible for analysis.*

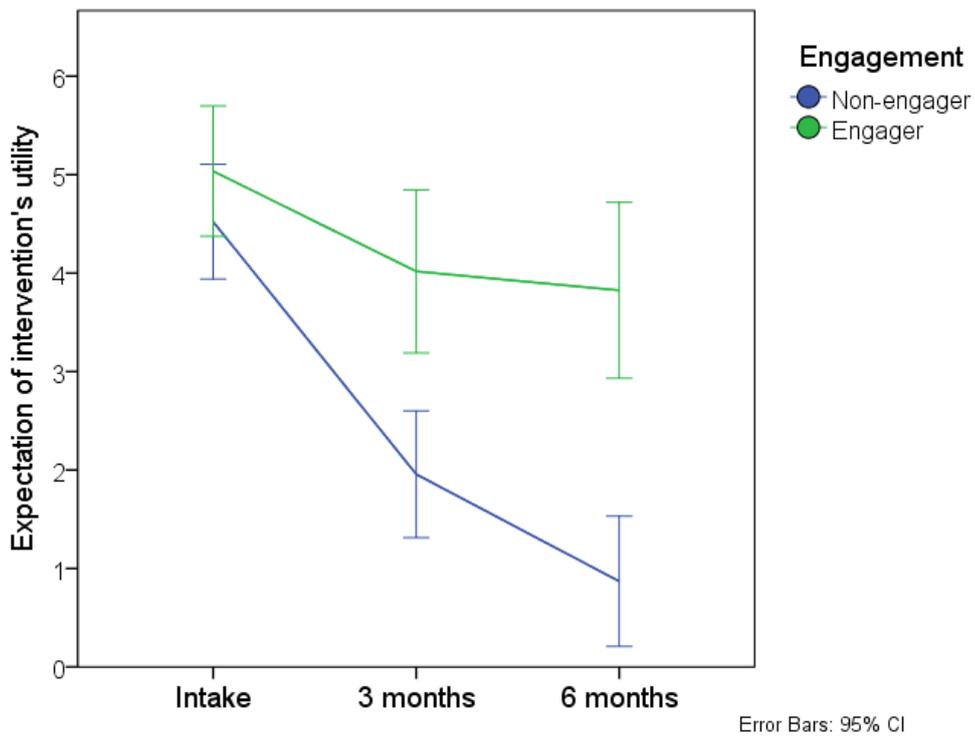


Figure 16: *Expectation of the intervention's utility at intake, three and six months for engagers versus non-engagers in the OSG condition.*

4.3.8 *Satisfaction data*

Table 17 shows the means for each of the nine items of the *Online Support Group Questionnaire* (Chang et al., 2001). The satisfaction levels in each of the categories for engagers are clustered around the midpoint of the scale, except for anonymity, which is higher. The satisfaction of the non-engagers is lower on every variable, but, again, the importance of anonymity is underlined.

Table 17: *Satisfaction with the online support group at the end of the study*

Variable	OSG engagers (n = 57)	OSG non-engagers (n=46)
	M (SD)	M (SD)
Felt supported	3.60 (2.62)	0.78 (1.85)
Felt listened to	3.40 (2.52)	0.67 (1.96)
Relevance of discussion	3.81 (2.19)	0.54 (1.39)
Others addressed my issues	3.39 (2.39)	0.39 (1.37)
Comfortable raising issues	3.33 (2.63)	0.78 (1.76)
Connection to other members	2.44 (1.84)	0.61 (1.47)
Satisfied with group membership	2.95 (2.26)	0.70 (1.72)
Importance of anonymity	5.12 (2.56)	2.20 (3.14)

4.3.9 *Word count analysis*

Forty-eight participants who engaged with the OSG and who provided correct username information were included in the linguistic analysis. In total these participants posted 1,659 messages across the full six months of the study. To reduce the workload involved in importing the data, this total number was reduced to 722

(see 3.5.9.2 for the exact method). Messages ranged in length from 38 words up to 6,124 words in one case with the total number of words analysed being 91,084.

To analyse the associations between language use and improvement a series of correlations was carried out between the improvements on the outcome measures and the features of language use. Improvement was calculated by the difference between intake scores and those at 3 and 6 months. The categories of language use tested were positive and negative emotions and the use of first-person singular pronouns and second- and third-person pronouns. The aim was to test the degree to which participants were talking about themselves, compared with interacting with others. Spearman correlations were carried out as the word count data was not normally distributed. The results of these correlations calculated between intake and 3 months are shown in Table 18. Only one of the correlations was significant: that between improvement on depression scores and the expression of positive emotions. This supports the first directional hypothesis for the word count analysis. Table 19 shows the correlations for the linguistic variables with the difference in the outcome measures over the full six months of the study. One correlation was significant, that between improvement in social support and use of the "I" pronoun. Over six months the significant correlation between lower depression scores and expression of positive emotions was no longer evident. There was, therefore, only weak evidence for the first directional hypothesis and no support for the second hypothesis that improvements in depression would be associated with higher use of second-person pronouns.

Table 18: Spearman correlations between improvement on outcome measures and facets of language use in the OSG over the first 3 months.

Outcome	Positive emotion	Negative emotion	"I"	"We, you, he, she & they"
Depression	.38*	.02	.25	.09
Social support	.27	-.25	-.13	.11
Satisfaction with life	.21	-.07	-.04	.15
Anxiety	.27	-.11	-.17	.13

* p = .009

Table 19: Spearman correlations between improvement on outcome measures and facets of language use in the OSG over the full 6 months of the study.

Outcome	Positive emotion	Negative emotion	"I"	"We, you, he, she & they"
Depression	.01	-.13	.25	.09
Social support	-.09	.04	.31*	.11
Satisfaction with life	.06	-.15	.08	-.03
Anxiety	0	-.21	-.02	.15

* p = .03

4.4 Discussion

4.4.1 Outcomes

The overall aim of the study was to test the effectiveness of an OSG for depression and anxiety by comparing it to an expressive writing intervention, thereby extending previous research which has not involved a comparison group. In the current sample, when all participants eligible for analysis were included, all four primary outcomes--depression, social support, satisfaction with life and anxiety--showed an improvement with time over the six months of the study. But, in terms of the outcome measures, the participants responded similarly to the expressive writing and the OSG, however in attrition and engagement the response of the two groups was dissimilar.

This raises a number of possibilities. The first is that both interventions had no effect and the improvements on outcome measures seen were a result of the natural tendency of people to improve over time, even without an intervention. One potential way of ruling this explanation out would be to just compare those who engaged with the OSG with the expressive writing condition, thereby excluding the non-engagers who may have been diluting the OSG effect. However, even when the non-engagers were removed from the analysis--which theoretically should have improved the outcomes overall in the OSG group--there were still no differences seen for the treatment effect.

The second possibility is that both interventions had a small, but similar effect, as suggested by the small to medium effect sizes for both the OSG and the expressive writing. Since expressive writing has previously been shown to have a small effect

size across outcomes including psychological distress and physical health (Frattaroli, 2006), this would fit. Although the effect size reported here is above the average reported by Frattaroli (2006), it is within the range of some of the studies reported there. The major difference in the current study was its length. The average study length reported by Frattaroli involved four sessions over four days. The current study had twelve sessions spread over six months. In addition there was no maximum limit set on the length of the expressive writing session that participants undertook, which was the norm in studies reviewed by Frattaroli (2006). This is clearly a considerable difference and may have unexpectedly contributed to a larger effect in the expressive writing condition.

If the expressive writing condition *was* too powerful, then perhaps a comparison with a waitlist control or weaker intervention would have shown an advantage for the OSG condition. An indication of whether or not this may be a fruitful approach can be ascertained by comparing the OSG condition in the current study to other studies which contain a somewhat similar population in a control group, and have used the same depression measures. These should provide a clue as to whether the effect sizes for both groups denote a real effect of the interventions or, more prosaically, people's natural tendency to improve over time (or even regress to the mean).

To identify suitable comparison control groups, a systematic review of computer-based psychological treatments for depression was consulted (Richards & Richardson, 2012). This paper identified 19 RCTs and, amongst these, 6 studies which used the CES-D scale, similar exclusion criteria and recruitment methods to the current study. A summary of these studies is shown in Table 20. Clarke et al.,

(2002) recruited a sample of 299 participants to the ODIN (Overcoming Depression on the Internet) study. All of them had self-identified as experiencing depression. Of these 155 were randomised to a control group which was administered online and provided no intervention. At intake their mean score on the CES-D was 31.2 (SD = 11.7), which dropped to 22.7 (SD = 12.6) at 16 weeks and 23 (SD = 14) at 32 weeks. A second ODIN study, which used a similar design, but with an extra intervention group, also contained a control group whose scores on the CES-D were monitored for 16 weeks (Clarke et al., 2005). At intake the mean score on the CES-D for the 100 participants in the control group who received no intervention was 28 (SD = 13.6) and this had dropped to 22.3 (SD = 13.1) at 16 weeks.

Table 20: Comparison control groups in computer-based psychological treatments for depression which have used the CES-D.

Authors	Follow-up	CES-D at intake	CES-D at follow-up	Power (d)
Baikie, Geerligs & Wilhelm (2012).	4 months	30.86 (13.06)	22.02 (14.30)	0.65
Christensen, Griffiths and Jorm (2004).	6 weeks	21.6 (11.1)	20.6 (11.4)	0.09
Clarke et al., (2005)	16 weeks	28 (13.6)	22.3 (13.1)	0.43
Clarke et al., (2002)	16 weeks	31.2 (11.7)	22.7 (12.6)	0.70
	32 weeks		23 (14)	0.64
Van Straten, Cuijpers & Smits (2008)	4 weeks	29.9 (9.2)	26.2 (10.5)	0.37
Warmerdam, van Straten, Twisk, Riper & Cuijpers (2008)	12 weeks	32.1 (9.3)	25.8 (10.4)	0.64

Warmerdam, van Straten, Twisk, Riper and Cuijpers (2008) recruited a community sample through the Internet and newspaper ads to a randomised controlled trial that was conducted online. In the waitlist control condition, at baseline their mean CES-D score was 32.1 (SD = 9.3) and this had dropped to 25.8 (SD = 10.4) at 12 weeks.

Van Straten, Cuijpers and Smits (2008) conducted an RCT on web-based self-help interventions which had a waitlist control. There were no specific inclusion criteria and participants were recruited through national and local newspapers. In the

waitlist control condition participants' mean score at baseline was 29.9 (SD = 9.2). This had dropped to 26.2 (SD = 10.5) after the four weeks of the study.

Christensen, Griffiths and Jorm (2004) recruited a community sample for an RCT on a web-based intervention. The placebo-controlled group in this study were asked targeted questions about their lifestyle and were phoned weekly by interviewers. At baseline participants had a mean score of 21.6 (SD = 11.1) and after six weeks this had dropped by one point (SD = 8.4). In a similar subsequent study, Mackinnon, Griffiths and Christensen (2008) recruited a community sample for an RCT on a web-based intervention. In the placebo-control group, who answered targeted questions about their lifestyles, the mean CES-D score at baseline was 21.6 (SD = 11.1), which had dropped to 17.8 (SD = 11.4) at the six-month follow-up.

Finally, in a study carried out subsequent to the systematic review by Richards and Richardson (2012), Baikie, Geerligs and Wilhelm (2012) recruited participants online for an expressive writing RCT. Participants in the control group wrote without emotion, listing the things they had done each day. At baseline the control writing group had an average CES-D score of 30.86 (SD = 13.06) and when followed up after four months this had dropped to 22.02 (SD = 14.30).

With the exception of the Australian studies of Helen Christensen and colleagues, all the control groups had very similar initial scores on the CES-D of around 30 (as in the present RCT). At six month follow-ups, and mostly over shorter periods, the mean scores in the control groups had dropped to around that seen in the current study: 22. Christensen's studies are slightly different in that participants had lower levels of depression in the first instance and the attempt was made to control for placebo effects, which was not the case in the other studies.

The most obvious conclusion to be drawn is that the drop in CES-D scores seen in the current study in both groups could easily have been a result of people's tendency to get better without treatment. The drops on this scale are comparable to the majority of the control groups from other studies cited here. Therefore, while the effect sizes seen in the expressive writing and OSG conditions were medium in size, it is likely that this is the type of effect size that would be seen even in a waitlist control condition. This evidence weakens the notion that either the expressive writing or the OSG condition had any additional effect.

