

Time-intensive behavioural activation for depression: A multiple baseline study.

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Abstract

Depression is the second leading cause of disability, worldwide, and increasing access to its effective/preferred treatment requires more attention. Behavioural activation shows promise as an effective and disseminable treatment for depression. Time-intensive treatment provision is also shown to enhance treatment access and response rates, and has proven efficacy in the treatment of anxiety disorders. However, there has been limited exploration of time-intensive behavioural activation for depression, especially within outpatient settings, where depression most commonly presents. Therefore this study aimed to investigate the feasibility, effectiveness, and acceptability of time-intensive behavioural activation in primary care. It was hypothesised that the intervention would be associated with improvements in idiographic, standardised and process measures of depression and comorbid anxiety.

Eight adults with major depressive disorder were recruited from three outpatient services into a multiple baseline single-case experimental design. All participants completed time-intensive behavioural activation, consisting of up to seven bi-weekly sessions and three optional booster sessions.

Treatment recruitment, retention, and credibility/expectancy indicated that the intervention was feasible. Visual and statistical analyses showed that relative to baseline, the majority of participants (between five and seven) made significant improvements in all idiographic symptoms of depression, except anxiety. According to standardised measures of depression, four out of eight participants were considered treatment responders, with intervention effects mostly generalised to standardised measures of anxiety. Although only five participants completed follow-up measures,

the majority of progress was maintained. Process measures of activation and dysfunctional attitudes showed low proportions of change. The intervention was considered highly acceptable by participants and therapists.

Overall this study provides new, but tentative evidence highlighting the potential of time-intensive BA as a feasible, effective and acceptable treatment for *some* adult outpatients with depression. The findings now warrant further, more rigorous evaluation of the treatment.

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Introduction

According to behavioural theory, depression occurs when individuals experience a reduction in positively reinforcing opportunities (Ferster, 1973; Lewinsohn, 1974). In turn, its recovery is concerned with increasing engagement in positively reinforcing activities while reducing negatively reinforcing patterns of behaviours. Indeed, these are the aims of behavioural activation, a treatment for depression that has received increasing attention over the past few decades. Research findings suggest that behavioural activation has many advantages in comparison to other psychological treatments for depression, and that it is as effective as other treatments, if not more so (Mazzucchelli, Kane, & Rees, 2009). Given depression's wide-spread cost, yet existing barriers and limitations to its treatments, increasing access to its effective/preferred forms of treatment requires more attention.

Behavioural activation shows particular promise as an accessible and disseminable treatment. Provision of time-intensive psychological interventions also holds promise for increasing access to treatments and they have proven efficacy in the treatment of anxiety disorders (Ehlers et al., 2014). However, there is limited exploration of the combination of the two: time-intensive behavioural activation for depression, especially in outpatient settings where depression is most often treated. The aims of this study were therefore to explore whether or not (a) time-intensive behavioural activation was a feasible intervention for adult outpatients with depression, (b) time-intensive behavioural activation was effective at reducing adult outpatients' idiographic measures of depression symptoms, (c) time-intensive behavioural activation was associated with reliable and clinically significant change in standardised and process measures of depression and anxiety symptoms (d) any existing effects were maintained after a follow-up period, and (e) to assess what were

participant and therapist perceptions of the acceptability of the treatment. Within the growing pressures of our National Health Service (NHS), an investigation that could guide the development of more accessible and cost-effective depression treatment seems highly relevant.

Depression

At a clinical level, depression is referred to as ‘major depressive disorder’ (MDD, see Appendix 1 for abbreviations), and is characterised by at least five criteria that must include persistent low mood and/or loss of interest or pleasure. Other symptoms can include sleep disturbance, significant weight or appetite change, psychomotor changes, diminished ability to concentrate, fatigue, thoughts of death or suicidal ideation, and a sense of worthlessness or guilt. To meet diagnostic criteria, symptoms must have persisted for at least two consecutive weeks, most of them almost daily, and must have caused clinically significant distress or functional impairment, without being attributable to another psychological or medical condition or substance use (American Psychiatric Association [APA], 2013). Within mental health services in the UK, regardless of whether or not all criteria for a diagnosis of MDD are met, depression severity is generally categorised as mild, moderate or severe, according to increasing functional impairment, respectively.

The costs of depression. Currently, depression is the second largest cause of disability worldwide (Ferrari et al., 2013), the most common mental health disorder (Steinert, Hofmann, Kruse, & Leichsenring, 2014) and owing to its increasing prevalence (Patten et al., 2016), it is predicted to be the leading cause of chronic illness in high-income countries by 2030 (World Health Organization [WHO], 2008).

In the UK alone prevalence of depression reaches five to 10% per year (McManus, Meltzer, Brugha, Bebbington, & Jenkins, 2009).

Depression commonly co-occurs with other mental (Kessler et al., 1994) and physical health conditions (Rosenthal, 2003). Individual differences (e.g., comorbidity, life-stressors, and availability of support) cause huge variability in the course of depression (Bennabi et al., 2015; Hunnicutt-Ferguson, Hoxha, & Gollan, 2012), taxing its treatment development. Unfortunately, according to a meta-analysis of randomised clinical trials of depression treatments, on average, 17.5% of depressed clients drop-out of treatment (Cooper & Conklin, 2015). Systematic reviews on the course of depression also report that of those who complete treatment, between 50% and 70% recover within 12 months, but 14% to 35% will experience an episode of recurrence during recovery (Richards, 2011). What is more, the rate of recurrence (Burcusa & Iacono, 2007), the length and severity of depression (Kendler et al., 2000) all increase over time and with subsequent episodes, while the rate of recovery slows (Richards, 2011). In fact, 10% to 17% will go on to have chronic relapsing depression (Steinert et al., 2014). Depression that persists for at least two years has recently been redefined as ‘persistent depressive disorder’, and its prevalence is estimated to be six percent (APA, 2013). Also, many individuals (29 - 46%) will experience ‘treatment resistant depression’, a failure to remit after at least two adequate trials of antidepressant medication (Fava & Davidson, 1996).

As a result of such varied treatment responses, depression can cause substantial costs to individual, health care service, societal and economic spending. The UKs latest released total annual cost of depression was £7.5 billion (McCrone, Dhanasiri, Patel, Knapp, & Lawton-Smith, 2008). More specifically, depression is

associated with detriments such as poor self-care, worsening physical illness, high mortality rates, absenteeism, impaired caregiver health, neglect, and implications to those left behind after a suicide (Donohue & Pincus, 2007).

Treatment of depression. The majority of people receiving treatment for depression are adults with mild symptoms (National Institute for Health and Clinical Excellence [NICE], 2004), and they are most often treated within outpatient primary care services (Fletcher, Bower, Gask, Richards, & Saunders, 2006). The stepped-care model, offering the least intrusive, most cost-effective low-intensity intervention before clients can be ‘stepped-up’ to more complex treatments following non-improvement, is the most widely adopted model for depression treatment within primary care settings (National Collaborating Centre for Mental Health [NCCMH], 2010). In the UK, the Improving Access to Psychological Therapies (IAPT) initiative (Department of Health [DOH], 2008) implemented the stepped-care model in order to make evidence based depression treatments more accessible.

Currently, the most recommended low-intensity treatments for mild to moderate depression, include cognitive behavioural therapy (CBT) based guided self-help, computerised CBT, structured physical activity programmes and group CBT. Antidepressant medication (ADM) is considered when symptoms are chronic or response to an initial intervention proves inadequate. For these individuals, high-intensity CBT, interpersonal therapy (IPT), or behavioural activation are also recommended. Combined CBT or IPT and ADM are recommended for moderate to severe depression treatment (NICE, 2009). During periods of being well, Mindfulness-Based Cognitive Therapy (MBCT) is recommended for those who have experienced three or more previous episodes of depression. Fundamentally though,

the development of patient-centred care, providing clients with treatment content and delivery *options*, is currently a key aim for mental health services (NICE, 2009).

Despite depression's high costs, the IAPT initiative (DOH, 2008), client choice, and the multitude of existing evidence based treatments for depression, psychological therapies have reached a plateau (Cuijpers, 2015). Response rates following depression treatments within IAPT are only 55% (Richards & Borglin, 2011). What is more, substantial numbers of depressed individuals remain undetected, undiagnosed and untreated (Glover, Webb, & Evison, 2010; McCrone et al., 2008), suggesting that barriers continue to be a block to the implementation of the NICE guidelines for depression (Gyani, Pumphrey, Parker, Shafran, & Rose, 2012). Some existing barriers include characteristics of the illness itself (e.g., pessimism), stigma, long service waiting lists, time constraints and personal responsibilities (e.g., child care and work schedules) (Mohr et al., 2010).

Much existing research on increasing access to depression treatments has investigated the effectiveness of more transportable low-intensity (e.g., technology-assisted and self-administered) or less expensive (e.g., brief, group or paraprofessional delivered) treatments (Chartier & Provencher, 2013). As an example, technology-assisted interventions have the potential to enhance treatment frequency and reduce treatment duration (in turn reducing costs), by enabling clients to access and complete online modules at varying rates, as well as to have contact with therapists within 24 hours (Andersson & Cuijpers, 2009).

Despite these benefits, some randomised controlled trials (RCTs) have demonstrated that acceptability of technology-assisted (Kenter, Cuijpers, Beekman, & van Straten, 2016) and unguided interventions (Hanson, Webb, Sheeran & Turpin,

2016), for depressed outpatients, is low. Another RCT concluded that in comparison to a telephone intervention, a *face-to-face* intervention lead to greater durability of improvement in depression symptomatology (Mohr et al., 2012). Some depressed individuals also have a preference for *1:1* therapy as opposed to group therapy (Dwight-Johnson, Sherbourne, Liao, & Wells, 2000). Therefore, in keeping with the aims of NICE (2009), clearly a variety of treatment choices are required to promote treatment access and provision of patient-centred care.

One *individual* and *face-to-face* treatment option that could address barriers to treatment such as pessimism, time constraints and personal responsibilities, while potentially still being more rapid and less expensive, is time-intensive treatment (TT). Generally speaking, TT refers to treatment delivered more frequently than the traditional weekly session rate, and over a shorter period of time.

Summary. Clearly, existing research indicates that depression is a complex affliction with increasingly far reaching effects. However, there is much room for increasing the success, accessibility, and retention of its treatment. As behavioural activation is thought to hold great promise in this regard (Kanter, Puspitasari, Santos, & Nagy, 2012) and TT also may, these will be the focus here, considering the literature (reviewed below) to suggest that there is reason to investigate the efficacy of both combined; time-intensive behavioural activation for depression.

Behavioural activation

Notably, numerous variants of behavioural activation exist and are often considered in combination as their shared components are thought to outweigh their differences (Dimidjian, Barrera, Martell, Munoz, & Lewinsohn, 2011). The most

commonly provided form of behavioural activation (Jacobson et al., 2001; Martell, Addis, & Jacobson, 2001), herein referred to as BA, is grounded in behavioural learning theory (Ferster, 1973; Lewinsohn, 1974), which, broadly speaking, proposes that depression can occur when individuals experience aversive events, and in order to cope, avoid the event as well as their related aversive thoughts and feelings. In turn, individuals engage in pleasant or satisfying experiences less often, and experience insufficient opportunities for response-contingent positive reinforcement (Lewinsohn, 1974). Coping via avoidance can have unintended consequences such as individuals becoming withdrawn and engaging in excessive behaviours (e.g., rumination). Unfortunately, these consequences act as secondary coping strategies, maintaining the depression by further limiting opportunities for individuals to experience positive reinforcement. This can lead to even deeper depression and more unhelpful coping behaviours (Veale, 2008). Moreover, these behaviours can influence individuals' environments (e.g., disrupting work routines), and relationships with others, which only serve to further maintain depression (Jacobson et al., 2001). As such, solutions to the problem become the problem.

Consequently, BA aims to reduce depression by reducing avoidance behaviours and unhelpful reinforcement patterns, instead promoting client engagement in activities that are pleasurable and positively reinforcing of antidepressant behaviour (Martell et al., 2001). Neurobiological literature supports this aim, demonstrating that those who show clinical improvements in depression symptoms also show functional changes in brain regions that mediate reward responsiveness (Dichter, Felfer, Petty, Bizzell, Ernst, & Smoski, 2009). In addition, though speculative, and subject to individual differences, mediation analyses have

also implicated reinforcement (Takagaki et al., 2016), and activation (Ryba, Lejuez, & Hopko, 2014; Santos et al., 2016) as mechanisms of change in BA.

BA is not strictly protocol driven, emphasising the idiographic nature of depression, but it typically begins with orienting individuals to the behavioural model of depression. Therapists then coach clients to learn to recognise the context in which their unhelpful, avoidance or excessive behaviours occur, as well as to analyse contingencies of reinforcement that unintentionally maintain their use (functional analysis). BA conceptualises overt and covert (including cognitive processes such as rumination and self-attack) behaviours, rather than the content of thoughts. BA also typically consists of activity monitoring, goal setting, and gradual scheduling of goal-directed activities that individuals either wish to do and value, or are avoiding doing, and are deemed more appropriate responses than their unhelpful behaviours. Accordingly, BA encourages individuals to act from the outside-in, according to their schedule, rather than to how they are feeling. Homework tends to consist of clients implementing their activity monitoring and scheduling, while investigating the impact of activities on their mood. At subsequent sessions, client activity levels are then reviewed, areas for development are identified, and activity schedules are established further. Problem solving and troubleshooting are repeatedly practiced when planning and reviewing activity schedules in order to amend barriers to completing activities that might maintain low mood. Through problem solving BA can also include some other therapeutic strategies (e.g., mindfulness or skills training) (Martell, Dimidjian, & Herman-Dunn, 2013).

The second most widely implemented variant of behavioural activation is behavioural activation treatment for depression (BATD; Lejuez, Hopko, LePage,

Hopko, & McNeil, 2001), which also assumes that activation should mediate changes in mood and shares BA's (Martell et al., 2001) aim to reduce the reinforcement of depressed behaviours while enhancing the reinforcement of more appropriate behaviours. BATD is rooted in behavioural matching theory (Herrnstein, 1970), which suggests that depression occurs when our environment results in reinforcers for depressed behaviour being more readily available than reinforcers of healthier behaviours. BATD differs to Martell et al.'s (2001) BA as it is briefer (eight to 15 sessions) and it does not focus on the functional analysis of avoidance or covert mental behaviours. Rather, its primary focus is on activation (Hopko, Lejuez, Ruggiero, & Eifert, 2003; Kanter et al., 2010).

Currently, the recommended amount of behavioural activation for persistent subthreshold or mild to moderate symptoms of depression (with inadequate response to initial interventions), and moderate to severe depression, consists of 16 to 20 sessions delivered over 12 to 16 weeks. If deemed necessary, three or four follow-up sessions are also recommended (NICE, 2009).

Advantages of behavioural activation. Despite differing treatments for depression, and their components, being increasingly acknowledged, by meta-analyses and systematic reviews, as equally necessary and effective (Barth et al., 2013; Cuijpers, 2015; Ekers, Richards, & Gilbody, 2008; Longmore & Worrell, 2007; Lorenzo-Luaces, Keefe, & DeRubeis, 2016; Mazzucchelli et al., 2009), behavioural activation and its variants are shown to exhibit some *advantages* over other recommended psychological treatments for depression.

Empirical evidence supportive of behavioural activation has increased over the last few decades. One particularly influential RCT treating 241 adults diagnosed with

MDD demonstrated that the response rate (those making 50% decrease in outcome scores from baseline) of participants receiving BA was 76%. Overall, CBT, BA and ADM (paroxetine) were equally comparable MDD treatment options (Dimidjian et al., 2006). In addition, for those participants exhibiting severe symptoms, BA was as effective as ADM and more efficacious than CBT. Within the same sample, BA's efficacy was even demonstrated for a group of depressed clients who had been unresponsive to previous cognitive therapy (CT) (Coffman, Martell, Dimidjian, Gallop, & Hollon, 2007). In addition, a two year follow-up study of the trial demonstrated that BA and CBT had equal durability of outcomes, and that both had superior durability and lower drop-out rates (9%) in comparison to ADM (Dobson et al., 2008).

Dimidjian et al.'s (2006) study was limited by not measuring the competency of its therapists and potential bias of allegiance effects. The authors also acknowledged that their higher rates of ADM attrition, though not proven, could have been accounted for by the design of the treatment implementation. However, a later systematic review then also concluded that drop-out rates were lower for behavioural activation (4.5% vs. 22.7%) than CBT (Sturmey, 2009). Though not proven empirically, following regression analyses, these findings have been hypothesised to be related to CT attributing depression to something intrinsic, rather than natural responses to situational factors (Castonguay, Goldfried, Wiser, Raue, & Hayes, 1996). Furthermore, behavioural activation is not limited by ADMs complicating factors such as unpleasant side effects (e.g., weight gain), nor is it potentially complicated by CBT's conceptualisation of thought content. In fact, behavioural activation is often referred to as 'parsimonious' (Jacobson et al., 1996) and less 'complex' than CBT

(Webb, Beard, Kertz, Hsu, & Bjorgvinsson, 2015). If experimentally supported, this might make behavioural activation more attractive to those with cognitive dysfunction, a common symptom of depression (APA, 2013), and for whom empirical evidence has concluded CBT is found to be less effective (Fournier et al., 2009).

Meta-analyses investigating the combined efficacy of different types of behavioural activation (BA, BATD and activity scheduling alone) have concluded that behavioural activation shows superiority to brief psychotherapy, supportive therapy (Ekers et al., 2008), and pharmacotherapy, and that there are limited associations between effects found and possible confounding variables (Ekers et al., 2014). Still, in 2009, the updated treatment recommendations for severe depression noted that the evidence for CBT and IPT was more robust than it was for behavioural activation (NICE, 2009). Indeed, referenced meta-analyses were underpowered and therefore subject to error. They often included studies considered as of low-quality, for reasons such as not using diagnostic interviews to determine participant inclusion, and not assessing treatment fidelity. In fact, removing low-quality studies from one meta-analysis removed the significant effect of behavioural activation over ADM (Ekers et al., 2014). However, NICE's (2009) conclusion is also likely to have been influenced by the fact that there were less studies of behavioural activation's efficacy in existence at the time.

More recently, a higher powered ($n = 440$) randomised controlled non-inferiority trial of BA concluded that BA is non-inferior to CBT, with 67% of depressed participants being considered treatment completers, and 64% of those demonstrating treatment response (50% decrease from baseline) over the twelve month period of the trial. The study also concluded that BA can be delivered by less

highly trained professionals than CBT requires (supporting the idea that it is less ‘complex’), and that at twelve months post-treatment it is more cost-effective at standard willingness to pay thresholds than CBT (Richards et al., 2016). Therefore, as suggested by commentaries on the effects of BA, it is thought that BA can be more attractive to services seeking economical and flexible treatment options, reinforcing its amenability for dissemination and accessibility (Curry & Meyer, 2016).

Behavioural activation is already found to be effective when disseminated across diverse settings and populations, including older adults, ethnic minorities and those with severe comorbidity (Kanter et al., 2015; Moradveisi, Huibers, Renner, Arasteh, & Arntz, 2013). Behavioural activation has also now been effectively disseminated across a wide variety of delivery formats including group (Porter, Spates, & Smitham, 2004) and computerised therapies (Andersson & Cuijpers, 2009). Regardless, in line with efforts to increase access to depression treatment, reviews of the existing literature have still called for continued innovation in its dissemination (Cuijpers, 2015; Dimidjian et al., 2011).

Time-intensive treatment (TT)

As mentioned, one option with potential for enhancing treatment access, choice *and* dissemination, is TT delivery. Currently the majority of research on TT has been conducted on anxiety disorders. Condensing treatment down over a shorter period of time, as an alternative to weekly hourly sessions, could be attractive to individuals who have a more immediate need or desire to recover (e.g., due to work and relationships being at risk), are less able to attend weekly treatment for longer periods of time due to their regular commitments (e.g., work, child care and travel

time), or have not responded to weekly treatment (Oldfield, Salkovskis, & Taylor, 2011; Storch et al., 2007).

Rationale for TTs has been based on early findings that avoidance can delay emotional processing (Rachman, 1979), and that in comparison to more traditionally spaced treatment, providing more frequent therapy sessions increases the rate of extinction of reinforcement patterns (Mackintosh, 1974, as cited in Oldfield et al., 2011, p. 8). Indeed, some regression analyses have demonstrated that increased symptom change between treatment sessions (sudden gains), and faster overall recovery, are both significantly associated with more frequent psychological treatment delivery (Bohni, Spindler, Arendt, Hougaard, & Rosenberg, 2009; Ehlers et al., 2010), regardless of the total number of sessions attended (Erekson, Lambert, & Eggett, 2015; Gutner, Sloan, Suvak, & Resick, 2016; Reese, Toland, & Hopkins, 2011). Although these regression analyses lacked experimental designs, and causality cannot be assumed, TT may also be associated with a decrease in total treatment durations deemed necessary for symptom improvement and the overall amount of time that individuals spend suffering. Concurrently, where empirically supported, TT could reduce the direct and indirect costs of depression (Kazdin & Blasé, 2011), treatment drop-out, and service waiting list times, which would be attractive to organisations (Zlomke & Davis, 2008).

Pioneers of TTs also highlight that they provide more frequent opportunities for symptom monitoring and safety promotion, and that they are thought to be helpful to those with memory problems as they keep session material fresh (Grey et al., 2009). Given the centrality of therapeutic alliance to psychotherapy outcomes (Fluckiger, Del Re, Wampold, Symonds, & Horvath, 2012), and the comparable

outcomes of different treatment approaches (Cuijpers, 2015), it is also conceivable, albeit not proven, that allowing therapeutic relationships to develop quicker could lead to more client motivation, and compliance, and be a non-specific therapy mechanism by which more rapid change occurs.