A third possibility was that the study did not have sufficient power to detect the difference between groups. The sample size chosen in the current study was based on a power calculation which assumed a medium between-groups effect size, suggesting that around 51 participants would be sufficient to detect the effect. The between-groups effect size, however, may well have been small, suggesting a larger sample size was necessary. In addition the engagement with the OSG by some participants was a problem. While 57 participants were classified as being 'engagers', it was clear that the average level of engagement was low, especially in the second half of the study. For example, the mean number of times the OSG was accessed in the second six months only reached 1 at three of the six measurement points. Among the group classified as engagers there were a group of participants who did use the OSG more, although, because of its low number, this was too small for analysis. It is possible that with a larger sample size, this group of higher engagement would have been large enough to analyse.

Overall, then, when considering the outcome measures of this study, there is no evidence that the OSG was effective in ameliorating the symptoms of depression. In

addition, the OSG had a major disadvantage in comparison to the expressive writing, to which we now turn.

4.4.2 Attrition and engagement

Attrition rates are often high in online studies because of the nature of the Internet and, in eHealth interventions, curves plotted of attrition are logarithmic (Eysenbach, 2005). Still, the attrition rate seen here was especially high in the OSG group. Of the 795 participants randomised to the OSG, only 57 were classified as engaging with the study, and many of these did not use the group much--that is a 93% attrition rate, or possibly worse depending on how 'engagement' is defined. This may well be a function of the design of the study which varied somewhat from those carried out previously. Houston et al. (2002), for example, who found use of an OSG to be psychologically beneficial, recruited existing members of a support group. In the current study participants were not existing members of an OSG and were asked to take part in forums that were completely new to them. This may well be partly responsible for the very high attrition rate seen in the current study. Since 82% of participants had never used an OSG before and 80% had never taken part in a face-to-face support group before, perhaps they were not aware what they were letting themselves in for. The attrition rate underlines the potential difficulties in assigning participants who are new to online support to these kinds of forums.

In comparison to the OSG condition, participants in the expressive writing condition displayed attrition rates which were closer to those found in previous online studies (Eysenbach, 2004). The increase in attrition rates over the study was also less slow in the expressive writing condition. At 3 months the attrition rate was

69%, while at 6 months it was 75%. The equivalent figures in the OSG were 85% and 94% for those who engaged.

The high attrition rates compared with the expressive writing condition was not the only signal that participants found the OSG less than enthralling. Across the first four to six weeks of the study, the engagement with the OSG dropped from a mean of twice a fortnight, down to less than once a fortnight, remaining at this level or lower for the rest of the study. The same message is coming from the data on the amount of time spent accessing the OSG and particularly from the number of posts made. Across all participants in the OSG condition, after the first fortnight, even those classified as 'engaged' with the OSG were only posting a mean of around one message every two weeks.

The potential reasons for the low levels of engagement with the OSG are many but one that stood out in this research was participants' expectations. Before the study began, and at every measurement point, participants were asked about their expectations of the intervention's utility. The question was part of the Illness Perception Questionnaire (Broadbent et al., 2006). Although the other factors on the scale, such as the condition's influence on life, the expected longevity of the condition and control an understanding of it change little, expectations of the intervention's utility dropped markedly in the OSG group over the period of the study. In comparison to expectations in the expressive writing condition, which remained largely stable over the three months, expectations dropped off sharply in the OSG condition. This difference was clear from both intake to three months and between intake and six months. As might be expected this difference was even more clear when comparing engagers to the OSG with non-engagers. After only three

months, mean expectations of the intervention's utility for non-engagers had dropped to 2 on the 11-point scale, indicating they thought it was close to worthless. It is hard to ignore this message that many of the participants in the study clearly thought the OSG would do little for them.

Certainly engagement with the OSG could not be predicted by demographic variables in the current sample. There were no associations between outcome measures and gender, age, education, whether taking medication or not, or which country they came from. One clue to what might affect engagement, however, came from the baseline scores for anxiety and depression. Those who had higher levels of anxiety were significantly more likely to engage with the OSG and there was a trend in the same direction for depression. However, the expectations in both the engaging and non-engaging groups began at the same level and only dropped after the start of the study. This again suggested that participants did not know what to expect from the OSG and some quickly wrote off the chance of any potential benefits from it. Much the same message came from the satisfaction data. While engagers were moderately satisfied with the OSG, those who did not engage gave very poor ratings to it. Both engagers and non-engagers, however, particularly emphasised the importance of their anonymity.

4.4.3 Word count analysis

The final part of the study involved looking for connections between improvements on outcome measures and an analysis of the language used in the OSG. Of particular interest were positive and negative emotion words and the pronouns used. Only one of the expected correlations was significant, supporting previous research finding that the expression of positive emotions was associated

with improved psychological health (Pennebaker, Mayne & Francis, 1997). Naturally, since this part of the research is correlational, it may well be that the use of positive emotion words is a *result* rather than a cause of lower levels of depression. In other words as people start to see the benefit of the OSG (or indeed of naturally getting better over time), they start to express more positive emotions. Nevertheless it may be a useful linguistic marker to assess how participants are reacting in an OSG.

No significant correlations were found for pronoun use providing no support for the helper-therapy principle or for the idea that focusing on the self may be detrimental to psychological health in the context of OSGs.

4.4.4 Limitations and future directions

The attrition rate along with the expectation and satisfaction data suggested that the OSG was less than acceptable for many participants. A number of issues could have contributed, including method of OSG allocation, cross-cultural concerns and the amount of guidance and prompting which participants received. These are further addressed in the next chapter which focuses on the qualitative analysis of participants' reactions to the OSG and expressive writing.

On the question of generalisation of the findings, it is important to note that the sample recruited in the study was around 63% university educated and therefore more highly educated than a typical sample experiencing depression and/or anxiety. The higher levels of women in the study (75%) was broadly representative of the higher levels of depression amongst women. The fact the sample was relatively

highly educated would mean that further research would need to be carried out to test the effects of an OSG on those with lower levels of education.

Chapter 5: Qualitative Analysis of Online Support Group and Expressive Writing Feedback

The quantitative results presented in the previous chapter give an overall picture of how participants responded to the OSG and the expressive writing conditions. Given the very high rate of attrition in the OSG condition, one conclusion that might be drawn is that they did not find the OSG particularly agreeable. In comparison, dropout rates in the expressive writing condition were not as high, especially in comparison with other online trials. The quantitative results do not provide much of a clue as to the reason, since the demographics and outcome measures collected were largely silent on this question.

Qualitative data about the experience of participants, however, was also collected. A variety of approaches have been used to analyse qualitative data of this kind. One of the most popular is thematic analysis (Boyatzis, 1998). It is often used because of its flexibility and because it is relatively neutral in terms of theoretical frameworks. In this case it provides a way of summarising the reactions of participants to their experience of the OSG. One of the dangers with thematic analysis is that it can be too loosely or broadly applied. Therefore in the current study the guidelines used by Braun and Clarke (2006) were adopted.

However, according to Braun and Clarke (2006) the stance of the analyst needs situating. The current work, therefore, aims to provide a rich description of the dataset rather than focussing on one particular theme or area. The approach used here was also an inductive thematic analysis, in that it does not attempt to impose theories

upon the data. Further, themes were identified at the semantic or explicit level; in other words, the analysis generally did not delve into the underlying assumptions of participant's responses, rather it focused on the surface meanings. The ideas were then analysed within an essentialist/realist framework rather than using a constructivist approach.

The aim of the current chapter, therefore, was to analyse the qualitative responses participants supplied. The research questions were: (1) which aspects of the intervention to which they were allocated attracted them and which repelled? (2) what types of factors did participants feel facilitated engagement and what did not? and (3) how did participants think either arm of the study could be improved?

5.1 *Methods*

5.1.1 *Participants*

The participants were made up of those who took part in both the OSG and expressive writing arms of the RCT described in Chapter 4.

5.1.1.1 *Online support group*

While only 57 engaged with the OSG (as defined by accessing it on at least two occasions), a further 44 remained in the study and completed the final measures, including a question asking about their experiences in the OSG. Of 103 participants, 73 (71%) responded with at least one sentence to a simple question.

5.1.1.2 *Expressive writing*

Of the 101 participants, 69 (68%) responded with at least one sentence to a simple question.

5.1.2 Data collection

After taking part in the study, as part of the final measures, which were collected online, participants were asked a simple question: "Finally, this last question is optional. If you like you can let us know what you thought of the online support group [expressive writing] and the study in general. You might like to tell us about both good and bad points. You might also like to suggest changes or improvements." There was a free-text box for participants to respond with as much or as little as they liked.

5.1.3 Data analysis

Responses were assessed using thematic analysis to summarise the points made. The process carried out, based on that suggested by Braun and Clarke (2006), involved firstly reading all the responses to provide an overall familiarisation with the data. This provides the foundations for the coding. Initial codes were then generated in a mostly data-driven way, i.e. without conscious reference to psychological theories and without applying preconceived concepts. Thirdly, codes were collected together into themes and sub-themes that represented what participants are saying. Fourthly the themes were reviewed: this resulted in codes being adjusted and some sections and themes/sub-themes being re-evaluated. Finally the themes and sub-themes were labelled. Quotes were chosen from each of the themes and sub-themes to help illustrate them. Participant data was anonymised and a number assigned to each one.

The thematic coding was carried out using online software called 'Dedoose', a qualitative research data analysis program (<http://www.dedoose.com/>).

5.2 Results - Online Support Group

The 73 participants submitted 7,427 words between them (mean = 101, S.D. = 58) some wrote a single sentence while around 300 words was the maximum. Typically participants responded with a single 50-150 word paragraph.

The analysis yielded four main themes: (1) comfort and connection, (2) social comparisons, (3) needing guidance, and (4) advice (Table 21). Overall the responses were quite negative for most of the themes, with people pointing out more problems than beneficial aspects. The positive and negative aspects of each of these themes are discussed in turn. The strength of each category compared with the others is indicated by a simple 1-3 scale where '1' indicates a relatively scarce opinion, '2' that it received moderate support and '3' that it was relatively common. The word 'relatively' is used because the absolute number of extracts supporting each theme was low (typically 3-8). This is explained by the fact that, because of the nature of the data, participants wrote relatively little, some only a few sentences. The total number of excerpts coded was 112.

Table 21: *Summary of themes and sub-themes identified in participants' OSG feedback.*

Theme	Sub-theme (strength)
1. Comfort and connection	<ul style="list-style-type: none"> a. Negative: the OSG is too big (3) b. Negative: unsupportive (2) c. Positive: warm and supportive (3)
2. Social comparisons	<ul style="list-style-type: none"> a. Negative: they are not like me (3) b. Negative: triggers (2) c. Negative: my trivial problems (3) d. Positive: putting it into perspective (2)
3. Need guidance using the site	(2)
4. Advice	<ul style="list-style-type: none"> a. Negative: bad advice (3) b. Positive: good advice (1)

5.2.1 Theme 1: Comfort and connection

Many of the responses revolved around the question of whether participants were comfortable and had managed to establish a connection with other users in the OSG. These were initially coded in a simple positive versus negative valence. Two negative aspects were identified as separate sub-categories, these were: (a) the OSG was too big, and (b) OSG users were unsupportive. Each of these is examined in

turn, followed by (c) the positive comments about comfort and connection in the OSG.

5.2.1.1 Theme 1a: The OSG is too big (3)

Participants found it difficult to connect with other users because of the group size. They frequently talked about how the OSG's size made it overwhelming. It was not just the number of people who used the OSG, but also the topics and sub-topics within those groups that people reported finding daunting. One participant explained:

"I found it overwhelming trying to settle into a place to go, and then how to respond. There was an overload of people, problems and information." (P48)

This sense of bewilderment at the size and complexity of the group was perceived as a barrier to engagement. Another participant said:

"I struggled to fit in with this group as it was so large and it was hard for me to keep on top of the posts and to build relationships with other members." (P8)

One participant suggested that the OSG should be further sub-divided into groups. The implication was that this would make it more manageable and perhaps encourage more intimacy between users.

Underlying all these explanations that were put forward was the inference that size militated against a feeling of community and membership. People felt lost in the crowd and could not find a familiar face.