Beyond assumptions, lived perceptions of TT in comparison to more traditional weekly sessions have been studied. A sample of participants with obsessive-compulsive disorder (OCD), considered TT to be an efficient and acceptable treatment adaptation in comparison to weekly sessions. Findings suggested that TT reduced rumination time, while enhancing the therapeutic alliance, client focus, momentum and motivation (Bevan, Oldfield, & Salkovskis, 2010). However, individual differences influenced treatment preference. Reported disadvantages of TT included it being “overwhelming” and “too brief” to enable “real change” (Bevan et al., 2010, p.173). Qualitative research is limited by recruiting small samples, and this study in particular was biased by not exploring perceptions of those who dropped out of the treatment, thus limiting understanding of what drives TT drop-out. Undoubtedly, reference to experimental RCTs is needed to establish the efficacy of TT, in comparison to traditional treatment delivery, in order to either support or disprove the findings and assumptions described above.

Efficacy of time-intensive treatments. Yet, a lack of standardisation of reporting treatment session numbers, frequencies and durations makes it much more difficult to identify and determine studies that have used TTs, let alone their efficacies. In addition, inconsistent terminology is used to mean ‘time-intensive’, such as ‘massed’ (Öst, 1989), ‘accelerated’ (Wootton & MacGregor 2016), and ‘high-density’ (Hahlweg, Fiegenbaum, Frank, Schroeder, & Witzleben, 2001) treatment.

The term ‘intensive’ alone can also be used interchangeably to mean ‘demanding’ where interventions are multimodal (Schramm et al., 2007), and as mentioned above, the terms ‘high-intensity’ and ‘low-intensity’ are currently used to denote different types of treatment in the stepped-care model (NICE, 2009).

Furthermore, there is a lack of standardisation of what TTs actually entail. Trials of behavioural treatments for *anxiety*, such as exposure and response prevention (ERP), have historically emphasised a need for therapy sessions to be more continuous than once a week (Foa & Goldstein, 1978). It follows then that there have been more rigorous RCTs investigating the efficacy of TTs for anxiety than there have been for depression. Regardless, session numbers, frequencies and durations of treatments considered to be time-intensive have all differed considerably. This only confounds treatment designs, making their findings harder to interpret.

As examples, Öst (1989) first described an example of TT as one-session treatment of specific phobias, lasting up to three hours, which is now shown to be effective in comparison to multiple weekly sessions (Haukebo et al., 2007; Öst, Alm, Brandberg & Breitholtz, 2001; Zlomke & Davis, 2008). Intensive daily CBT for OCD has been delivered as fourteen, 90 minute sessions over three weeks, or weekly over 14 weeks, and found to be equally as effective as weekly treatment, at reducing OCD symptomatology (Storch et al., 2007). More recently, time-intensive post-traumatic stress disorder (PTSD) treatment, consisting of 18 hours of daily therapy, delivered over two, 90 minute to two hour session, for five to seven working days, was also shown to be as effective as therapy sessions delivered weekly over three months (Ehlers et al., 2014). None of these studies showed evidence of enhanced negative effects or increased drop-out associated with TT. Rather, some studies observed

improvements were even maintained at long-term follow-up points (Ehlers et al., 2014; Öst et al., 2001). However, there have not been many rigorous studies like these. It is conceivable that findings may not generalise to larger trials, and the studies themselves acknowledge that their findings could be confounded by extraneous variables, such as pre-treatment differences between their treatment conditions (Haukebo et al., 2008; Storch et al., 2007). Therefore, the findings still need to be considered tentatively.

Furthermore, inconsistencies in comparative trial findings indicate uncertainty surrounding the short and long-term effects of TTs. Some experimental evidence demonstrates that TT shows superiority for immediate short-term outcomes, yet that improvements deteriorate over the longer-term (Bohni et al., 2009; Storch et al., 2007). This suggests that TT may be related to undesirable outcomes such as lower retention of learning and higher relapse rates. Indeed, it has been suggested that longer spacing between sessions can impede learning, but can also provide increasing and diverse opportunities to practice and consolidate learned skills in different contexts, potentially promoting the long-term retention of progress (Abramowitz, Foa, & Franklin, 2003). Conversely, Haukebo et al., (2008), only found equal effects of time-intensive versus spaced dental phobia treatment one year post-treatment, after spaced treatment had initially appeared superior and change was explained by continued improvement of TT outcomes. It may be that without *some* spacing between sessions or practicing of skills post-treatment, progress might be lost once treatment ends. It has also been suggested, though following their naturalistic study, that the retention of more ‘complex’ treatment skills, encompassing more mechanisms (e.g., cognitive and behavioural mechanisms in CBT), is harder within intensive time-

periods, than ‘simpler’ (e.g., behavioural mechanisms in behavioural activation) skills (Webb et al., 2015).

Time-intensive treatment of depression

Based on promising existing evidence for TT of *anxiety* disorders, it is reasonable to assume that time-intensive BA for *depression* could also have promising effects for some individuals. After all, anxiety and depression are interrelated. They are both theorised to be characterised by negative affect (Mineka, Watson, & Clark, 1998; Watson, 2005), and they commonly co-occur (Kessler et al., 1996). Indeed, longitudinal evidence suggests that avoidance and escape behaviours are primary perpetuating factors of both anxiety and depression (Jacobson & Newman, 2014). Accordingly, treatments of anxiety *and* depression (e.g., CBT, ERP and BA) share some conceptual underpinnings, namely behaviour modification, often targeting avoidance (Hopko, Robertson, & Lejuez, 2006). Therefore, one might assume that the therapeutic effects of activation in behavioural activation (learning new responses to positively reinforcing stimuli) and exposure in ERP (learning new responses to previously feared stimuli), through extinction, are functionally similar (Hopko et al., 2003b). However, operant conditioning (learning via reinforcement interactions), tends to be used to modify affective symptoms of depression, whereas classical conditioning (learning via stimulus-response interactions) holds higher theoretical basis in anxiety disorder treatment (Neudeck & Wittchen, 2012; Ramnero et al., 2016). What is more, existing research on mechanisms of change underlying behavioural activation outcomes is still mixed and speculative, meaning that they have not been confirmed as the same mechanisms of change present in anxiety treatment (Hunnicut-Ferguson et al., 2012; Lemmens, Muller, Arntz, & Huibers,

2016; Lorenzo-Luaces et al., 2016; Santos et al., 2016). Even so, RCTs investigating time-intensive anxiety treatments have also demonstrated transfer effects in depression outcomes (Ehlers et al., 2010; 2014; Storch et al., 2007), which has even resulted in increasing interest in integrating behavioural activation treatments for individuals with comorbid or mixed anxiety and depression presentations (Ammerman et al., 2012; Barlow & Campbell, 2000; Hopko, Lejuez, Ryba, Shorter, & Bell, 2016).

Time-intensive behavioural therapy. Actually, even prior to the development of stand-alone behavioural activation, the efficacy of delivering behavioural therapy (BT) components (e.g., self-monitoring, activity scheduling, and problem-solving that went on to embody behavioural activation), time-intensively, had been demonstrated. For example, depression symptomatology measured on the Beck Depression Inventory (BDI; Beck, 1967) reduced at an equally effective rate following either randomly allocated BT or CT, when delivered in six, 40 minute sessions, over four weeks (Taylor & Marshall, 1977), and these findings were maintained at 5 week follow-up. In addition, Zeiss, Lewinsohn and Munoz (1979), found twelve BT sessions, delivered three times a week, over one month, to be equally as effective as interpersonal and cognitive approaches when reducing depression symptomatology on a depression behaviour checklist (Grinker, Miller, Sabshin, Nunn, & Nunnally, 1961). In retrospect, the authors commented that they considered their treatment schedule to be too time-intensive, stating that it “did not allow enough time for clients to practice new skills under therapist guidance” (Zeiss et al., 1979, p. 432). Instead, they recommended that future researchers spread the sessions out over a six week period. Furthermore, these study samples were subject to

selection bias as they were small, heterogeneous, non-clinical, opportunity samples. The incidence of depression was not measured using diagnostic screening tools, and outcomes were predominantly measured using self-report scales, reducing the validity of the outcomes. Study findings were also subject to experimenter bias, as either only one therapist delivered the treatments and rated outcome measures (Taylor & Marshall, 1977), or therapists had limited experience (Zeiss et al., 1979), Therefore the reliability and generalisability of the study findings are limited.

Furthermore, conflicting findings for the effectiveness of time-intensive BT do exist. One study comparing group BT delivered either immediately (twice a week for two hour long sessions, over four weeks), or delayed (for four weeks of self-monitoring followed by weekly sessions), reported that delayed treatment led to significantly increased activation and significantly decreased depression scores in comparison to the immediate treatment condition. This effect was hypothesised by the authors as caused by the four weeks of self-monitoring better preparing participants for treatment (Barrera, 1979), but was also acknowledged as potentially confounded by therapist experience.

How time-intensive should behavioural activation be? When BA was eventually introduced as a stand-alone treatment (Martell et al., 2001) for depression, it was specifically intended to be delivered twice a week for the first three to four weeks and then once a week thereafter, making it time-intensive to begin with. Indeed, this mode of delivery is now recommended for consideration, particularly for clients experiencing moderate to severe symptoms (NICE, 2009). Martell et al., (2001) specifically intended such treatment delivery to promote client engagement, the therapeutic alliance, early improvement and the reduction of risk. A later step-by-

step guide to BA highlighted that barriers to the practicalities of this methodology, such as client availability, service demands and resources, prevented the recommendation from being followed consistently in clinical practice (Dimidjian, Martell, Addis, Herman-Dunn, & Barlow, 2008).

It may not be surprising therefore, that since the development of stand-alone behavioural activation interventions, this literature review found no published, gold-standard, RCTs comparing the efficacy of time-intensive behavioural activation for depression to treatment as usual or control conditions. This comparison has not even been investigated in the wider field of depression treatments yet. In fact, the first study of this kind, a RCT comparing the cost-effectiveness of twice-weekly and once-weekly IPT and CBT, is currently ongoing (Bruijniks et al., 2015).

Therefore, it makes sense that Cuijpers, Huibers, Ebert, Koole, & Andersson, (2013) concluded that there is a lack of understanding of an optimal intensity of psychotherapy sessions for depression. Their meta-regression analysis of RCTs investigated the association between the effectiveness of psychological treatments for adult depression and a) the number of sessions, b) treatment durations and c) intensity of session deliveries, in order to determine how much psychotherapy is needed to treat depression. They defined treatment intensity as the number of sessions delivered per week, and included 70 trials in total. Their findings showed that the intensity of psychological treatments for depression ranged from 0.44 to two sessions per week, and that the majority of depression treatment studies delivered just one session per week. Six studies included in the meta-analysis investigated the efficacy of behavioural activation or its components (Carpenter, Smith, Aharonovich, & Nunes, 2008; Dimidjian et al., 2006; Ekers, Richards, McMillan, Bland, & Gilbody, 2011;

Taylor & Marshall, 1977; Teri, Logsdon, Uomoto, & McCurry, 1997; Turner, Ward, & Turner, 1979). However, only two delivered treatment 1.5 times a week on average (Dimidjian et al., 2006; Taylor & Marshall, 1977), and one delivered treatment 1.25 times on average (Turner et al., 1979).

Turner et al., (1979), delivered five 50 minute sessions of activity scheduling over a 30-day period and found a significant reduction in depression symptoms in comparison to exercise, activity monitoring, and attention-control conditions that did not increase participant activity levels. However, similarly to Taylor and Marshall's (1977) study (described above), their study was limited by sampling and experimenter biases. In addition, the majority of its sessions ($n = 3$) were delivered weekly. Conversely, Dimidjian et al., (2006), (also mentioned above), delivered 24, 50 minute sessions of stand-alone BA, over 16 weeks, (meaning that they did employ the recommended twice-weekly delivery of sessions for the first eight weeks) when demonstrating its efficacy as treatment for clinically depressed outpatients, in comparison to both CBT and ADM.