"Because the population on those forums is so large, it was not easy to feel like a member of the community... only very regular and long-term users are easily recognised by others, because there are so many users registering every day." (P4)

5.2.1.2 Theme 1b: Unsupportive (2)

Although it was a minority viewpoint, some users found the OSG unsupportive and provided specific examples. One said:

"I think not getting involved was healthier for me as, frankly, most of the threads I read were people winding each other up and making each other more anxious."

(P55)

Another spoke of getting into difficulties with other users and failing to find help from the moderator:

"I had terrible experiences with a couple of members, and then in asking for help from the moderator and then the doctor running the group their response resulted in an even worse experience." (P19)

These comments, though, reflect the more extreme end of the spectrum and most participants did not have these sorts of complaints to make.

A few other users questioned whether, by their very nature, OSGs could provide the supportive environment they required:

"I needed personal contact with people rather than on-line contact. I felt that the group somehow isolated me more from the real world although I visit it whenever I have time out of curiosity" (P42)

Again, this was a minority viewpoint, although a few did express the desire for real, offline relationships as opposed to online friends: some said they already had friends online.

5.2.1.3 Theme 1c: Warm and supportive (3)

Set against the negative viewpoints were quite a number of positive comments that the OSG was generally warm and supportive. Participants variously praised the anonymity of the group, said that it sparked help-seeking behaviour with existing friends and provided an outlet where their existing support networks were already over-burdened. Many expressed sentiments similar to this participant:

"...the forum used for this study was very friendly and usually answered my posts and seemed appreciative of my responses." (P8)

The tone of the positive response was best summed up by the following comment:

"Many depressed people find it difficult to relate to others face to face, and online support is far preferable to none at all." (P29)

More ringing praise for the warmth and support of the OSG was less common, but was still reported:

"...it made a huge difference putting my problems out there and having people come back with genuinely heartfelt comments telling me that actually I sounded like I was doing all the right things and coping very well." (P1)

This suggested a small minority had found the OSG very useful for them, with perhaps the most positive comment being:

"PsychCentral has been a very, very important part of my life. During my most difficult times, I've relied on PC more than anyone or anything else in my life. It has been a lifesaver for me." (P14)

Unlike those discussing the problems with comfort and connection, those talking about the positive aspects were quite non-specific.

5.2.2 Theme 2: Social comparisons

A recurrent theme revolved around social comparisons with others. These social comparisons were specifically related to how much similarity participants perceived with others, the degree to which mental health problems were affecting their lives and/or how 'serious' other people's conditions were in comparison to their own. Many participants found this one of the most central aspects of the OSG.

In general, almost everyone who spoke about other people's mental health problems found that the other members of the OSG were different and/or in a worse condition than they were themselves. This was interpreted in different ways. Some found the social comparisons positive, but, set against this, most complained that comparisons with others had a negative effect.

Among those who thought that comparisons with others were detrimental, three sub-themes were identified: (a) that other OSG users were dissimilar in various ways, (b) other OSG users expressing negative emotions 'triggered' negative emotions in themselves and (c) that social comparisons caused participants to see their own problems as trivial. The one positively valenced category was (d) that social comparisons could have a positive effect.

5.2.2.1 Theme 2a: They are not like me (3)

Many participants expressed problems making a connection with other users on the OSG. A variety of reasons were given for this but many centred around the idea that it was hard to find someone who was 'like me'. For example, one participant explained:

"I was afraid to talk about my problems because it felt like nobody else had ever dealt with the same thing. It almost felt like talking about it in the group was worse than dealing with it on my own." (P45)

Another said:

"As I read through the posts I felt that most of the participants were teenagers or people with a definite diagnosis who wouldn't be able to relate to my experiences. I wasn't comfortable posting to the forum." (P15)

There was a strong sense that, in various ways, some participants experienced other members of the OSG as being different from them. Some were put off by the overt religiosity of others, some by an over-emphasis on diagnostic categories of mental health disorders, still others by the use of 'smilies' or animations in the signatures. All of these sent the signal to participants that there were not 'people like me'. Many seemed to be looking for someone who was in much the same situation as they were. How much effort they had gone to find them was not clear, but participants seemed sure the right person was not there.

Along with a generalised sense that other OSG members were too dissimilar, was a complaint about geographical boundaries. Specifically, participants from the UK complained that the US-based support group used in this study was 'too American'.

Other participants also pointed out the same cultural differences as barriers to engagement. In contrast only one (UK) participant thought it was useful to speak to people outside the UK. Set against this lone voice were a few participants reiterating how Americans 'think differently':

"[The] main problem with [the]online support group was everyone seemed to be taking drugs/going to therapists--mainly American users at this group." (P59)

5.2.2.2 Theme 2b: Triggers (2)

Participants found it problematic to engage with other people when they, themselves were depressed, because it triggered low mood:

"...reading posts by other people often triggered a negative feeling for me, and made me feel more anxious about myself." (P11)

A few people suggested that others were 'bragging' about how ill they were and there was, in some sense, a competition to see who was 'the most ill':

"I felt that the forums were a place for people to "brag" about how bad their depression was, and how no one's depression was as bad as theirs. I found people constantly talking about the symptoms brought me down and made me focus on my symptoms but there was very little information being shared on how to get out of the black hole." (P33)

Whatever the perceived motivations of others for their postings, though, in short, some people found that being exposed to other people with depression produced negative mood in themselves:

*"I tried it, but I didn't want to give advice and everyone seemed worse off than me, which was a huge downer. Since I am managing my depression over the long term, and [am]generally rather well, the support group was just *depressing*." (P9)*

5.2.2.3 Theme 2c: My trivial problems (3)

The second sub-theme was the notion that participants felt their own problems were inconsequential and that this had a negative effect. This was well-expressed by this participant:

"I found that some of the issues raised online were overwhelming i.e. there were a lot of people in bad shape which made me less inclined to engage. At times when I felt OK and then when online other people's issues got me down and I even felt some second-hand trauma from people's posts and situations." (P20)

Similarly:

"I think on occasion it can be counter-productive to go to a place where one is surrounded by other, in my case, depressives. Sometimes it's better to have 'normal' people around so you get used to that being the way you should be thinking." (P18)

This category, however, had a more neutral valence than the 'trigger' category. Some participants partly attributed their inability to engage with the OSG to this aspect:

"...it seemed that the majority of the regular posters on Psych Central went way beyond a tad anxious or a bit blue. A lot of the members had severe mental illnesses

or told stories about going through horrendously traumatic experiences. I felt a little over my head in the community." (P22)

In comparison, they felt 'fake', intrusive or that they did not deserve support because their own worries did not rate when others appeared to be having a much worse time.

5.2.2.4 Theme 2d: Putting it into perspective

While many participants expressed the view that the other people's problems put them off, some had positive things to say. The general tone, though, was quite lukewarm, for example:

"I do appreciate that this group exists for people with a much more severe "condition" than mine and it is good to know it is here." (P51)

And, similarly:

"The only way that the online support group helped me was when I initially began to read through many of the relevant sections. It helped put things in perspective for me that perhaps I've got a better handle on managing my conditions than I thought I had." (P55)

However, participants intimated that they would not be using the OSG in the long-term. Rather it acted as a short-term boost to their morale--since other people's problems seemed much more serious--but they did not feel the need to use it any further.

Only one participant unconditionally expressed the view that comparing their own condition with others was helpful:

"It made me feel that I was not alone, that there are many others that suffer from similar (sometimes identical) symptoms as myself." (P58)

5.2.3 Theme 3: Need guidance using the site

Some participants felt that more guidance was required in order to begin navigating the OSG. They found that it was difficult to get started, which some attributed to their depression and others to the requirement for outside guidance.

"I had no idea how to start as I was depressed" (P2)

There were no suggestions as to what sort of help might be useful. The tone of this theme was relatively neutral, suggesting the OSG might have been suitable for them if only their initial reticence or low motivation could have been conquered. A typical response was:

"I didn't know where to start and how to best "plunge" in -- what was I supposed to say when introducing myself to a bunch of anonymous strangers? It didn't feel "real"." (P21)

And, also reflecting a bafflement about how to deal with the OSG at first:

"I just don't think the support group was for me, not that it wasn't something that could have been successful if I knew what to do with it." (P31)

The idea that participants needed to be pointed in the right direction, or at least given a little encouragement was supported by those who reported they were 'too busy' to take part in the OSG:

"I didn't have much time to spend on becoming better acquainted with the forum (and thus becoming more comfortable posting/replying/etc), due to a busy schedule."
(P30)

Thus, some participants seemed aware that their lack of engagement with the OSG was down to being unable to surmount early hurdles: whether this was lack of time, motivation or a simple clue about what to do after the initial post. This ambiguous attitude towards the OSG, suggesting more guidance was required, was further reinforced by this participant who explained their lack of engagement thus:

"This is perhaps due to the fact that I have been very busy and when online, I'm doing other things instead. Perhaps I am too busy to become down, or perhaps I am keeping busy so I don't get down - who knows?" (P17)

5.2.4 Theme 4: Advice

A popular theme amongst participants was the advice (or lack of it) they received on the site. The balance of comments on this subject was heavily biased towards the negative.

5.2.4.1 Theme 4a: Bad advice (3)

Many participants were worried about the potential for receiving bad advice from other members of the OSG. This was often expressed in a rather nebulous way:

"I'd be interested in joining this kind of group but not one which is made up solely of people with mental health conditions. Too much possibility of getting bad advice if there isn't a moderator." (P61)

Similarly:

"...there seemed to be a hell of a lot of ill-informed rubbish posted, which could - in the case of medication or treatment - be dangerous" (P55)

The suggestion of many participants was that they had not necessarily received bad advice themselves, but more saw it as a potential danger. Worries included receiving the wrong advice about medication, that other OSG users were generally ill-informed or just 'winding each other up'. Others simply wanted advice but did not find anyone they considered had the right expertise or knowledge to give it. A few people mentioned, however, that they were often told to go to therapy. For some this was not an option because they were looking for solutions from other OSG members, which were not forthcoming:

"While it helps to know that people at least superficially care about you when you feel everyone else treats you like dirt, constantly being told to go to therapy while it wasn't an option just wasn't very helpful. That is why after a while, I simply stopped going." (P31)

5.2.4.2 Theme 4b: Good advice (1)

Only a few people had good things to say about the advice they had received on the OSG:

"...there were some very interesting discussions raised over the last few months, which have helped me look at my illness and recovery in a different way. In particular the discussion around not aiming for happiness but for a 'satisfying,

hopeful & contributing' life. Also, the discussion on drug resistance and taking medication over long term basis." (P62)

While this comment was strongly positive, it was one of only a few who expressed this sentiment:

"Some of the advice given to me and others helped me see my worries and concerns differently." (P38)

And:

"I didn't expect such a well thought out and considerate response" (P1)

5.3 Results - Expressive Writing

The 69 participants submitted 8,992 words between them (mean = 130, S.D. = 115). Expressive writing participants wrote 29 words more (30%) on average than the OSG participants. The pattern of responses, though, was similar, with some writing a single sentence, while a few participants wrote up to 500 words. Typically, though, participants responded with a 50 - 200 word paragraph.

The analysis yielded three main themes: (1) clarification, (2) emotional effects and, (3) tweaks (Table 22). Overall the feedback was broadly positive with many participants pointing out the beneficial aspects of the activity. The relative strength of each theme from 1-3 is indicated in the same way as for the OSG feedback analysis: '1' indicates a relatively scarce opinion, '2' that it received moderate support and '3' that it was relatively common. Again, the word 'relatively' is used because the absolute number of extracts supporting each theme was higher than the OSG

analysis, but still low (typically 8-25). This is explained by the fact that, because of the nature of the data, participants wrote relatively little, some only a few sentences. The total number of excerpts coded was 70.

Table 22: *Summary of themes and sub-themes identified in participants' expressive writing feedback.*

Theme	Sub-theme (strength)
1. Clarification	(3)
2. Emotional effects	a. Positive: feeling better (3) b. Negative: feeling worse (2)
3. Task tweaks	a. Lack of feedback (2) b. Writing prompts (2) c. Positive writing (1)

5.3.1 Theme 1: Clarification

The largest theme that was identified in participants' responses was how the expressive writing had made them more aware of their own thoughts and emotions. The overall tone of the responses was very positive in this theme, although some participants did point out negative effects of the expressive writing. Having more awareness of some of the issues they were facing and was deemed by many to be a positive step forward.