Despite comparing a variety of different treatment formats, the overall finding of the meta-analysis was that, effectiveness of depression treatment was more associated with session *intensity* than general treatment *quantity*. In fact, having two sessions a week as opposed to one session each week increased treatment effect size by $g = 0.45$. This significant effect was still present when comparisons between weekly, more than weekly and less than weekly treatments, were all made separately. Longer treatment durations also resulted in significantly lower effect sizes, and a decrease of $g = 0.13$ with every additional week of therapy. There was also a significant positive relationship between treatment duration and treatment effect size.

However, the association between session intensity and effect size was the only remaining significant association when more sensitive analyses were employed that, for example, excluded studies where diagnostic interviews had not been used to assess for depression. To explain this effect, the authors referred to animal model evidence within neurobiology, which suggests that learning processes require neurons born over the past five days (Henn & Vollmayr, 2004), and therefore that TT may increase the survival of such neurons, and in turn accelerate the learning of therapeutic skills.

Nevertheless, these findings cannot support an inference of causality between variables. Findings were based on planned treatment amounts, frequencies, and intensities, which may not have been representative of actual treatment delivered following participant drop-out and non-attendance. Findings may also be biased by not always accounting for the quality of treatments included in the meta-analysis, and not considering the impact of booster sessions on treatment effects. Furthermore, the studies included in the meta-analysis were acknowledged as at high risk of publication bias (Cuijpers et al., 2013).

Regardless, Cuijpers et al., (2013) called for future studies, employing rigorous methodology (e.g., multiple baseline or RCT designs), to investigate the efficacy of different TTs for depression. In line with general attempts at increasing depression treatment access, currently the bulk of research influenced by Cuijpers et al.'s (2013) findings consists of investigating technology-assisted (mobile or internet-based) therapies (e.g., Kooistra et al., 2014).

One-session behavioural activation. The lack of understanding of optimal depression treatment intensity makes it less clear how time-intensive BA for outpatients with depression should be structured. Cuijpers et al., (2013) proposed that

“no one would probably consider treating depression in one week” (p. 11). Indeed, greater homework completion (Busch, Uebelacker, Kalibatsera, & Miller, 2010) and activity levels (Mazzucchelli et al., 2009) are both shown to correlate with positive change in behavioural activation, which supports the suggestion that retention of TT outcomes could require longer opportunities to practice skills gained from therapy (Abramowitz et al., 2003). In addition, considering that the time required to form new habits successfully (Lally, van Jaarsveld, Potts, & Wardle, 2010), can be longer than time required for habituation to anxiety (e.g., Öst et al., 1989), one might have anticipated that interventions for depression, where habitual learning carries weight, could not be effective after a single session, or that they might be less effective than shown for specific phobias. However, there is also evidence to suggest that the *quantity* of activity completed in behavioural activation treatment is *not* associated with change in depression outcomes (Hershenberg, Paulson, Gros & Acierno, 2014; Ryba et al., 2014). In addition, empirical as well as less rigorous research has highlighted that success and temporal aspects of depression treatments are heterogeneous (Manos, Kanter, & Luo, 2011; Santos et al., 2016; Stavrakakis et al., 2015).

In fact, some research has indicated behavioural activation’s potency when completed for one or two weeks, following just one treatment session. Gawrysiak, Nicholas and Hopko (2009) administered one 90 minute session of BATD to 30 university students with moderate levels of depression. Following the intervention, participants were instructed to complete activation goals over a two week period. No one dropped out, and findings showed that 93% of those receiving the intervention experienced reliable and clinically significant improvements in their experience of

depression symptoms, according to BDI-II (Beck, Steer, & Brown, 1996) scores, and 36% made reliable and clinically significant change in their anxiety levels, as measured by the Beck Anxiety Inventory (BAI; Beck & Steer, 1993). Only 31% of participants in a no-treatment control condition showed such progress on either measure. Despite the study making good efforts to maximise the external reliability of the findings (e.g., through randomisation), it had many limitations. Recruiting a volunteer sample of non-clinical university students, and excluding anyone who was taking medication or had received psychological treatment in the past two years, reduced the generalisability of the study findings. Participants only completed self-report measures, and although adequate, the sample size was small, increasing the probability of measurement errors. Furthermore, the study did not include a follow-up measurement, reducing our understanding of how outcomes may or may not have been maintained over time.

In 2016, the efficacy of another single session of BATD, also lasting for 90 minutes, was investigated as a preventative depression intervention, in comparison to a wait-list control condition, for a community sample of 13 non-depressed carers (Read, Mazzucchelli, & Kane, 2016). The findings indicated that the intervention led to reduced stress levels in carers but that it did not lead to reliable or clinically significant reduction in depression or anxiety symptoms on the Depression Anxiety Stress Scales (Lovibond & Lovibond, 1995). The small sample size may have resulted in non-significant findings. In addition, the authors themselves acknowledge that treatment adherence of only 56% and a two week intervention period may not have allowed for the interventions full impact to be demonstrated. They proposed that

future research should include short telephone calls between the therapist and client, to prompt activation.

Even more recently, 46 participants with diagnosed MDD were randomised to either Gawrysiak et al.'s (2009) one-session BATD intervention or a wait-list control condition (Nasrin, Rimes, Reinecke, Rinck, & Barnhofer, 2017). After only a one week intervention phase, post-treatment outcome measures indicated that participants made significant improvements in self-reported depression symptoms (according to the Patient Health Questionnaire; Kroenke, Spitzer and Williams, 2001). Still, these effects were only subtle, and again potentially influenced by the small sample size, 9% of participants dropping-out, and experimenter bias, as only one therapist delivered the treatments. Clearly there is some evidence for the efficacy of one-session BATD treatments, though this is limited and inconsistent.

Multi-session time-intensive behavioural activation. Multi-session, time-intensive behavioural activation treatment has been more commonly researched in inpatient settings. For inpatients, session frequency tends to be higher, as length of stay is reduced.

One pilot RCT compared BATD to a supportive psychotherapy control condition, for 25 inpatients with depression. In the BATD condition participants were seen, for 20 minute sessions, three times a week, over a two week period (Hopko, Lejuez, Lepage, Hopko, & McNeil, 2003). According to outcomes on the BDI-II (Beck et al., 1996), BATD was shown to be more efficacious than the control condition. However, the control condition was not empirically validated, and the experimenters did not measure treatment adherence to either condition, threatening the internal validity of the findings.

In a separate study, 50 older adults on a geriatric inpatient unit, presenting with depression and cognitive impairment, were randomised to receive either eight 30 to 60 minute sessions of BATD, over four weeks, or treatment as usual. BATD led to improvement in depression symptoms on the Geriatric Depression Scale Short Form (Sheikh & Yesavage, 1986) for 24% of depressed inpatients as opposed to only 12% improving in a treatment-as-usual condition (Snarski et al., 2011). However, the findings were biased by high attrition rates ($n = 9$, 36%).

More recently, a behavioural treatment model for depression, based on the synthesis of BA and BATD has been developed (BA/TD: Kanter, Busch, & Rush, 2009), maintaining emphasis on functional analysis while keeping the structure of treatment simple. Eight to 12 sessions of the treatment were delivered once or twice a week to 13 participants from Swedish inpatient settings, who were transitioning to outpatient services and indicated having significant depression symptoms according to the Montgomery-Åsberg Depression Rating Scale (MADRS; Montgomery & Åsberg, 1979). Comparisons between pre and post-treatment scores indicated that participants made significant improvements in depression symptoms. Credibility and acceptability of the intervention were also high, deeming the intervention feasible for their population. However, the *mean* number of sessions delivered was only three and a half, three participants dropped-out, and the researchers were unable to draw conclusions about the interventions efficacy as the study was not a randomised controlled trial (Folke et al., 2015a).

Folke et al., (2015b) went on to test the efficacy of their time-intensive BA/TD intervention using the more rigorous methodology of multiple baseline single case experimental design (SCED). They recruited six participants with depression

(according to a score of 20 or more on the MADRS) from three different inpatient wards in Sweden. Participants were randomised to baseline phases lasting one to six days and then attended two, daily, 20 to 30 minute sessions of BA/TD, over five consecutive days. Depression outcomes were measured according to participants completing daily self-report versions of the MADRS (Svanborg & Åsberg, 1994), an hourly diary rating their felt level of depression, and their activation levels on the short Behavioural Activation for Depression Scale (Manos et al., 2011). Independent raters also collected clinician-rated versions of the MADRS at the beginning and end of baseline and intervention phases. The study findings indicated that the majority of participants experienced reliable change (Jacobson & Traux, 1991) in depression symptomatology, according to daily self-report ($n = 5$, 83%) and clinician-rated measures ($n = 4$, 66%). Fewer participants demonstrated clinically significant change in their self-report ($n = 2$, 33%) and clinician-rated outcomes ($n = 3$, 50%). However, feasibility measures also demonstrated that participants rated the treatment as highly satisfying. Even so, experimental bias may have confounded these findings as non-random recruitment of participants was used, the first author delivered the intervention, and outcome raters were also members of the research team.

Moreover, all of the studies described above, that were conducted within inpatient settings would benefit from having larger sample sizes, increasing statistical powers. None of the studies used structured clinical interviews to determine whether or not participants met diagnostic criteria for MDD, reducing the validity of their samples. In addition, all of the participants had comorbidities and were receiving multiple standard inpatient treatments concurrently to the behavioural activation. They will of course have included medicinal treatment dosages that can fluctuate

daily. While such a range of depression severity does enhance generalizability of the study findings, it also confounds them. Furthermore, none of the studies measured treatment fidelity, meaning the integrity of the interventions is uncertain. Given that stay durations on inpatient units are often short and interrupted by sudden discharge, the participants were often unable to even complete their behavioural activation. In fact, none of the inpatient studies described collected follow-up outcome measures, rendering the maintenance of any of their treatment effects, unknown.

Summary. In summary, some existing research describes the merits of delivering both behavioural activation and TTs, in comparison to other treatment types or modalities. However, TT for depression using behavioural activation has not been investigated to the same rigorous standards as some treatments for anxiety disorders have been. What is more, any existing research into its effects has been subject to several limitations. Of note, the majority of rigorous evidence investigating the efficacy/effectiveness of time-intensive behavioural activation, though supportive, has either not been time-intensive across the total treatment duration (e.g., Dimidjian et al., 20006) or, where it has been, it has also been much briefer (e.g., Gawrysiak et al., 2009) than the current recommended behavioural activation durations for outpatients with depression (NICE, 2009). Therefore, time-intensive behavioural activation treatments for depression have not been defined in a consistent way. Also, it seems the majority of existing time-intensive behavioural activation, owing to taking place within inpatient services, has delivered BATD or BA/TD as opposed to BA, and has been less focused on increasing access to completing treatments but more focused on participants making fast progress in contexts where stay durations are

unpredictable and most often short (F. Folke, personal communication, February 6, 2017).

Currently, meta-analyses have predicted that cost-effectiveness and client preference will increasingly influence treatment provisions (Mazzucchelli et al., 2009). Despite most treatment of depression occurring in adult outpatient settings, and there being more rigorous existing research of BA's efficacy (Richards et al., 2016), as opposed to BATD's, particularly within outpatient settings (Kanter et al., 2010), this review found no examples of studies investigating the effects of *continuously* delivered time-intensive BA in these settings. Therefore, there appears to be a gap in the literature, and given the implication that time-intensive BA for depression could enhance treatment access and effects; it is a gap worth filling.

The present study

Accordingly, the practical key aim of the current study was to conduct a preliminary examination of the effects of a time-intensive BA intervention, delivered to adults with depression, presenting to outpatient primary care services. The study aimed to answer the following research questions:

1. In terms of recruitment rate, treatment duration, retention, and treatment credibility/expectancy ratings; is time-intensive BA a feasible intervention for adults with depression who present to outpatient primary care services?
2. Can time-intensive BA lead to improvement on idiographic measures of depression symptoms?
3. Can time-intensive BA lead to reliable and clinically significant change on standardised and process measures of depression and anxiety?

4. Are treatment gains maintained over a three week follow-up period?
5. Do participants' and therapists' evaluations of the intervention indicate that it is considered an acceptable treatment?

The study employed a multiple baseline single-case experimental design (SCED), with randomisation to baseline duration. SCEDs are a robust method for testing causal mechanisms of treatments. They monitor progress within individual participants over time by repeatedly measuring outcome variables across different phases (e.g., baseline and intervention), rather than making within and/or between group comparisons (Kazdin, 1982). This allows detailed change to be demonstrated within each participant (Turpin, 2001), for participants to act as their own controls, and for individual differences between multiple participants to be captured (Morley, 2015a), enabling a more complete understanding of change. Thus, SCEDs are considered adequate starting points for guiding practice development (Morley, Linton, & Vlaeyen, 2015). Furthermore, SCEDs are more readily applicable to busy primary care settings than larger more rigorous research designs and require fewer participants to detect an effect. Therefore SCED was considered a more appropriate design for the current proof-of-concept study.

The multiple baselines characteristic increases the experimental control of study findings by demonstrating the stability of outcomes, over differing durations, before the intervention is manipulated. Randomisation to baseline lengths controls for extraneous threats to validity, such as maturation, enabling outcomes to be attributed to the intervention as opposed to time (Kratohwill et al., 2010).

Eight participants with a primary diagnosis of MDD were recruited from three IAPT outpatient adult mental health services in London, and were prospectively

followed during the course of their time-intensive BA. Following suggestions from previous research (described above), the Principal Investigator decided that the TT would consist of seven bi-weekly sessions (Cuijpers et al., 2013), of BA delivered over 22 days (Zeiss et al., 1979), with three optional additional booster sessions (Cuijpers et al., 2013; NICE, 2009), and regular prompting (Read et al., 2016) (see Methods for further rationale).

Participants completed daily visual analogue scales measuring their mood, anxiety, rumination, avoidance, encapsulated beliefs and chosen idiographic symptoms of depression. They also completed standardised weekly measures of depression and anxiety symptomatology, as well as process measures of activation and dysfunctional attitudes. Acceptability of the intervention was determined by measuring client satisfaction and both therapist and client's ratings of the intervention's acceptability.

Besides using rigorous SCED methodology, the study aimed to build on the existing literature by defining a novel application of time-intensive BA that was continuous and less brief. The study recruited outpatients, with less severe comorbidity, who were not engaging in any other psychological intervention simultaneously to the BA, but were allowed to participate if they were taking ADM or had received previous psychological treatment within the last two years, but not the last six months. The reliability of the outcomes was enhanced by collecting clinician-rated as well as self-report measures of depression symptomatology. Treatment validity was also improved by using diagnostic screening criteria to select participants, using multiple qualified therapists to deliver the intervention (none of whom were the Principal Investigator), measuring the treatment fidelity and

considering the durability of change by monitoring symptoms for three weeks post-treatment.

Participants' outcomes were explored at an individual level using visual analyses of graphed data. Statistical analyses were also conducted to determine the amount of data that differed between the study phases, and whether or not participants made reliable and clinically significant change. Participant and therapist's evaluations of the acceptability of the intervention are also described.

It was hypothesised that following the intervention, participants would show improvements in their idiographic, standardised and process measures of depression symptomatology, and that these effects would generalise to anxiety symptoms. Improvement was operationalised as making significant declines on idiographic measure ratings (according to *Tau* statistics), or reliable change (Jacobson & Traux, 1991) on standardised and process measures. Due to the lack of existing research in this area, no directional hypotheses were made about whether or not progress would reach reliable *and* clinically significant change, be maintained following the short follow-up period, or whether or not the intervention would be viewed as acceptable and feasible.

Methods

Participants

Sample. In total eight participants (two male, six female), consented to take part. Participants were recruited from three primary care Improving Access to Psychological Therapies (IAPT) services in London. The time period for recruitment was September 2016 - March 2017.

Inclusion criteria. The following inclusion criteria were used for the study:

1. Being aged 18 or over;
2. Meeting criteria for a primary diagnosis of MDD according to The Research Version of Structured Clinical Interview for MDD (First, Williams, Karg, & Spitzer, 2015);
3. Having sufficient command of English to comprehend instructions and measures without the use of an interpreter;
4. Scoring ≥ 10 on The Patient Health Questionnaire (PHQ-9; Kroenke & Spitzer, 2002);
5. Scoring ≥ 25 on The Montgomery-Åsberg Depression Rating Scale (MADRS; Montgomery & Åsberg, 1979);
6. If prescribed anti-depressants, being on a dose that had been stable over the past six weeks with future type and dosage being controlled (by their General Practitioners) to remain constant;
7. Being willing and able to travel to treatment at the time-intensive rate;
8. Having treatment goals that were suitable for receiving BA;
9. Having no specified preference to receive CBT.

Clients who showed obvious presence of a comorbid diagnosis that was more severe (e.g., bipolar disorder, psychotic and personality disorders) and/or more prominent (e.g., substance dependency, panic and agoraphobia) than MDD, and required a different intervention, were excluded. Clients were also excluded from taking part in the study if they were acutely suicidal, had attempted suicide within the previous two months, were receiving any other form of psychological intervention currently, or in the preceding six months, had a long-term physical health condition that would prevent intensive treatment attendance (e.g., needing hospitalisation or being immobile), required specialist perinatal care or had a cognitive impairment due to an organic cause (e.g., learning disability or dementia).

Eventually, to preserve the power of the study as much as possible, the exclusion criteria were relaxed to enable the recruitment of participants who had received psychological treatment in the last six months (given the design's use of a baseline phase), or were due to receive a low-intensity depression treatment before being stepped-up for high-intensity treatment of a comorbid problem (e.g., social phobia). Broadening these criteria was deemed to represent more accurately the types of clients seeking depression treatment across London IAPT services.

Eight participants completed treatment. One participant dropped out of the study following her assessment as she was returning to work and disclosed that outcome measure completion made her feel more depressed. The flow of participants that were approached and recruited into the study is depicted in Figure 1.

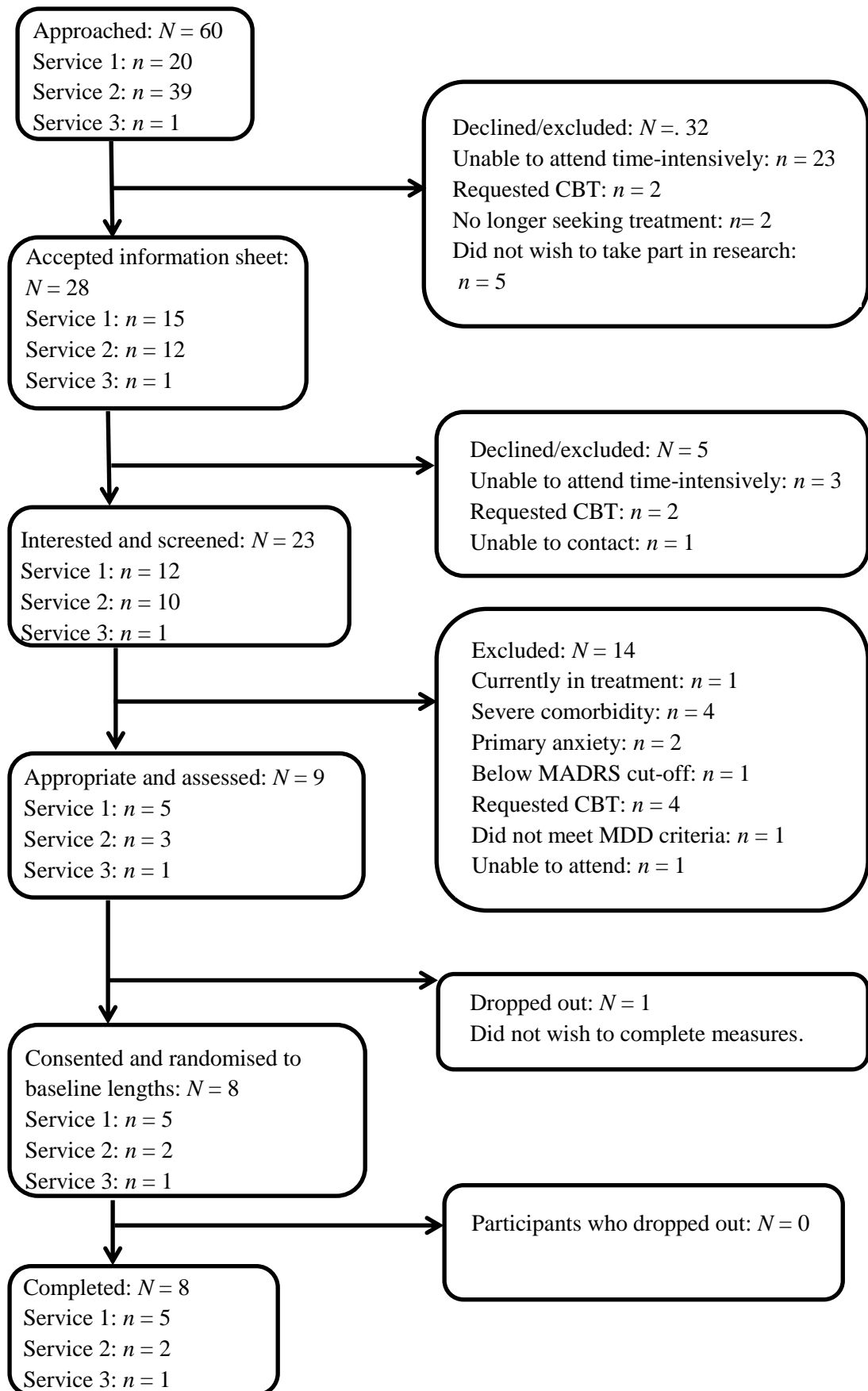


Figure 1. Flow of recruitment and participation

Recruitment. Initially, six services were approached and asked to be involved in the research study. The three sites that declined involvement did so due to either already being involved in other depression research or not having therapists whose hours would have enabled them to see participants time-intensively.