"I think as a process writing down what you think is happening to your mind is useful and would help most literate people as you think quicker than you write and it gives you a chance to realise what is going on and put it back into proportion to some extent." (P38)

There was also some surprise expressed at the topics that came up during the expressive writing sessions:

"I was surprised by how passionate or emotional I became while writing, and at times confused by the topics I ended up on when I wasn't aware they were so prominent in my mind!" (P50)

Some felt this ability to make become more aware of their thoughts and emotions came from the freedom they felt from the expressive writing:

"Expressive writing is very useful in my view anyway. I was encouraged to look on occasions at very deep issues which I had previously not felt able to share." (P30)

Similarly:

"It has been useful as an outlet for thoughts & feelings; being able to express myself with no holds barred and without the need to hide the depth of my sadness. I would certainly use expressive writing for myself in the future to get my thoughts and feelings out of my head." (P53)

Although, this 'freedom' sometimes took a while to come:

"...in the final few writing sessions I began to feel a freedom in just spilling my thoughts out without all that self conscious stuff. I actually wrote stuff that I wish I

could tell even my regular therapist but can never seem to get out when I'm speaking." (P24)

Some felt it was a useful adjunct to their usual therapy:

"I see a therapist once a week and the writing helped me when I couldn't speak to her. I felt like it was another outlet for my feelings and it helped me to see things more clearly (the same way I feel when I come out of a session with my therapist)." (P46)

Whether people talked about 'getting things in perspective', 'getting it out' or as an 'outlet', the expressive writing certainly felt to many participants like a useful exercise in becoming more aware of their thoughts and emotions. Perhaps, also, just as importantly the exercise provided an impetus to stop and think that might not ordinarily exist in the rush and tumble of everyday life.

5.3.2 Theme 2: Emotional effects

While awareness of thoughts and emotions might be a useful first step, did participants think the expressive writing had helped them feel better? More participants expressed a positive view than the negative, but both threads were there.

5.3.2.1 Theme 2a: Positive - Feeling better

This sub-theme was more qualified, nevertheless participants did think that, on occasion the expressive writing did make them feel better.

"The activity itself was very uplifting. I felt I had gotten a huge weight off my shoulders. I feel that this was a very effective way of alleviating what i feel was a

moderate (but still significant) level of depression and anxiety due to a combination of genetics, environment and the usual lark." (P55)

Others were even surprised by its effects:

"I must say, I did not think the writing was helping until I was unable to write. I realized it was helping my anxiety a great deal. I am grateful to have had this opportunity. I will continue writing far after this study is over." (P29)

Such strongly positive statements were slightly unusual, although other participants did feel it had helped:

"I find it easier to cope-with them as if by sending them to you I was allowing myself to rid my mind of them. They then in essence became your problems." (P32)

Similarly:

"In fact, it gave a great burden of release...yes I would feel low or a tad vulnerable for a few hrs afterwards...but it was great to get 'where I was' off my chest and put my feelings into words." (P28)

Others made more equivocal statements, perhaps reflecting the limits of expressive writing for the emotions:

"...writing something down might make me feel better about something at that time, but that I can feel bad about that same issue all over again later on, days, or weeks later. Writing it down doesn't get rid of the underlying feelings." (P37)

Despite some equivocation, the responses collected in this theme, like those for theme 1a were broadly fairly positive. Indeed both the positive themes were identified as strong themes in the data.

5.3.2.2 Theme 2b: Negative - Feeling worse

Set against the feedback about the expressive writing improving mood and providing some clarification, a few participants mentioned that the expressive writing task made them feel worse. For example:

"Sometimes doing the writing and the questionnaires made me feel more depressed and anxious than if I wasn't thinking about those things." (P60)

Other participants also noted the association that built up between expressive writing and thinking about negative aspects of their lives:

"I go through stages when I need to avoid the hard parts of my life and when you have to write about it, that doesn't help. So writing about your emotions doesn't always help sometimes it really does even just as a reference point to look back on." (P58)

Similarly:

"On one of the occasions I felt upset by the writing, but it was on a significant anniversary so I probably would have been upset anyway." (P22)

Although negative emotional reactions were reported, then, these were relatively limited and participants could control them by avoiding the task for a period. Having a negative reaction was a thread running through some of the responses, but it was only a circumscribed observation.

5.3.3 *Theme 3: Task tweaks*

Part of the open-ended question that participants were asked probed whether they thought the study could have been changed or 'tweaked' in any way. A few of these tweaks were only suggested by a few participants and were relatively idiosyncratic--such as the facility to submit handwriting and slightly different submission schedules--and so are not included as separate sub-themes. This theme collects together three of the major tweaks which participants proposed as a result of their own experience of the study: (1) the lack of feedback, (2) writing prompts and (3) positive writing.

5.3.3.1 *Theme 3a: Lack of feedback*

A few participants were unhappy or disappointed that they did not receive any feedback about what they had written. Some clearly expected it, or at least it would have been beneficial for them. This theme was expressed at its strongest by this participant:

"I felt I was still totally on my own, there was no response, there was no indication that anyone was even interested in my thoughts let alone reading them."
(P34)

Others were concerned that they were not sure if their expressive writing was being read or not:

"Not knowing if what I wrote was really read is a bit creepy." (P19)

The majority of participants who were worried about the lack of feedback were more concerned that it might have been a useful addition:

"I wrote as though I was talking to a psychologist, but I never got any feedback as to whether my thoughts, worries, and fears were normal or natural or logical or irrational." (P39)

5.3.3.2 Theme 3b: Writing prompts

A relatively popular complaint about the expressive writing task was that it was too open-ended. At its most negative, this was expressed thus:

"I would have preferred boxes with headings to fill in I think - a blank box to ramble on in to be read by unknown people didn't feel very constructive. " (P36)

Most other participants expressed a softer view:

"I wonder whether it would be helpful or not to have one or two slightly prescriptive questions to prompt the expressive writing at the time of sending the collection form. just to slightly remind prompt and refocus at the time of writing." (P30)

When at a loss for what to write about, one participant used their initiative:

"I found myself trying different methods, series of questions out of books to help focus my thoughts on some days." (P45)

Still others were happy that there no particular writing prompts:

"Not being given topics allowed me to go anywhere with my ramblings." (P19)

This rather summed up the prevailing view: writing prompts might have been a nice addition but were certainly not a serious omission.

5.3.3.3 Theme 3c: Positive writing

A few participants suggested that because the expressive writing focused on 'traumatic events', this could make the exercise depressing. Why not, they asked, focus on positive events from time-to-time?

"...while expressive writing was helpful, and I do think it's important to explore the bad, it might be more helpful to also explore the good. To remind myself that it's not always bad." (P21)

The idea that balance was important in the expressive writing was also endorsed by this participant:

"I think the emphases on writing should be to reflect on both the good and the bad things that happened. It felt one-sided just writing about things that made me feel sad." (P57)

5.4 Discussion

This thematic analysis aimed to summarise the views of participants who had completed both the OSG and expressive writing conditions of the RCT reported in the previous chapter. It's no exaggeration to say that the qualitative responses to the two arms of the RCT could not have been more different. The qualitative feedback for the OSG was largely negative and the feedback for the expressive writing was mostly positive. Although this result was implicit in the higher attrition rate in the OSG condition, the qualitative results provide an insight into the problems that people perceived.

5.4.1 OSG feedback

The main problem with the OSG, as participants saw it, was that it was hard to establish a sense of comfort and connection with other users. The strongest reason for this was that it was just too big. With so many people visiting the site, they felt overwhelmed by the sheer number of other people and choices of different sub-forums within the site itself. Due to this, participants found it hard to feel like a member of a community. Some even said that other participants in the OSG were not warm and supportive. Potentially related to these problems of comfort and connection were calls in the third theme for more guidance in using the site. There was the sense again that participants did not know where to start. Set against this negative point, though, more participants endorsed the fact that the OSG was generally warm and supportive, as much of the previous research has found.

These somewhat mixed signals about the OSG were also echoed in the second theme of social comparisons. Once again, though, the negative outweighed the positive. Participants found that other people in the group were not like them (perhaps contributing to their lack of comfort and connection). The equivocal nature of the findings here echo the research from social comparison theory in general. Theoretically, people under stress are more likely to make downward social comparisons, which are most likely to improve how they feel (Wills, 1981). But in these qualitative findings, this did not appear to be the case: downward comparisons appeared to primarily blunt participants' enthusiasm for taking part in the OSG. Specifically, here participants reported that their own problems seemed trivial in comparison to those of others, whose suffering appeared greater. Some even said that the problems of others just 'triggered' bad feelings in themselves. On the positive

side, though, some did say that the serious problems that others were facing helped put their own problems in perspective. It is likely that, as suggested by Taylor and Lobel (1989), the types of social comparisons made will depend on motivation.

Finally, participants in the OSG condition perceived that one of the dangers of OSGs was the potential for receiving bad advice. While some thought good advice could be had in OSGs, this was once again overwhelmed by those who thought bad advice ruled. Tempering this criticism slightly was the fact that participants did not generally consider they'd received bad advice themselves, rather that the potential was there.

Reading these comments and themes together, rather a different picture of OSGs is presented than that commonly described in the research. Although the OSG was considered generally warm and supportive, there was a sense of bewilderment at the options available in OSGs and difficulties were expressed in engaging with it. Not only was the OSG hard to engage with for some people, but it was also a place of potential dangers, from both bad advice and depressing and very depressed people. Another recent qualitative study utilising the same OSG reached similar conclusions (Breuer & Barker, 2013). Participants perceived the possibility of harm to themselves and others, feelings of difference from others in the OSG and fears of being judged or even identified. Whether these problems stem from the specific group chosen, it is difficult to tell without a comparison with another OSG.

There was, nevertheless, a vocal minority who had broadly positive things to say about their experience of the OSG. This suggested that those who could engage with the OSG found it useful. Some people found that contact with those who were more depressed than themselves put their own problems into perspective and that they

could make some connection with others on the OSG. However, it was interesting to note that unlike those discussing the problems with comfort and connection, those talking about the positive aspects were quite non-specific. Perhaps this reflects the fact that, when thinking about the negative aspects, people felt they had to provide more concrete, specific reasons why they did not use the OSG. The positive aspects of comfort and connection were rather taken for granted.

These qualitative findings have some similarities with the quantitative, where many people were lost through attrition, but a central core of users carried on using the OSG right through the six months of the study. It may well be that OSGs are only suited to a relatively small sub-group of the general population: unfortunately no measures administered in this study were able to shed light on what those demographic or individual difference variables might be. In any case, an intervention which is only suitable to a small proportion of the general population is not useful for the vast majority of people, especially since they cannot be identified in advance.

5.4.2 Expressive writing feedback

In contrast to the broadly negative feedback from the OSG condition, those in the expressive writing condition generally enjoyed the experience. Its acceptability was clearly much higher for people. The two main benefits from the expressive writing that people perceived were in helping to clarify their thoughts and in improving how they felt. The potential for gaining self-awareness was particularly important, with people saying that they could express things in their writing that they even found difficult to talk about with a trained therapist. Where a more negative note was struck, it was in relation to the expressive writing bringing up negative thoughts which may be upsetting, although this was usually short-lived. In general, the

expressive writing acted for many like a space for reflection that was not ordinarily available in the rush and tumble of everyday life. Most appreciated this opportunity and some said they would continue the expressive writing beyond the end of the study--a sentiment almost none of the OSG participants expressed.

Participants also suggested some potential changes to the expressive writing task--such as providing feedback, including writing prompts and exploring positive writing--which could be incorporated in future research.

5.4.3 *Limitations*

The main limitation inherent in this qualitative analysis was the simple nature of the open-ended question that was asked. Participants' views were not explored or challenged in any way--these findings are the result of people's spontaneous responses to a single question. While the answers provide some insight into people's experience over and above the quantitative findings, they could not address factors that might have given further insight, such as motivation to use the OSG, whether people found benefit from helping others (cf. the helper-therapy principle) and issues around empowerment.

5.4.4 *Conclusion*

The conclusion from the qualitative analysis of the feedback from both arms of the RCT had a clear result: participants found the expressive writing much more acceptable than the OSG. Echoing the higher drop-out rates observed in the quantitative analysis, participants found the OSG too big and the other people using the OSG too depressed. In comparison, the expressive writing was a relatively

pleasant activity that provided space for reflection and thought that might not otherwise be available in a busy world.

Chapter 6: Discussion

6.1 *Summary of findings*

A review of the literature (Chapter 1) underlined the common observation that depression and anxiety are widespread psychological problems in the modern world. While the health services continue to do their best to help people experiencing these kinds of problems, people experiencing these often chronic conditions have naturally gravitated towards OSGs as one method of trying to find support and comfort. Despite the huge number of people taking part in OSGs around the world, relatively little is known about whether they may be helpful for their participants and the processes that are ongoing within them, perhaps partly because of the difficulties inherent in doing so. Theoretically, a number of propositions have been put forward about why OSGs might be useful: these include the provision of social support, the helper-therapy principle and social comparison. Empirically, some evidence does suggest that OSGs can be helpful for depression and anxiety, along with other outcomes, but this evidence largely comes from studies which do not include appropriate comparison groups.

The studies described in this thesis, therefore, aimed to investigate the potential benefits of an online support group (OSG) for participants experiencing depression and anxiety. This was primarily addressed by carrying out a randomised controlled trial of an OSG for depression and anxiety. In order to prepare for this RCT, two initial studies were carried out to test and explore the methods to be adopted. Firstly, the validity of a piece of software (LIWC) which counts words in psychologically relevant categories was tested (Chapter 2). Testing the validity of the LIWC was

motivated by its planned use for analysing the processes ongoing in OSGs. When the LIWC was tested on four different OSGs, support was found for two important categories: positive and negative emotions. The agreement between the software and human coders in assessing the amount of each emotion in the particular OSG posts reached an acceptable level. There were similar findings for the degree to which the posts were either self-focused or focused on others. Set against these positive results were rather more mixed findings for both social processes and cognitive categories, suggesting the LIWC software was not measuring the same things that the human coders perceived. Despite this, support was found for the use of the LIWC software as a valid tool for the analysis of the language used in OSGs.

Two pilot studies were then conducted to make various methodological preparations for the RCT (Chapter 3). Before running the RCT, it was necessary to test the particular OSG that was chosen (Psych Central; <http://forums.psychcentral.com/>), to trial a comparison group, the technology used to administer participants, and to estimate recruitment and retention rates. These two pilot studies were successful in testing the methods to be employed in the RCT. They also found that attrition was likely to be higher in the OSG arm of the RCT and that the recruitment advert should be reworded to attract participants with a wider range of depressive symptoms.

The main RCT (Chapter 4) tested the effectiveness of an OSG by comparing it with an expressive writing condition. Participants were randomised to either an OSG (Psych Central), or to an expressive writing condition. Those in both conditions were sent reminders every two weeks to take part in their allocated condition and, in the OSG condition, asked about their group usage. Measurement points were at three

and six months. The results at the final six-month measurement point revealed that all participants had, on average, improved on all the outcome measures, including depression, social support, satisfaction with life and anxiety. The interpretation of these findings, though, was made difficult by the fact that participants responded similarly in both the OSG and expressive writing condition. The possible interpretations of this finding were, firstly, that the improvements were due to people's natural propensity for their depression and anxiety to ameliorate over time. The second possible explanation was that both conditions had a small, but similar effect. A third possible explanation was that the study did not have sufficient power to detect what may have been a small, rather than a medium, effect size. Weight was lent to the idea that the results could be explained by the natural tendency of depression and anxiety to improve over time by a comparison with control groups in other studies. Control groups from six other comparable studies mostly showed similar changes in depression scores as those seen in the current study. It seems less likely, therefore, that the improving scores demonstrate a direct effect of the treatment. Finally, in Chapter 4, the analysis of natural language use in the OSG did not produce the expected correlations.

On top of the outcomes, the quantitative results also suggested a marked difference between the two conditions in terms of acceptability. Drop-out rates were much higher in the OSG than the expressive writing condition. To investigate this further, a content analysis was carried out of the feedback received from participants (Chapter 5). The analysis of the feedback from those who had used the OSG was overall quite negative. Despite saying that the OSG was generally warm and supportive, chief among the complaints was the lack of ability to gain comfort and connection from the group. Participants also expressed the opinion that comparing

their own position with that of others was damaging. They were also worried about the potential for receiving bad advice. Only a relative minority of participants who responded found it useful. In comparison, the feedback from the expressive writing participants was largely positive. They found it useful having the space and time to clarify their thoughts. Although thinking about traumatic events could be negative, these soon passed and the experience was deemed broadly positive.

With reference to the theories as to why OSGs might be useful, the quantitative data provided no insight. Since social support levels in both groups increased by the same amount, for example, there was no support for the idea that OSGs might be helping people by providing social support. Similarly, the word count analysis provided no support for the directional hypothesis that greater improvements would be seen amongst those who focused more on others than on themselves.

The qualitative data, meanwhile, did provide some insights, especially with regard to social comparison theory. Feedback from the OSG group mainly indicated that social comparison factors had negative effects. Two relevant mechanisms were identified by participants: (1) dissimilarity with others and, (2) triviality of own problems in comparison. Only a relative minority of people referred to a positive effect of social comparisons, in that they may put existing problems into context. The theory that social support may be important in the OSG received some support in that some thought the OSG was warm and supportive. Others, though, were of the opposite opinion. Participants made little or no spontaneous mention of empowerment or the idea that helping others was beneficial. Taken together, this provides a conflicting view, likely caused by a very general question which did not prompt discussion of these complex issues.

6.2 *Limitations*

A major limitation of the current study in terms of its ability to generalise was that it did not vary the type of OSG employed. While care was taken in choosing Psych Central, it may be that the fit for the majority of participants was just not right. A potential problem was that participants were largely recruited in the UK and then sent to a US-based support group; although there was no evidence of this in higher drop-out rates in the UK as opposed to US participants. Nevertheless, this may have been a contributing factor. As well as nationalities of those using the OSG, there are also large differences between the ecologies of different groups. For example, some attract more depressed participants than others and some are more oriented towards talking about drug treatments rather than talking therapies. When people join and take part in OSGs, they naturally conduct this filtering process as they try out one, then the next. In this study, though, participants were forced to use one OSG that was assigned to them, and this may have contributed to the high attrition. In retrospect, one useful step would have been to interview participants in the pilot study to assess their experience of Psych Central.

One of the surprises of the study was the very high drop-out rates in the OSG condition. On top of this, about half of the participants who remained in the study, and completed the final measures, were not using the OSG by the end. The measure of people's expectations about how useful the OSG would be also dropped sharply between baseline and three months in the OSG condition, which did not happen in the expressive writing condition. Indeed, even the usage of those considered 'engagers' with the OSG was still relatively low. Perhaps this suggests a greater problem than simply a mismatch between participants and that particular OSG, or

those particular OSG users. A clue about one potential problem comes from the qualitative analysis of the OSG feedback. This was the theme that users needed guidance in starting to use the site. Participants did not feel they knew how to get started: e.g. how they should introduce themselves and how to proceed from there. This echoes findings in the literature which point to the importance of effective moderators (Coulson & Shaw, 2013). Moderators are one method by which OSG participants can be given some guidance as to how they should engage with others. Although in the present study this was only a moderately strongly endorsed theme, perhaps other participants experienced this but without consciously realising that they did not know where to start. These early hurdles, then, may well have hurt participants' enthusiasm and motivation.

6.3 *Future directions*

A clue about how to address these limitation comes from a recent trial run by Griffiths et al. (2012), which had more positive outcomes: to use an OSG that has been created specifically for the group. This may help address the problem that people found others in the group were too different to themselves. Presumably, if people were recruited in a similar way, they would have similar characteristics and be better able to relate. Certainly the direction for future work lies in testing different populations in different types of OSGs. Given the sheer diversity of groups and the discussions going on therein, there may even be an argument for encouraging users to explore a set of OSGs or to find one that suits them. In particular, finding OSGs which have effective moderators who can help nurture participants may be an important factor (Coulson & Shaw, 2013). A few users in the current study reported

that they had used alternative OSGs, which they obviously found more acceptable than that which had been assigned.

In addition to trying different groups, further attention needs to be paid to the characteristics of the users. When a person is already experiencing depression, their motivation needs all the help it can get. To this end, therefore, future research might try a more facilitated approach to introducing OSGs. In this study participants were given some introductory information about using the OSG and some initial pointers, but the only prompts after this were the fortnightly reminders to report OSG usage. Future research might incorporate more prompts into these reminders to encourage users to explore the OSG and to interact with other users. This, in addition to any other measures which might help participants get into the habit of using the OSG, would be likely to reduce attrition.

As well as outcome, this thesis was also concerned with the processes ongoing in OSGs for depression and anxiety. To that end, the validity of a tool for analysing natural language was assessed. While the LIWC software showed promise for the emotional categories and focus on self or other, most of the correlations that were expected between the outcome measures and types of language use were not seen. For example, low correlates did not provide any support for the helper-therapy principle. Nevertheless, the LIWC software still appears a potentially profitable way to analyse the huge amounts of text posted to OSGs and try to link these up to outcomes. Further research should look more closely at how the outputs from the LIWC software tie up with the real intentions of the author: the idea being to triangulate between what the person writing a particular post was trying to express, what the reader perceives and what the LIWC software reports. The results of this

type of analysis would provide many new avenues of research. Ultimately, the software might be used in an automated way to (1) monitor OSGs and the progress of its participants and (2) to provide instant feedback to post authors on how what they have written will be perceived. The second use might also provide a solution to those looking for instant feedback from the expressive writing task.

Another surprise of the study was how well people took to the expressive writing task. This clearly came out in lower drop-out rates and in the qualitative analysis. Since this task is acceptable and easy to implement, it may be worth investigating its effect over longer periods than those previously investigated. At six months long, this is one of the longest, if not the longest, period that participants have been followed carrying out an expressive writing task. Even after six months, many participants were of the opinion that they would continue with it. Future research on expressive writing should address some of the suggestions that participants made, such as a balance of positive writing with the negative (already showing encouraging results; e.g. Baiki et al., 2012), the provision of feedback, or at least encouragement and the use of differing tasks or prompts. Existing research already shows the small but useful effect of expressive writing over the short-term (e.g. Frattaroli, 2006), so it makes sense to investigate it as a longer term activity.

6.4 Conclusions and clinical implications

The original impetus for the work in this thesis was to see if OSGs might be one of a number of adjunct activities that health services could recommend to patients suffering anxiety and depression. OSGs have the potential to provide a highly cost-

effective low-intensity intervention that could be suggested to patients. The RCT reported here does not lend support to making this recommendation in clinical practice. Since the null hypothesis was not rejected and there was low acceptability of the OSG used in the current research, this should give pause for thought about recommending OSGs more widely for depression and anxiety. Although the OSG apparently caused no harm, those with depression and anxiety did generally find it difficult to get over the initial hurdles in using it: for whatever reason, they certainly did not experience it as an attractive option. As discussed in the limitations section above, this may be a result of the OSG used in the current study; one other recent study has more promising findings (Griffiths et al., 2012). In addition, this caution may only apply to OSGs that are in the wild, so to speak; setting up a new OSG may provide a more attractive environment for participants, although it will prove more onerous for researchers and clinicians. Either way, it is likely that the majority of people who are new to OSGs will require help with the initial hurdles involved in joining and taking part in an OSG. With future research, the best ways to help motivate people to take part can be established.

For the clinical practitioner faced by a patient asking about the potential benefits of using an OSG specifically for depression and anxiety, on the basis of this RCT there is no evidence that they are effective. Indeed, due to the barriers which a new user may face to entry and use, at the moment they are best avoided. Proponents of OSGs will hope that with the development of enhanced methods of induction and finding the right type of groups, this will change.

Outside of depression and anxiety, however, the evidence for the benefits from OSGs is stronger. One reason may be the demotivating role of depressive cognitions.

People who are depressed experience a number of reliable biases in their thinking style, characterised by Beck et al. (1979) as the 'cognitive triad': these are persistent negative thoughts about the self, the environment and the future. Faced with an apparently cold and unfeeling computer screen, and without sufficient guidance, it may be difficult for those experiencing depression to overcome their inclination to feel the entire enterprise is hopeless.