At participating services, the Principal Investigator and Psychological Wellbeing Practitioners/Assistant Psychologists were responsible for recruitment. Potential participants were initially identified from consecutive referrals on service waiting lists, as those who were being offered BA, and whose initial assessment suggested that they might be eligible to participate in the study. The study was then briefly introduced to clients when feeding back their treatment options to them. Those who were interested in participating in the study were sent a participant information sheet (Appendix 2). After reading the information sheet, those who were still interested in taking part were screened by the Principal Investigator to see if they met the study inclusion criteria. Participant eligibility was always checked with at least one other member of the research or clinical team (the Principal Investigator, supervisors, therapists and service leads). Those that were deemed eligible to be included in the study, and were still interested in taking part were then booked in for an assessment session with a therapist. Participants were not offered any compensation for taking part in the study.

Power. Systematic procedures for performing power analyses for SCEDs are under-developed (Arntz, Sofi, & van Breukelen, 2013). Still, to increase external validity of study findings, and to compensate for low statistical power that is normally associated with small-N samples (Turpin, 2001), it is recommended that SCEDs be

replicated across more than one participant (Hayes, Barlow, & Nelson-Gray, 1999). A ‘three point guideline’ has been recommended for determining experimental control of study designs (Lanovaz & Rapp, 2015). Indeed, existing SCEDs have recruited a median of three participants (Shadish & Sullivan, 2011). However, it was later reported that multiple baseline design power only exceeds the desirable 0.8 when the number of time points per phase is 12 and the number of cases is nine (Shadish, Hedges, & Pustejovsky, 2014). In an attempt to consider these recommendations, to improve upon sample sizes of existing studies with similar designs (e.g., Folke et al., 2015b), to account for potential participant attrition, and to aim to recruit a feasible sample size within the study time-frame, this study inflated a desired sample size of nine by 25% and aimed to recruit 11 participants.

Therapists. Therapists involved in the study were either Clinical Psychologists and/or High-Intensity Cognitive Behavioural Therapists. Therapists were only considered eligible to take part in the study if they had completed their qualification and had accreditation with The British Association of Behavioural and Cognitive Psychotherapies (BABCP). Therapists received training in BA as part of their qualifications but were also required to attend a half-day training session on BA in order to take part in the study. The training session was delivered by experts in the field and included a PowerPoint presentation summarising the background to the study, the main research questions and teaching on the principles and mechanisms of BA. Therapists then needed to demonstrate self-reported competence in delivering BA, using an adapted version of the Quality of Behavioural Activation Scale (QoBAS; Dimidjian, Hubley, Martell & Herman, 2016) (see Measures and Appendix 3).

Therapists were not paid extra for their involvement in the study. Motivations to participate included work variety, and potential for authorship should the current study findings be published. In total, six therapists took part in the study, three from Service 1, two from Service 2 and one from Service 3. All included therapists achieved a *mean* adapted QoBAS score of 66% (55.8/84), and their *mean* duration of time post-qualification was 3.37 years (three years and four months, *SD* = 43.80, *range* = six months - nine years).

Ethics. The study was reviewed and approved by Royal Holloway University of London Research Committee (Appendix 4). The UK Central London Research Ethics Committee gave approval for the study (16/LO/0485) on 13/04/2016. Approval was subsequently given by the NHS Health Research Authority (HRA), relevant local Research and Development (R&D) teams, and The Royal Holloway University Department Ethics Committee self-certification was obtained. Service 3 was not initially part of the study's ethical approval. No amendment was necessary when it was added because it was part of the same NHS Foundation Trust/R&D team as Service 2. Approval documentation front sheets can be seen in Appendices 5 to 8.

Service user consultation. The participant information sheet, research protocol and treatment delivery design were reviewed by a service user and carer group at a London university with research connections to Service 2. The group was asked to comment on the acceptability of participant resources and the feasibility of the design of treatment delivery. The group reported thinking that the study was investigating a worthwhile intervention but that it would be very time-consuming for participants to complete the necessary outcome measures. They also wondered if participants would receive feedback on their outcome measure scores. They were

supportive of the intervention including session breaks and clinician prompting. Materials and procedures were adapted to consider the views of the service users.

Design

The study employed an A₁BA₂ single-case experimental design (SCED) with multiple baselines, and a symptom monitoring follow-up period. The A₁ phase was the non-concurrent multiple baseline phase, systematically randomising participants to collect outcome measures for seven, 14 or 21 days prior to starting phase B. Phase B was the intervention phase, lasting a minimum of 22 days and a maximum of 52 days, comprising of seven face-to-face sessions and three optional booster sessions. The A₂ phase represents a period when outcomes were monitored again, for up to three weeks, after the withdrawal of the treatment. An AB design was used when follow-up scores were not obtainable.

The manipulated intervention was time-intensive BA for depression, based on Martell et al.'s (2013) clinicians' guide, which is the same intervention that was delivered in previous trials (Dimidjian et al., 2006; Dobson et al., 2008) and is described in more detail below (see Intervention). Time-intensive was operationalised as treatment that is not delivered in the traditional weekly 50 minute/ hourly sessions, but is concentrated and delivered at a higher level, over a shorter period of time (Oldfield et al., 2011). The dependent variables were depression and anxiety symptomatology, indicated by quantitative scores on outcome measures, and the intervention's acceptability, as indicated by recruitment and retention rates as well as participant and therapists' acceptability ratings. Figure 2 shows a visual representation of the design and procedures.

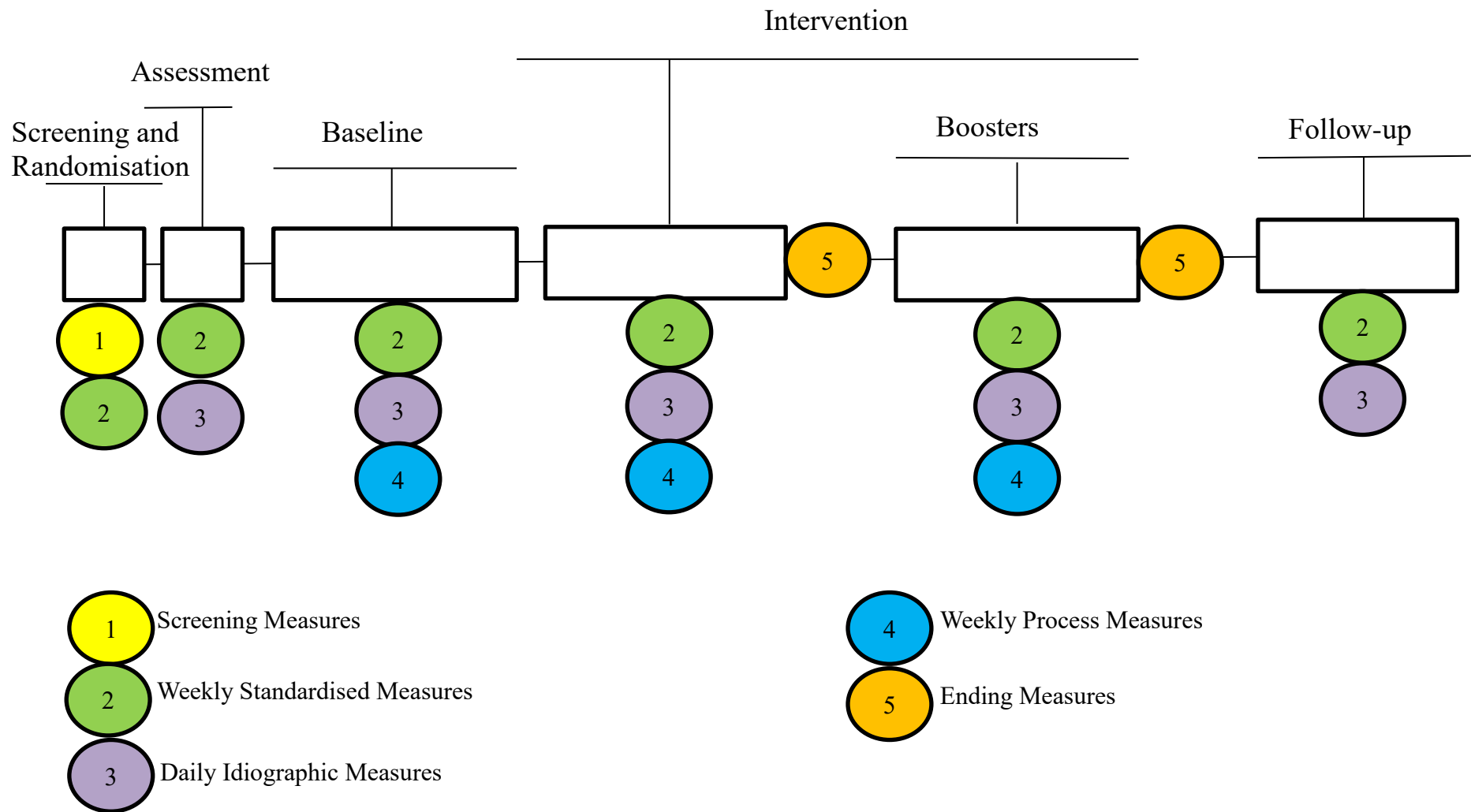


Figure 2. Diagram of the study design and procedures

Measures

Five types of outcome measures were collected during the study: screening, idiographic, standardised, process, and ending measures. Of note, the specific constructs of depression and anxiety were measured using multiple types of measures. Depression was measured using an idiographic visual analogue scale (see Idiographic measures below), a clinician rated scale (see The Montgomery-Asbery Depression Rating Scale below), and a standardised self-report scale (see The Patient Health Questionnaire below). Anxiety was measured using an idiographic visual analogue scale (see Idiographic measures below) and a standardised self-report scale (see The Generalized Anxiety Disorder Scale below). Repeated measurement of the same overlapping constructs was used because idiographic measures consider individualised meanings of constructs and are highly sensitive to change within individual subjects, enabling more detailed understanding of where subtle change occurs, whereas standardised measures are less sensitive to change but, given that they are based on population norms, they can provide global context to idiographic findings. Both clinician and self-report rated standardised measures of depression were collected to enhance the reliability of the findings, given that research suggests that they each provide unique information, of relevance to clinical outcomes (Cuijpers, Li, Hofmann, & Andersson, 2010; Uher et al., 2012).

All measures were completed using electronic or paper copies.

Screening measures. Some measures were completed solely during the screening process when determining whether or not referrals met criteria to participate in the study. They were completed by the Principal Investigator, over the telephone. Completion of the screening process took approximately one hour.

The Research Version of the Structured Clinical Interview for Major Depressive Episode (SCID-5-RV; First, Williams, Karg, & Spitzer, 2015). The SCID-5-RV is a clinician led semi-structured interview guide and was used for making a diagnosis of MDD, based on DSM-5 criteria.

Demographic Variable Questionnaire. A Demographic Variable Questionnaire (Appendix 9) was created by the Principal Investigator and completed by participants in order to consider the differences between participants and the existence of potential confounding variables that might have influenced their treatment outcomes. Variables assessed included age, sex, gender, ethnicity, duration of the problem, previous treatment, comorbidity and significant life events.