A second reason for the disparity between OSG outcomes in depression and anxiety compared with other physical conditions may come back to Yalom's concept of 'universality'. When participants visit an OSG where the topic addresses their specific condition, e.g. fibromyalgia, then it is easy to see the universal connection between users. However, for those experiencing depression and anxiety--and particularly when engaged in an online environment--it may be much harder to find universal connections with others. So many participants in the current study pointed out that others in the group were *not like them*, that it seems the universality principle was not effective here. Online groups are naturally nebulous, so adding people experiencing such a broadly-defined and difficult to grasp condition like depression and/or anxiety, may mean it is hard to make that all-important connection with others without some other way in. Even something as simple as being recruited into the study at the same point--as were participants in Griffiths' et al., (2012) may be enough to create more fellow-feeling, and the first steps towards an experience of universality.

Turning from the OSG to the expressive writing, although expressive writing may provide a useful adjunct activity for those experiencing depression and anxiety,

and it was certainly more acceptable to participants, there was no evidence of its effectiveness found in this study.

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Appendices

8.1 Appendix A: Center for Epidemiologic Studies Depression Scale

Below is an indicative screenshot of the online presentation of the CES-D. The full list of questions and responses from the scale follows.

UCL Research: Online Support Group

The remaining questions ask you about your thoughts and feelings and other psychological aspects of your experience.

Part 2

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

NOTE: If you miss a question the survey will not let you advance to the next page. Scan down the page for red text **like this** to find the question you've missed.

15. I was bothered by things that usually don't bother me.

16. I did not feel like eating; my appetite was poor.

17. I felt that I could not shake off the blues even with help from my family or friends.

18. I felt I was just as good as other people.

19. I had trouble keeping my mind on what I was doing.

20. I felt depressed.

21. I felt that everything I did was an effort.

22. I felt hopeful about the future.

23. I thought my life had been a failure.

24. I felt fearful.

25. My sleep was restless.

26. I was happy.

Center for Epidemiologic Studies Depression Scale (CES-D), NIMH

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

Week	During the Past			
	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I did not feel like eating; my appetite was poor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I felt that I could not shake off the blues even with help from my family or friends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I felt I was just as good as other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I had trouble keeping my mind on what I was doing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I felt depressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I felt that everything I did was an effort.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I felt hopeful about the future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I thought my life had been a failure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I felt fearful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. My sleep was restless.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I was happy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I talked less than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I felt lonely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. People were unfriendly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I enjoyed life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I had crying spells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I felt sad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I felt that people dislike me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I could not get "going."	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SCORING: zero for answers in the first column, 1 for answers in the second column, 2 for answers in the third column, 3 for answers in the fourth column. The scoring of positive items is reversed. Possible range of scores is zero to 60, with the higher scores indicating the presence of more symptomatology.

8.2 Appendix B: Medical Outcomes Study Social Support Survey

Below is an indicative screenshot of the online presentation of the MOSSSS. The full list of questions and responses from the scale follows.

UCL Research: Online Support Group

Part 3

People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it?

NOTE: If you miss a question the survey will not let you advance to the next page. Scan down the page for red text **like this** to find the question you've missed.

35. Someone you can count on to listen to you when you need to talk.

36. Someone to give you information to help you understand a situation.

37. Someone to give you good advice about a crisis.

38. Someone to confide in or talk to about yourself or your problems.

39. Someone whose advice you really want.

40. Someone to share your most private worries and fears with.

41. Someone to turn to for suggestions about how to deal with a personal problem.

42. Someone who understands your problems.

43. Someone to help you if you were confined to bed.

44. Someone to take you to the doctor if you needed it.

45. Someone to prepare your meals if you were unable to do it yourself.

46. Someone to help with daily chores if you were sick.

47. Someone who shows you love and affection.

Medical Outcomes Study: Social Support Survey Instrument

People sometimes look to others for companionship, assistance, or other types of support. How often is each of the following kinds of support available to you if you need it? Circle one number on each line.

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
Emotional/informational support					
Someone you can count on to listen to you when you need to talk	1	2	3	4	5
Someone to give you information to help you understand a situation	1	2	3	4	5
Someone to give you good advice about a crisis	1	2	3	4	5
Someone to confide in or talk to about yourself or your problems	1	2	3	4	5
Someone whose advice you really want	1	2	3	4	5
Someone to share your most private worries and fears with	1	2	3	4	5
Someone to turn to for suggestions about how to deal with a personal problem	1	2	3	4	5
Someone who understands your problems	1	2	3	4	5
Tangible support					
Someone to help you if you were confined to bed	1	2	3	4	5
Someone to take you to the doctor if you needed it	1	2	3	4	5
Someone to prepare your meals if you were unable to do it yourself	1	2	3	4	5
Someone to help with daily chores if you were sick	1	2	3	4	5
Affectionate support					
Someone who shows you love and affection	1	2	3	4	5
Someone to love and make you feel wanted	1	2	3	4	5
Someone who hugs you	1	2	3	4	5
Positive social interaction					
Someone to have a good time with	1	2	3	4	5
Someone to get together with for relaxation	1	2	3	4	5
Someone to do something enjoyable with	1	2	3	4	5
Additional item					
Someone to do things with to help you get your mind off things	1	2	3	4	5

Satisfaction with Life Scale



The SWLS is a short, 5-item instrument designed to measure global cognitive judgments of one's lives. The scale usually requires only about one minute of respondent time. The scale is not copyrighted, and can be used without charge and without permission by all professionals (researchers and practitioners). The scale takes about one minute to complete, and is in the public domain. A description of psychometric properties of the scale can be found in Pavot and Diener, 1993 Psychological Assessment.

Survey Form

Below are five statements that you may agree or disagree with. Using the 1 - 7 scale below indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- 7 - Strongly agree
- 6 - Agree
- 5 - Slightly agree
- 4 - Neither agree nor disagree
- 3 - Slightly disagree
- 2 - Disagree
- 1 - Strongly disagree

____ In most ways my life is close to my ideal.

____ The conditions of my life are excellent.

____ I am satisfied with my life.

____ So far I have gotten the important things I want in life.

____ If I could live my life over, I would change almost nothing.

- 35 - 31 Extremely satisfied
- 26 - 30 Satisfied
- 21 - 25 Slightly satisfied
- 20 Neutral
- 15 - 19 Slightly dissatisfied
- 10 - 14 Dissatisfied
- 5 - 9 Extremely dissatisfied

Below is the full IPQ questionnaire, however the following questions were **not** used in the current research:

- How much do you experience symptoms from your illness?
- How concerned are you about your illness?
- How much does your illness affect you emotionally? (e.g. does it make you angry, scared, upset or depressed?)

Appendix A. The Brief Illness Perception Questionnaire

For the following questions, please circle the number that best corresponds to your views:

How much does your illness affect your life?	0	1	2	3	4	5	6	7	8	9	10
no affect at all											severely affects my life
How long do you think your illness will continue?	0	1	2	3	4	5	6	7	8	9	10
a very short time											forever
How much control do you feel you have over your illness?	0	1	2	3	4	5	6	7	8	9	10
absolutely no control											extreme amount of control
How much do you think your treatment can help your illness?	0	1	2	3	4	5	6	7	8	9	10
not at all											extremely helpful
How much do you experience symptoms from your illness?	0	1	2	3	4	5	6	7	8	9	10
no symptoms at all											many severe symptoms
How concerned are you about your illness?	0	1	2	3	4	5	6	7	8	9	10
not at all concerned											extremely concerned
How well do you feel you understand your illness?	0	1	2	3	4	5	6	7	8	9	10
don't understand at all											understand very clearly
How much does your illness affect you emotionally? (e.g. does it make you angry, scared, upset or depressed?)	0	1	2	3	4	5	6	7	8	9	10
not at all affected emotionally											extremely affected emotionally

8.5 Appendix E: State-Trait Anxiety Inventory

Below is an indicative screenshot of the online presentation of the STAI. The full list of questions and responses from the scale follows.

Online Support Group Research

Part 5

A number of statements which people have used to describe themselves are given below. Read each statement to indicate how you **generally** feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

NOTE: If you miss a question the survey will not let you advance to the next page. Scan down the page for red text **like this** to find the question you've missed.

57. I feel pleasant.

58. I feel nervous and restless

59. I feel satisfied with myself.

60. I wish I could be as happy as others seem to be.

61. I feel like a failure.

62. I feel rested.

63. I am "calm, cool, and collected".

64. I feel that difficulties are piling up so that I cannot overcome them.

65. I worry too much over something that doesn't really matter.

Below is only the trait part of the State-Trait Anxiety Inventory

Self-evaluation questionnaire STAI

A number of statements which people have used to describe themselves are given below. Read each statement to indicate how you generally feel. There are no right or wrong answers. Do not spend too much on any one statement but give the answer which seems to describe you generally feel.

I feel pleasant

I feel nervous and restless

I feel satisfied with myself

I wish I could be as happy as others seem to be

I feel like a failure

I feel rested

I am "calm, cool, and collected"

I feel that difficulties are piling up so that I cannot overcome them

I worry too much over something that doesn't really matter

I am happy

I have disturbing thoughts.

I lack self-confidence

I feel secure

I make decisions easily

I feel inadequate

I am content

Some unimportant thought runs through my mind and bothers me

I take disappointments so keenly that I can't put them out of my mind.

I am a steady person

I get in a state of tension or turmoil as I think over my recent concerns and interests.

The four options for each statement are:

- Almost never
- Sometimes
- Often
- Almost always

8.6 Appendix F: U.S. National Institute of Health clinical trial registration

U.S. National Institute of Health clinical trial registration is below
(<http://clinicaltrials.gov/ct2/show/study/NCT01149265>).

Online Support Groups for Depression and Anxiety

Sponsor: University College, London

Information provided by:

University College, London

ClinicalTrials.gov Identifier: NCT01149265

First received: June 22, 2010

Purpose

The purpose of this study is to determine the effectiveness of online support groups for anxiety and depression.

<u>Condition</u>	<u>Intervention</u>	<u>Phase</u>
Depression Anxiety	Behavioral: Online support group Behavioral: Expressive writing	Phase 1 Phase 2

Study Type: Interventional

Study Design: Allocation: Randomized
Intervention Model: Parallel Assignment
Masking: Open Label
Primary Purpose: Treatment

Official Title: Randomised Controlled Trial of an Existing Online Support Group for Depression and Anxiety

Further study details as provided by University College, London:

Primary Outcome Measures:

- The Center for Epidemiological Studies Depression Scale
[Time Frame: Zero, three and six months] [Designated as safety issue: No]

Secondary Outcome Measures:

- Satisfaction with Life Scale [Time Frame: Zero, three and six months]
[Designated as safety issue: No]
- The Medical Outcomes Study Social Support Survey [Time Frame: Zero, three and six months] [Designated as safety issue: No]
- Generalised Anxiety Disorder Assessment [Time Frame: Zero, three and six months] [Designated as safety issue: No]
- The Illness perception questionnaire [Time Frame: Zero, three and six months] [Designated as safety issue: No]

Estimated Enrollment: 1000

Study Start Date: May 2010

<u>Arms</u>	<u>Assigned Interventions</u>
Experimental: Online support group	Behavioral: Online support group Expressive writing involves people writing about their thoughts and feelings, often upsetting ones, for a short period of time. Other Name: Online support group
Active Comparator: Expressive writing	Behavioral: Expressive writing Online support groups are Internet forums where like-minded people give and receive both informational and emotional support. Other Name: Expressive writing

Detailed Description:

In recent years the number of online support groups for conditions like depression and anxiety has grown rapidly. Millions of people are thought to be using them

around the world. This research aims to help find out whether the use of online support groups is beneficial and to learn more about what happens in these groups.

This research will compare online support groups with expressive writing. Expressive writing involves people writing about their thoughts and feelings, often upsetting ones, for a short period of time. In online support groups giving and receiving support from others can be helpful while expressive writing about emotional issues can be cathartic.

1,000 participants will be recruited online from the UK, USA and Canada and randomly assigned to either an existing online support group or to an expressive writing condition.

▶ Eligibility

Ages Eligible for Study: 18 Years and older

Genders Eligible for Study: Both

Accepts Healthy Volunteers: Yes

Criteria

Inclusion Criteria:

- Self-defined depression & anxiety
- Resident in the UK, US or Canada
- Access to the Internet

Exclusion Criteria:

Additional relevant MeSH terms:

Anxiety Disorders
Depression
Depressive Disorder

Mental Disorders
Behavioral Symptoms
Mood Disorders

8.7 *Appendix G: Participants recruitment advert for main RCT*

Website recruitment advert is below.