The Patient Diagnostic Screening Questionnaire (PDSQ; Zimmerman & Mattia, 2001). The PDSQ (see Appendix 10) was routinely completed by clients at their referral, to assess whether or not they might have had difficulties comorbid to their depression. The PDSQ is a 126-item self-report questionnaire that screens for 13 DSM-IV Axis-I disorders most commonly seen in adult outpatients (e.g., PTSD and OCD). The measure acts as a diagnostic aid to facilitate making diagnoses and has been found to show sufficient internal reliability ($\alpha = .68 - .96$), 99.6% sensitivity, 69.5% specificity, and 98.8% negative predictive value (Galvez, Fernandez, Manzanaro, & Valenzuela, 2010). Where the PDSQ indicated the presence of disorder, the relevant SCID (First, Williams, Karg, & Spitzer, 2015) was then completed.

The Credibility/Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000). The CEQ (see Appendix 11) was completed at the end of Session One, once participants had been oriented to BA, to assess the strength of participants' thoughts

and feelings, about the credibility and expectancy of their treatment. The questionnaire consists of six items. Four of the items are measured on a nine point scale ranging from 1 (“*not at all*” or “*none*”) to 9 (“*very*”). Two of the items are measured on an 11 point scale ranging from 0% to 100%. The measure score is summed and ranges from 3 to 27. Higher scores indicate participants having higher credibility or expectation for improvement as a result of the treatment. The expectancy factor is shown to have a standardised Cronbach’s α of .90, and the credibility factor has an α of .86, demonstrating the measure’s internal reliability. Expectancy scores are found to be significantly positively correlated with change scores on the Depression Anxiety Stress Scale ($r = 0.20$, Lovibond & Lovibond, 1995) and the Impact of Events Scale ($r = 0.26$, Horowitz, Wilner, & Alvarez, 1979), suggesting their convergent validity.

To reduce time pressure on participants and screeners, no diagnostic tools were used to screen for personality disorders. It was thought that personality disorder symptoms would have been evident following participants initial service triage, and indeed such referrals would not have been suitable for the recruitment services intake.

Idiographic measures. Idiographic measures were the primary outcome measures for this study (see Appendix 12). Idiographic measures are a crucial component to SCEDs as they allow for the repeated collection of data, visual analysis (Morley, 2015d) and analyses of phase non-overlap. Idiographic measures were administered daily (see Table 1) across the course of the study and consisted of six non-standardised self-report Visual Analogue Scales (VASs) that took approximately one minute each to complete. Despite these measures not being validated, VASs in general are considered reliable and suitable for SCEDs due to their simplicity, and

known sensitivity to change within individual subjects, and across short periods of time (McCormack, Horne, & Sheather, 1988). They are also considered valid if they are carefully defined (Morley, 2015d).

The VASs were designed by the Principal Investigator and measured levels of depression, anxiety, rumination, avoidance, an encapsulated belief, and a chosen idiographic symptom. The encapsulated belief consisted of a statement that summarised the meaning of the participants' experience of depression. The chosen idiographic symptom was whichever symptom participants noticed most or most wanted to monitor. It was hoped that enabling participants to choose two of their outcome measures might encourage them to stay engaged in outcome measure completion, and to have agency over witnessing change, potentially enhancing their motivation to complete the study measures. VAS scores ranged from 0 to 100, where higher scores indicated higher symptomatology, frequency or belief.

Standardised measures. Standardised measures (Appendix 13 to 15) were collected weekly during baseline, intervention and follow-up phases (see Table 1) in order to determine which participants had made reliable and clinically significant change (Jacobson & Traux, 1991) after receiving the intervention (Morley, 2015b), and to provide context to idiographic outcomes. Participants were asked to rate these measures referring to their past week, which required altering the measure instructions in some cases (for the PHQ-9 and GAD-7). Standardised measures are less sensitive to change than idiographic measures because they are developed to measure constructs between people, based on known population norms (Morley, 2015b).

The Montgomery-Åsberg Depression Rating Scale (MADRS; Montgomery & Åsberg, 1979). The MADRS is a 10-item clinician-rated scale and was used to

measure symptoms of depression. Each item is rated on a seven point Likert scale from 0 (indicating 'normal' or 'no difficulties') to 6, and the scale takes 10 to 15 minutes to complete. The summed score range is 0–60, and higher scores reflect greater symptomatology. Total scores of 7 to 19, 20 to 34, and 35 or more represent mild, moderate and severe depression respectively. The measure has shown inter-rater reliability between .89 and .97 as well as significant correlation with the Hamilton Rating Scale (Hamilton, 1960), indicating its convergent validity (Montgomery & Åsberg, 1979). The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) is considered a gold-standard self-report measurement of depression (Cusin, Yang, Yeung & Fava, 2010). The MADRS was chosen over the BDI because it is clinician-rated, improving the study's reliability. It also corresponds closely to the diagnostic criteria for MDD and was available to the Principal Investigator for no monetary cost.

The following standardised measures were completed as part of routine outcome measure collection within IAPT services. They take approximately 10 minutes to complete together:

The Patient Health Questionnaire (PHQ-9; Kroenke & Spitzer, 2002). The PHQ-9 is a 9-item self-report measure of depression symptoms, usually over the past two weeks. Each item is scored from 0 ('not at all') to 3 ('nearly every day'), and the summed total score ranges from 0 to 27, with higher scores reflecting greater symptomatology. Total scores of 5, 10, 15 and 20 represent mild, moderate, moderately severe and severe depression, respectively. Cronbach's α for the scale is .89 and it has significant correlation with a number of health measures, implying its convergent validity (Kroenke et al., 2001). The PHQ-9 has the advantage of being

shorter than the BDI (Titov, Dear, McMillan, Anderson, Zou, & Sunderland, 2011), and having superior criterion validity in comparison to the Hospital Anxiety and Depression Scale (Löwe et al., 2004).

The Generalized Anxiety Disorder Scale (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006). The GAD-7 is a 7-item self-report measure for symptoms of generalized anxiety, usually over the past two weeks. Each item is rated from 0 ('*not at all*') to 3 ('*nearly every day*'). The total score ranges from 0 to 21, with higher scores reflecting greater symptomatology. Scores of 5, 10 and 15 represent mild, moderate and severe anxiety respectively. The GAD-7 has excellent internal consistency (Cronbach's $\alpha = .92$) and test-retest reliability (*Intra-class Correlation [ICC]* = .83) and relates strongly to scores on the Beck Anxiety Inventory (Beck, Epstein, Brown, & Steer, 1988) demonstrating its convergent validity ($r = 0.74$; Spitzer et al., 2006).

Process measures. Process measures (Appendix 16 and 17) were collected to measure whether or not components of the treatment were having their intended effect (Morley, 2015a). These were collected weekly during the baseline and intervention phases (see Table 1) and took approximately 10 minutes to complete together. Participants were asked to complete them referring to their past week.

The Behavioural Activation for Depression Scale - Short Form (BADSF; Manos et al., 2011). The BADSF is a 9-item self-report scale measuring activation and avoidance over the past week, and is generally used over the course of BA. Items are rated from 0 ("*not at all*") to 6 ("*completely*"), though some items are reverse scored. Total scores range from 0 to 54. Higher scores represent more activation and less avoidance. Activation (6 items) and avoidance (3 items) subscale scores can also

be calculated, with higher scores indicating doing more of each area of interest. The scale is shown to have strong internal consistency (Cronbach's $\alpha = .82$) and its construct validity is as good as if not better than the original BADS measure. For example it demonstrates significant negative correlation ($r = -.49$) with Beck Anxiety Inventory (1988) scores (Manos et al., 2011).

The Dysfunctional Attitudes Scale - Short Form (DAS-SF; Beevers, Strong, Meyer, Pilkonis, & Miller, 2007). The DAS-SF is a 9-item scale measuring dysfunctional cognition (thought to reflect negative self-evaluation) relating to depression. Items are rated from 1 (“*totally agree*”) to 4 (“*totally disagree*”) and measure strength of dysfunctional attitudes. Total scores are summed to range from 9 to 36, and all items are reverse coded by subtracting each item score from 5. Higher total scores indicate greater dysfunctional attitudes. Cronbach's α s for the DAS-SF1 (the version used herein) is .84, demonstrating its strong internal consistency. The scale also strongly correlates with outcomes from the original DAS ($r = .92$). The scale has good convergent validity as it moderately correlates with The Cognitive Bias Questionnaire (Krantz & Hammen, 1979) ($r = .52$) and Hopelessness Scale (Beck, Weissman, Lester, & Trexler, 1974) ($r = .28$) scores (Beevers et al., 2007).

Ending measures. The following measures were completed after participants finished their seventh treatment session, in case participants chose not to attend their optional booster sessions. They took approximately 15 minutes to complete.

A briefer version of the Demographic Variable Questionnaire was completed post-treatment to determine whether or not participants experienced any outcome-related changes during the course of their treatment.

The Client Satisfaction Questionnaire (CSQ; Larsen, Attkisson, Hargreaves, & Nguyen., 1979). The CSQ (see Appendix 18) is an 8-item self-report measure of clients' perspectives of the value of services, and was used here as a quantitative measure of treatment acceptability. All items are rated on different four point Likert scales. Item scores are summed to give a total score ranging from 8 to 32, with higher scores indicating greater satisfaction. Cronbach's α values for the scale have been found to range from .83 to .93, indicating excellent internal reliability. The scale scores are also found to positively correlate with symptom reduction scores, indicating its convergent validity (Attkisson, 2012).

The Client Feedback Form. Participants were asked to rate how acceptable they had found their treatment on a visual analogue scale of 0 (“*not at all*”) to 100 (“*completely*”) (Appendix 19).

The Therapist Feedback Form. Therapists were also asked to rate the acceptability and utility of the intervention, their confidence delivering it, and their intention to use it in future, all on visual analogue scales ranging from 0 (“*not at all*”) to 100 (“*completely*”) (Appendix 20).

The Quality of Behavioural Activation Scale (QoBAS; Dimidjian et al., 2016). The QoBAS (see Appendix 21) measures the quality with which BA techniques are applied. A self-report version of the measure (see Appendix 3), created by the Principal Investigator, was used here to determine therapist self-rated competence in BA following their BA training. The original version of the measure (Appendix 21) was used to assess the treatment fidelity of BA therapists post-treatment. The measure is split into three parts. Part one consists of rating seven items measuring structural and stylistic strategies (e.g., following an agenda). Part two

consists of seven items measuring conceptualisation, strategy and application (e.g., use of the BA model). Items from part one and two are rated on a seven point Likert Scale from 0 (“*poor*”) to 6 (“*excellent*”), with a score of 3 indicating satisfactory BA skill quality. Higher scores indicate greater quality of the treatment delivered. Part three allows raters to make additional considerations and comments. The measure is not yet validated, but it is the primary measure of quality of BA in use, and was shared with the Principal Investigator under the agreement that the current study’s QoBAS data could then be shared with S.Dimidjian, for validating the scale.

Procedure

The TT used in this study was new and exploratory. It was designed in collaboration with experts in the field of BA and TT, as well as IAPT service managers. As participants act as their own control within SCEDs, they are intentionally flexible and adaptive (Kratowill et al., 2010). Therefore, it was anticipated that in order to be flexible to participant needs, procedures might differ slightly for each participant.