Are You Feeling Low? Take Part in Online Study –



- Are you currently feeling a little under the weather, fed up or stressed?
- Do you live in the United States, Canada or the United Kingdom?
- Are you over 18?

Researchers at University College London are carrying out an Internet-based study into whether online support groups and expressive writing are beneficial for people.

This study is conducted entirely online.

It will involve you either joining an online support group or completing an expressive writing activity (minimum 5 minutes every two weeks) as well as filling in questionnaires about how you are feeling.

Taking Part



To take part in this research you need to be:

- Living in the United States, Canada or the UK.
- Over 18 years of age and able to read and write English.
- Willing to take about 20 minutes to fill in some forms online on three occasions over 6 months.
- Willing and able to carry out an expressive writing task or join and take part in an online support group.
- Willing to have your progress monitored over this period.
- Please do not take part if you have participated in one of the pilot studies.

Who is running the study?



The research is based at University College London. The principal researchers are Jeremy Dean, a researcher at UCL, Dr Chris Barker, a clinical psychologist at UCL and Dr Henry Potts, a lecturer at UCL.

8.8 Appendix H: Participant information sheet

The following pages contain screenshots of the online participant information sheet (references to 'recruitment closed' were added subsequently).



Online Support Research

@ University College London



Your consent – recruitment closed

RECRUITMENT CLOSED

Thank you for taking the time to read the introduction and considering taking part in this study. This page is a little longer because it contains the full details of the study.

Below is a formal consent form which includes the study's procedure, the benefits and risks of taking part and information about data protection and privacy. Please read this carefully.



At the bottom of this page you are asked for your email address. This will be used to contact you about the next stage of the study.

Online Support Groups and Expressive Writing

Contact Details of Investigators: [Jeremy Dean](#), [Dr Chris Barker](#)

Research Department of Clinical, Educational and Health Psychology
University College London

Gower Street
London WC1E 6BT

Study approved by UCL Research Ethics Committee [Project ID]: 1376/001

Invitation to take part



We would like to invite you to participate in this research project. You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important for you to read the following information carefully and discuss it with others if you wish. Please ask us if anything is not clear or if you would like more information.

...continued on the next page....

About the study

In recent years the number of online support groups for conditions like depression and anxiety has grown rapidly. Millions of people are thought to be using them around the world. This research aims to help find out whether the use of online support groups is beneficial and to learn more about what happens in these groups.

This research will compare online support groups with expressive writing. Expressive writing involves people writing about their thoughts and feelings, often upsetting ones, for a short period of time.

We are looking for people over 18 who are feeling a little under the weather, fed up, stressed or anxious. To take part you need to have access to the internet at home and be interested in joining a suitable online support group or carrying out an expressive writing activity.

We hope to recruit up to 1,000 participants for this study.

The study's procedure

It is expected that the study will last for 6 months. This is what will happen:

1. At the beginning, you will be asked to fill in questionnaires about how you are currently feeling.
2. Then you will be randomly assigned to one of two groups:
 - Either (a) an online support group:** you will be given information about an online support group for you to join. It is important to understand that this support group is not run by the researchers but it has been chosen by the researchers as a suitable forum for discussion of psychological problems.
 - Or (b) expressive writing:** you will be given information about how to carry out an online expressive writing task.
3. We will contact you at three-month intervals to check on your progress and ask you to fill out some more questionnaires. This will also be an opportunity to raise any concerns that you have – although you can also do this at any time during the study.
4. We will analyse the interactions in the online group (involving yourself and other group members) as well as your expressive writing.
5. At the end of the 6-month study period you will be asked to fill in the final questionnaires. You may if you wish, continue in your online group after the study ends.



...continued on the next page....

Potential benefits and risks of the study



Research suggests that people can benefit from both expressive writing and taking part in online support groups. In online support groups giving and receiving support from others can be helpful while expressive writing about emotional issues can be cathartic.

However, while studies have shown that online support groups usually have a positive, supportive atmosphere, there is always a chance that this might not be the case. The online support group in this study is not controlled by the researchers and is open to any members of the public. It is possible that you could find it unhelpful or upsetting, because of how other people respond to your postings.

It is also possible that you could find the expressive writing task unhelpful or upsetting, because of the thoughts and feelings it conjures up. You are, of course, free to change the topic or stop writing at any time. If you are upset by anything in the study, you are welcome to contact the researchers.

You can of course leave the group or the study at any time (see below).

Participation is voluntary

Your participation in this study is entirely voluntary. It is up to you to decide whether or not to take part. If you choose not to participate it will involve no penalty or loss of benefits to which you are otherwise entitled. If you decide to take part you will be given this information sheet to keep and be asked to fill out an online consent form. If you decide to take part you are still free to withdraw at any time without giving a reason.

Data Protection

All the information you give us will be confidential and used for the purposes of this study only. The data will be collected and stored in accordance with the Data Protection Act 1998 and will be disposed of in a secure manner. The information will be used in a way that will not allow you to be identified individually.



Any questions?

If you have any questions about the research please email [Jeremy Dean](mailto:Jeremy.Dean).

...continued on the next page....

Consent Form



- I confirm that I have read and understood the information pages about the study. I have had the opportunity to consider this information fully.
- I understand that I am volunteering to complete a set of online questionnaires shortly, and then again in three month's time, then again in six month's time.
- I understand that all the information I provide will be confidential, and that I will remain anonymous.
- I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
- I confirm that I am aged 18 or over, **living in the US, Canada or the UK** and I understand English.
- I agree to take part in this study. Please enter a working email address that acts as your signature and as the primary contact for this study.

If you agree with all the above statements then enter your email address below. An automated confirmation email will then be sent to you.

RECRUITMENT NOW CLOSED

Please ensure this address is entered correctly and you **press the 'I agree to take part' button** or it will be impossible to contact you for the next stage of the study. All contact for this study will be via the internet.

[↶ Back to top](#)

8.9 Appendix I: Introduction to the OSG for participants

Screenshot of the introduction to the OSG for participants.

8.10 Appendix J: 'Hints and tips' for participants

Screenshot of the 'hints and tips' which participants were directed to read before they started the OSG arm of the study.



Hints and Tips

Potential benefits

Joining an online support group is potentially beneficial (indeed the aim of this research is to assess just how beneficial they may be). Research on face-to-face support groups has found that it is beneficial in these areas:

1. **Sharing your experience with others.** As the old saying goes: a problem shared is a problem halved.
2. **Receiving support from others.** It is thought that sharing your experience with others, especially those going through something similar, is beneficial.
3. **Helping other people.** Not only is it potentially beneficial to share your experience with others, but the act of helping others may also be beneficial.

That said, it's worth being aware of some potential issues.



...continued on the next page....

Potential issues

1. **Privacy.** When registering with the support group it is recommended that you choose a screen name that does not personally identify you. Support groups are indexed by search engines like Google and are potentially open to anyone so it is better to be anonymous. It is worth bearing in mind privacy issues when you are posting about yourself on the groups.
2. **Misinformation.** Other members of support groups are generally not health professionals so any advice they give should be treated cautiously. Some people, for whatever reason, spread misinformation, either about themselves or others. These people are in a minority but it is worth being aware that these people exist online just as they do offline.

Other points

Here are some further points to bear in mind about online support groups:

1. **Communication failures.** Because people don't have access to body language online it is easy for some types of comments to be misunderstood. For example, sometimes when people are teasing each other online, this can be misinterpreted. Be aware that you may be misinterpreted by others and other people may misinterpret your comments unless their meaning is very obvious. Fortunately these types of misunderstanding can easily be resolved by asking for clarification.
2. **Moderation.** The Psych Central Forum is moderated: this means that messages won't appear until they are checked by an administrator. Online support groups are run by unpaid volunteers who moderate and administer these forums as a service to everyone.
3. **Advertising.** The support group is run by an independent group and carries advertising. While we would have preferred to direct you to a group that does not carry advertising, this was not possible.
4. **US based support group.** The online support group that has been recommended is based in the US. Many of the users are Americans, while some are from the UK and Canada and other countries. Bear this in mind as there are some cultural differences, including names of medicines and how healthcare systems operate. This may be relevant when giving and receiving advice. For example drug names and treatment availabilities vary across countries.

If you have any further questions about the points raised here then please email me: jeremy@onlinesupportresearch.com.

8.11 Appendix K: Expressive writing instructions

Screenshots of the expressive writing instructions.



Expressive Writing: Instructions

This page gives you information about the main aim of the study: *for you to do some expressive writing*. It will tell you:

1. How to prepare for writing.
2. Some ideas for what to write about.
3. When we collect the writing online.

→ **Suggestion:** We recommend that you bookmark this page so that you can find the instructions in the future.

Getting ready to write

- Find a time and place where you won't be disturbed. Ideally, pick a time at the end of your workday or before you go to bed.
- Promise yourself that you will write for a *minimum* of 5 minutes once every two weeks.
- Please type the text into a word processor or other program on your computer so that it can be cut and pasted into an online form. Every two weeks we will send you an email to ask for the text you have written.
- Once you begin writing, write continuously. Don't worry about spelling or grammar. If you run out of things to write about, just repeat what you have already written.
- You can write about the same thing or you can write about something different each time. It is entirely up to you.



...continued on the next page....

What to write about

Over the period of the study you might like to express your deepest emotions and thoughts about upsetting experiences in your life. Try to really let go. In your writing, you might tie this experience to your childhood, your relationship with your parents, people you have loved or love now, or even your career. How is this experience related to who you would like to become, who you have been in the past, or who you are now?

Many people have not had a single traumatic experience but all of us have had major conflicts or stressors in our lives and you can write about them as well. You can write about the same issue each time or a series of different issues. Whatever you choose to write about, however, it is critical that you really *let go and explore your very deepest emotions and thoughts*.

Warning: Some people report that after writing, they sometimes feel somewhat sad or depressed. Like seeing a sad movie, this typically goes away in a couple of hours. If you find that you are getting extremely upset about a writing topic, simply stop writing or change topics.

When your writing is collected

You might like to start doing some expressive writing now. **We will email you in two weeks (and then every two weeks) to collect your writing in an online form and as a reminder.** Then in 3 months time there will be some further questions asking how you're feeling.

Any questions?

If you have any questions about the study or you get into difficulties of some kind related to the administration of the study then do not hesitate to get in contact. You can email me at jeremy@onlinesupportresearch.com.



Generalised Anxiety Disorder Questionnaire (GAD-7)

Over the last 2 weeks, how often have you been bothered by any of the following problems?

Feeling nervous, anxious or on edge?

Not at all
Several days
More than half the days
Nearly every day

Not being able to stop or control worrying?

Not at all
Several days
More than half the days
Nearly every day

Worrying too much about different things?

Not at all
Several days
More than half the days
Nearly every day

Trouble relaxing?

Not at all
Several days
More than half the days
Nearly every day

Being so restless that it is hard to sit still?

Not at all
Several days
More than half the days
Nearly every day

Becoming easily annoyed or irritable?

Not at all
Several days
More than half the days
Nearly every day

Feeling afraid as if something awful might happen?

Not at all
Several days
More than half the days
Nearly every day

Total= /21

8.13 Appendix M: Online Support Group Questionnaire

Below is an indicative screenshot of the online presentation of the OSGQ. The full list of questions and responses from the scale follows.

UCL Research: Online Support Group

Part 6

We are interested in your experience of the online support group. Please select on a scale of 1 to 7 the number that best corresponds to your views.

(If you haven't used the online support group or feel unable to comment on a question, please select 'not applicable'.)

NOTE: If you miss a question the survey will not let you advance to the next page. Scan down the page for red text **like this** to find the question you've missed.

57. I felt supported by other members of the group.

58. I felt listened to by other members of the group.

59. Things discussed by other group members were relevant to me.

60. Other people addressed the issues I raised.

61. I felt comfortable raising issues in the group.

62. I felt a connection to other members of the group.

63. I felt satisfied with being part of the group.

64. I preferred being anonymous to having my real name.

65. Finally, this last question is optional. If you like you can let us know what you thought of the online support group and the study in general. You might like to tell us about both good and bad points. You might also like to suggest changes or improvements.

Your comments will be taken into account in the design of future research in this area, so any feedback you can give us is valuable.

We are interested in your experience of the online support group. Select the answer that most closely corresponds with how much you agree with each statement. Please do not skip any items.

1. I felt supported by other members of the group
2. I felt listened to by other members of the group
3. Things discussed by other group members were relevant to me
4. Other people addressed the issues I raised
5. I felt comfortable raising issues in the group
6. I felt a connection to other members of the group
7. I felt satisfied with being part of the group
8. I preferred being anonymous to having my real name

Participants respond on a 7-point scale running from "Not at all" up to "Very much".

8.14 Appendix N: OSG usage questionnaire

Below is an indicative screenshot of the online presentation of the OSG usage questionnaire, for which reminders were emailed every two weeks. The full list of questions and responses from the scale follows.

UCL Research: Online Support Group

NOTE: If you miss a question the survey will not let you submit your answers. Scan down the page for red text **like this** to find the question you've missed.

1. In the last two weeks, how many times have you accessed the online support group, whether to browse or post a message?
2. In the last two weeks, each time you accessed it, on average how long did you spend using the support group?
3. In the last two weeks, how many times have you posted a message on the online support group?
4. In the last two weeks have you accessed an online support group other than the one we recommend for this research (PsychCentral)?
If you answered yes, please give their address(es)

OSG Usage 2 15092010

These questions are about your use and experience of PsychCentral Forums in the last two weeks. It will only take a few minutes to complete.

When you are ready, please press 'start' below.

NOTE: If you miss a question the survey will not let you submit your answers. Scan down the page for red text **like this** to find the question you've missed.

Q1: In the last two weeks, how many times have you accessed the online support group, whether to browse or post a message?

- Not in this last 2 weeks#0 Once#1 Twice#2
 Between 3 and 5 times#3 More than 5 times#4

Q2: In the last two weeks, each time you accessed it, on average how long did you spend using the support group?

- Not applicable#0 Less than 1 minute#1 Between 1 and 5 minutes#2
 Between 5 and 10 minutes#3 Between 10 and 20 minutes#4 More than 20 minutes#5

Q3: In the last two weeks, how many times have you posted a message on the online support group?

- Not in the last 2 weeks#0 Once#1 Twice#2
 3-5 times#3 More than 5 times#4

Q4: In the last two weeks have you accessed an online support group other than the one we recommend for this research (PsychCentral)?

- Yes (if so please specify below)#1 No#2
 Don't know/Not sure#3

If you answered yes, please give their address(es)

The following questions ask about your experience of Psych Central Forums in the last two weeks. Please answer on a scale of 1 to 5 where 1 is the lowest rating and five is the highest.

If you have not used the group in the last two weeks or feel unable to comment on a particular question please answer 'not applicable'.

8.15 Appendix O: Email requesting expressive writing submission

Below is a screenshot of the email asking participants to submit their expressive writing every two weeks.

EW 1 - 31082010

Please cut and paste (or type in) your expressive writing below. For a reminder here is a link to the expressive writing activity instructions (opens in a new window).

When you are finished please press 'submit expressive writing' below.

Q1: Please cut and paste or type your expressive writing below:

(If you have problems entering the text please try a different web browser - problems have been reported with Google Chrome)

8.16 Appendix P: Expressive writing participant information sheet



Online Support Research

@ University College London



Expressive Writing: Your Consent

Update: Thanks for your interest in this study but recruitment is now closed.

Thank you for taking the time to read the introduction and considering taking part in this study. This page is a little longer because it contains the full details of the study.

Below is a [formal consent form](#) which includes the study's procedure, the benefits and risks of taking part and information about data protection and privacy. Please read this carefully.



At the bottom of this page you are asked for your email address. This will be used to contact you within a few days about the next stage of the study.

Expressive writing

Contact Details of Investigators: [Jeremy Dean](#), [Dr Chris Barker](#)

Research Department of Clinical, Educational and Health Psychology
University College London
Gower Street
London WC1E 6BT

Study approved by [UCL Research Ethics Committee](#) [Project ID]: CEHP/2009/023

...continued on the next page....

Invitation to take part



We would like to invite you to participate in this research project on expressive writing. Expressive writing involves people writing about their thoughts and feelings, often upsetting ones, for a short period of time.

Previous research has shown that this has a small but noticeable beneficial effect on physical (and sometimes psychological) well-being.

You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Before you decide whether you want to take part, it is important for you to read the following information carefully and discuss it with others if you wish. Please ask us if anything is not clear or if you would like more information.

The study's procedure

It is expected that the study will last for 6 weeks. This is what will happen:

1. At the beginning, you will be asked to fill in questionnaires about how you are currently feeling.
2. You will be given information about how to carry out the weekly online expressive writing task.
3. We will contact you after six weeks to check on your progress and ask you to fill out some more questionnaires.
4. We will analyse what you have written to find out what writing characteristics are associated with any changes in how you are feeling.



Potential benefits and risks of the study



Previous research suggests that people benefit from an expressive writing activity.

It is, however, possible that you could find the expressive writing task unhelpful or upsetting, because of the thoughts and feelings it conjures up.

You are, of course, free to change the topic or stop writing at any time.

Participation is voluntary

Your participation in this study is entirely voluntary. It is up to you to decide whether or not to take part. If you choose not to participate it will involve no penalty to you. If you decide to take part you are still free to withdraw at any time without giving a reason.

...continued on the next page....

Data Protection

All the information you give us will be confidential and used for the purposes of this study only. The data will be collected and stored in accordance with the Data Protection Act 1998 and will be disposed of in a secure manner. The information will be used in a way that will not allow you to be identified individually. The only exception to this is if you write about harm to yourself or to others.



Any questions?

If you have any questions about the research please email [Jeremy Dean](mailto:Jeremy.Dean@nhs.uk).

Consent Form



- I confirm that I have read and understood the information pages about the study. I have had the opportunity to consider this information fully.
- I understand that I am volunteering to complete an initial set of online questionnaires, and another set in six week's time.
- I understand that all the information I provide will be confidential, and that I will remain anonymous.
- I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
- I confirm that I am aged 18 or over, living in the UK and I can read and write English.
- I agree to take part in this study. Please enter a working email address that acts as your signature and as the primary contact for this study.

If you agree with all the above statements then enter your email address below and click 'I agree to take part'. An automated confirmation email will then be sent to you.

Update: Thanks for your interest in this study but recruitment is now closed.

Please ensure this address is entered correctly or it will be impossible to contact you for the next stage of the study. All contact for this study will be via the internet.

8.17 Appendix Q: Ethics approval for the randomised controlled trial

UCL GRADUATE SCHOOL
UCL RESEARCH ETHICS COMMITTEE



Dr Chris Barker
Sub-department of Clinical Health Psychology
UCL

28 January 2008

Dear Dr Barker

Notification of Ethical Approval

Project ID/Title: 1376/001: On-line support groups for anxiety and depression

I am pleased to confirm that the UCL Research Ethics Committee has approved your study for a period of 12 months from the commencement of the project (1 April 2008) subject to the following conditions:

1. It is a requirement of the Committee that research projects which have received ethical approval are monitored annually. Therefore, you must complete and return our 'Annual Continuing Review Approval Form' PRIOR to the **1 April 2009**. If your project has ceased or was never initiated, it is still important that you complete the form so that we can ensure that our records are updated accordingly.
2. You must seek Chair's approval for proposed amendments to the research for which this approval has been given. Ethical approval is specific to this project and must not be treated as applicable to research of a similar nature. Each research project is reviewed separately and if there are significant changes to the research protocol you should seek confirmation of continued ethical approval by completing the 'Amendment Approval Request Form'.

The form identified above can be accessed by logging on to the ethics website homepage:

<http://www.grad.ucl.ac.uk/ethics/> and clicking on the button marked 'Responsibilities Following Approval'.

3. It is your responsibility to report to the Committee any unanticipated problems or adverse events involving risks to participants or others. Both non-serious and serious adverse events must be reported.

Reporting Non-Serious Adverse Events.

For non-serious adverse events you will need to inform Ms Helen Dougal, Ethics Committee Administrator (h.dougal@ucl.ac.uk), within ten days of an adverse incident occurring and provide a full written report that should include any amendments to the participant information sheet and study protocol. The Chair or Vice-Chair of the Ethics Committee will confirm that the incident is non-serious and report to the Committee at the next meeting. The final view of the Committee will be communicated to you.

Reporting Serious Adverse Events

The Ethics Committee should be notified of all serious adverse events via the Ethics Committee Administrator immediately the incident occurs. Where the adverse incident is unexpected and serious, the Chair or Vice-Chair will decide whether the study should be terminated pending the opinion of an independent expert. The adverse event will be considered at the next Committee meeting and a decision will be made on the need to change the information leaflet and/or study protocol.

On completion of the research you must submit a brief report (a maximum of two sides of A4) of your findings/concluding comments to the Committee, which includes in particular issues relating to the ethical implications of the research.

Yours sincerely

Sir John Birch
Chair of the UCL Research Ethics Committee

8.18 Appendix R: Ethics approval for online expressive writing pilot

via email...

Dear Chris,

The Clinical, Educational, and Health Psychology Research Department Ethics Committee has approved your application:

Staff: Chris Barker
Students: Jeremy Dean

Number: CEHP/2009/023

Title: Online Expressive Writing Pilot

****MAKE SURE TO INCLUDE THE ETHICS APPROVAL NUMBER IN INFORMATION SHEETS AND CONSENT FORMS****

Please do make sure that the data you gather are stored anonymously.

Please remember, in general to observe the Code of ethics and conduct. Leicester: The British Psychological Society, March 2006, and in particular to follow the 'Guidelines for minimum standards of ethical approval in psychological research'. Leicester: The British Psychological Society, July 2004 when conducting your research.

Yours sincerely,

Essi Viding

Chair

Essi Viding, PhD
Reader in Developmental Psychopathology
Co-Director of Developmental Risk and Resilience Unit
Research Department of Clinical Educational and Health Psychology
Division of Psychology and Language Sciences
University College London
26 Bedford Way
London
WC1H 0AP

8.19 Appendix S: Participants recruitment advert for pilot OSG study



Stressed? Depressed? Take Part in Online Support Groups Study

Monday, March 30th, 2009



- Are you currently experiencing problems with stress, depression or anxiety?
- Do you live in the United Kingdom?
- Are you over 18?
- Would you be interested in joining an online support group?

Researchers at [University College London](#) are carrying out research into whether online support groups are beneficial for people. If you have been experiencing stress, depression or anxiety and would be interested in taking part in an online support group, then read on...

Online support groups

Online support groups are internet discussion forums where people share problems and provide each other with support. They are like online version of self-help groups for illnesses or other conditions. Mental health professionals are not normally directly involved and discussions are usually anonymous.

In recent years the number of online support groups for conditions like depression and anxiety has grown rapidly. They are thought to be in use by millions of people around the world suffering from common psychological problems.



[Research into face-to-face groups](#) has found they can be effective for some psychological problems. But studies into online groups are few, although some do show positive benefits. This study is interested in adding to this research and looking at what happens in these groups.

About the study

Here are some brief details of the study, more information is available by clicking through below:

- You will remain anonymous, you will not be contacted by phone or in person (although you will need to provide email contact details for the administration of the study).
- The study is conducted completely online so you must have regular internet access.
- You will be asked to join and participate in an existing online support group chosen by the researchers.
- Your progress will be monitored.
- The study will last for six months, but you do not need to commit to this and are free to leave at any time.
- Please note that this is a pilot study and therefore participant numbers are restricted.

If you are interested please [find out more about this study](#) →

8.20 Appendix T: Participants recruitment advert for pilot OSG study



Take Part in Online Expressive Writing Study

Wednesday, August 19th, 2009



- Are you currently feeling a little under the weather, fed up or stressed?
- Do you live in the United Kingdom?
- Are you over 18?
- Would you be interested in participating in an expressive writing study?

If so, read on...

About this research

Many studies have found that when people write about past emotional events in their lives they can show improvements in physical or mental health. We want to test the effects of expressive writing in a study carried out completely online. Here are some brief details of the study, more information is available by clicking through below:

- You will **not** be contacted by phone or in person (although you will need to provide name, address and email details for the administration of the study).
- This 6 week study is conducted completely online so you must have regular internet access.
- You will be asked to carry out an expressive writing activity.
- Please note that this is a pilot study and therefore participant numbers are restricted.
- Please do *not* take part if you have already participated in UCL's online support groups study (previously advertised on PsyBlog).