Randomisation. After being screened and found eligible to take part in the study, the Principal Investigator randomly allocated participants to an intervention start time using a random number generating command on Microsoft Excel. Baseline durations were then communicated to study therapists before participants attended a two hour long introduction/assessment session. Baseline durations of seven, 14 or 21 days long were considered acceptable and ethical as baseline phases were incorporated into service wait times, which on average were six weeks.

Introduction/assessment session. Written informed consent was obtained by the therapists at the start of the session (Appendix 22). Participants understood that they were free to withdraw from the study at any point. The therapist and participant then worked collaboratively to build a functional analysis of the problem. Participants had the option to bring a significant other to the session, in order to enhance the formulation. Encapsulated beliefs were identified using downward arrow techniques (e.g., *what does it mean about you as a person?*), idiographic symptoms to measure were chosen, and all VASs were completed. Therapists also oriented participants to the aims and content of BA. Treatment start times (according to randomisation and availability) were discussed, and Participant Orientation Forms were completed (Appendix 23) to summarise when participants would need to attend sessions, and how they might need to reorganise their diaries in order to maximise their attendance. Finally, therapists introduced participants to outcome measures that they would need to complete throughout the study duration. They were then given relevant baseline measures to take home with them and return to their first treatment session.

Baseline phase. During the baseline phase, participants were instructed to complete daily VASs. They also completed standardised and process measures once a week. The MADRS was completed over the telephone by their therapist. Depending on whether participants were randomised to a 7, 14 or 21 day baseline period, participants had a minimum number of seven baseline data points and a maximum of 21. These baseline durations were considered acceptable as baseline ranges most often include between three and 10 data collection points (Turpin, 2001), and it would have been impractical to ensure that baseline data were stable before starting treatment. Participants did not receive any treatment during their baseline period and

communication via the telephone did not contain therapeutic manipulation, making stable baseline outcomes more likely.

Intervention phase. BA began directly after baseline periods. Overall, the core goals of the intervention were to:

1. Orient participants to understanding what BA is, and to socialise them to the behavioural model of depression;
2. Conduct an idiographic functional analysis of participants' (overt and covert) avoidance and excessive behaviours, as well as the contextual contingencies of reinforcement maintaining them;
3. Collaboratively develop treatment goals;
4. Monitor participants' daily activity levels, links between activities and their sense of pleasure and mastery;
5. Review participant activity levels in order to develop their conceptualisation;
6. Make changes by gradually structuring and scheduling relevant goal-oriented activities for participants;
7. Review activity scheduling, providing regular feedback on areas of progress and areas for improvement, before developing the activity schedule;
8. Repeatedly practice problem solving and troubleshooting to reduce the likelihood of barriers to completing scheduled activities;
9. Address relapse prevention (Martell et al., 2013).

Participants were asked to arrive early for their sessions so that they could complete idiographic, standardised and process measures in service waiting rooms before their sessions began. If consent was given, sessions began by starting audio recording for later rating. All core techniques referred to in Martell et al.'s (2013)

clinicians' guide were available for use, as therapists had access to the guide. However, given that BA is not strictly protocol driven (Dimidjian et al., 2008), weight given to techniques varied depending on individual participant formulations. Table 1 below shows an example of how our time-intensive BA might have progressed (assuming here that participants were seen on Mondays and Fridays), as well as when outcome measures were completed. In summary, all sessions tended to consist of completing clinician-rated outcome measures, reviewing progress, assessing risk, developing a shared agenda, summarising the session, eliciting feedback, setting homework activities, discussing which outcome measures needed completing and returning for the next session, what the focus of the next session would be, and discussing treatment endings. To reduce therapist burden while ensuring that all outcome measures were completed at the right time, therapists were given folders indicating how BA might be delivered time-intensively, when to administer outcome measures, a space to store them, and finally details of practical issues to consider when providing intensive treatment (Appendix 24). Examples of practical considerations included:

1. Advanced organisation of case-loads, session times and time to prepare for sessions;
2. The possibility to be made exempt from some service responsibilities (e.g., all-staff meetings) in order to implement intensive treatment while reducing burn-out;
3. Deciding clear attendance boundaries with participants, in order to promote attendance;
4. Devising creative solutions to achieving goals of any unavoidably missed sessions (e.g., extending subsequent sessions, and offering telephone sessions);

5. Managing the continuation outcome collection when sessions were missed;
6. Managing minimal discussion of inadvertent events to keep sessions focused on activation;
7. The application of therapeutic boundaries during breaks;
8. Employing ways to reduce cognitive functioning difficulties (e.g., reducing distractions and providing session summary sheets);
9. Remaining aware of goals needing to be realistic within TT periods, and collaboratively setting meaningful activation tasks that maximised the possibility for reinforcement.

Table 1 *An example of how BA techniques and outcome measures may have been delivered time-intensively.*

Intervention phase day	Example content	Recommended contact duration	Outcome measures completed
1 (e.g., Monday)	<i>Treatment Session 1:</i> Further assessment Goal setting Functional analysis Orientation to treatment Introduction to activity monitoring	2 hours	Standardised measures Idiographic measures Process measures
2	Activity monitoring and prompting	Up to 10 minutes	Idiographic measures
3	Activity monitoring and prompting	Up to 10 minutes	Idiographic measures
4	Activity monitoring and prompting	Up to 10 minutes	Idiographic measures
5	<i>Treatment Session 2:</i> Review activity monitoring Problem-solve Add to functional analysis	2 hours	Idiographic measures
6	Activity monitoring		Idiographic measures

7	Activity monitoring		Idiographic measures
8	<i>Treatment Session 3:</i> Review activity monitoring Troubleshoot Add to functional analysis Activity scheduling Problem-solve barriers	2 hours	Standardised measures Idiographic measures Process measures
9	Activation and prompting	Up to 10 minutes	Idiographic measures
10	Activation and prompting	Up to 10 minutes	Idiographic measures
11	Activation and prompting	Up to 10 minutes	Idiographic measures
12	<i>Treatment Session 4:</i> Review activity schedule Troubleshoot Activity scheduling Problem-solve barriers	1 hour	Idiographic measures
13	Activation		Idiographic measures
14	Activation		Idiographic measures
15	<i>Treatment Session 5:</i> Review activity schedule Troubleshoot Activity scheduling Problem-solve barriers	1 hour	Standardised measures Idiographic measures Process measures
16	Activation and prompting	Up to 10 minutes	Idiographic measures
17	Activation and prompting	Up to 10 minutes	Idiographic measures
18	Activation and prompting	Up to 10 minutes	Idiographic measures

19	<i>Treatment Session 6:</i> Review activity schedule Troubleshoot Activity scheduling Problem-solve barriers	1 hour	Idiographic measures
20	Activation		Idiographic measures
21	Activation		Idiographic measures
22	<i>Treatment Session 7:</i> Review activity schedule Troubleshoot Plan for the future Review goals and progress Relapse prevention	1 hour	Standardised measures Idiographic measures Process measures Ending measures
23	Activation and prompting	Up to 10 minutes	Idiographic measures
24	Activation and prompting	Up to 10 minutes	Idiographic measures
25	Activation and prompting	Up to 10 minutes	Idiographic measures
26	Activation and prompting	Up to 10 minutes	Idiographic measures
27	Activation		Idiographic measures
28	Activation		Idiographic measures
29	<i>Optional Booster Session 1:</i> Review activity schedule Troubleshoot Plan for the future	1 hour	Standardised measures Idiographic measures Process measures
36	<i>Optional Booster Session 2:</i> Review activity schedule Troubleshoot Plan for the future	1 hour	Standardised measures Idiographic measures Process

			measures
50	<i>Optional Booster Session 3:</i> Review activity schedule Troubleshoot Plan for the future	1 hour	Standardised measures Idiographic measures Process measures

Participants received a minimum of 10 and maximum of 13 hours of face-to-face treatment, consisting of seven initial sessions and three optional booster sessions. As a rule, face-to-face sessions were always between two and three days apart, as opposed to daily. Therefore, participants were seen twice-weekly. This was intended to allow participants to complete activity monitoring for five days, and to have enough time to implement activation and consolidate learning, while still rapidly promoting engagement and the therapeutic relationship (Martell et al., 2001). Longer spacing between sessions was not used, influenced by findings to suggest that there can be negative associations between hours of treatment per week and effect size (Jonsson, Kristensen, & Arendt, 2015), and in case of manifesting avoidance increasing the likelihood of participant non-attendance. From Table 1 it is possible to imagine how within this rule, five out of seven face-to-face treatment sessions could also have been scheduled more flexibly.

The initial three treatment sessions were recommended to last for two hours, and the last four were recommended to be one hour long, though all contact time was recorded and expected to fluctuate. Considering existing research to suggest that BA sessions are more efficacious when lasting less than 90 minutes (Braun, Gregor, & Traun, 2013), and to promote concentration and activation, therapists and participants were advised to include a break in longer sessions, and were instructed to record what

they did during any breaks. Homework was set each session and tended to be following activity schedules, listening to audio recordings of treatment sessions, and completing daily VASs.

To enable the treatment to end gradually, and to potentially enhance progress over time (Gearing, Schwalbe, Lee, & Hoagwood, 2013; Storch et al., 2007), three optional face-to-face booster sessions were offered after participants' seventh sessions. Boosters were kept as optional following evidence to suggest that frequency rather than the amount of therapy governs speed of recovery (Cuijpers et al., 2013; Erekson et al., 2015). Boosters were recommended to take place at one, two and four weeks after Session Seven. With the inclusion of booster sessions, it was expected that participants could complete a maximum of 52 idiographic data points, and 10 standardised and process measure data points, during the intervention period.

To enhance attendance, participants received automatic text message reminders about their next session. On weekdays, in-between face-to-face sessions, and up until booster sessions began, therapists (from Service 1 and 3) and an Assistant Psychologist (from Service 2) telephoned, texted, or emailed participants for short 'prompting' conversations. Prompting was intended as a method of contingency management, to demonstrate therapists' dedication to participants, to validate participants' experiences, and to positively reinforce progress, motivation, treatment compliance and the therapeutic relationship. Participants could send text messages or emails to their therapist whenever they wanted to, though no communication occurred over weekends, and participants understood that therapists would try to respond to them within 24 hours. The frequency of prompts was not predefined, and was dependent on need and feasibility. However, therapists followed some 'prompting

guidelines', such as leaving a message if they could not get through to a participant on the telephone, and logging all prompting attempts, so that time spent prompting participants was included in treatment duration calculations.

Therapists received supervision, whenever necessary. Clinical supervision was provided by senior NHS clinicians trained in delivering BA, and was overseen by research experts where requested. Research supervision was also provided by the Principal Investigator whenever requested.

Participants who received eight hours of clinician contact were deemed to have completed enough BA (Barkham et al., 1996; Richards, 2016). At the end of treatment, participants and therapists were asked to complete ending measures. All participants were offered a clinical review to see if they required further psychological or medical treatment. Those that did require further treatment went back on their service waiting list for treatment delivered at the usual frequency. However, if immediate treatment was deemed necessary, they were offered to continue sessions with their existing therapist.

Treatment fidelity. To reduce threats to the study's validity, therapists' competency in BA was measured. Once all treatments were completed, three Assistant Psychologists who had attended the BA training and were independent to the research team, used the Quality of Behavioural Activation Scale (Dimidjian et al., 2016) to assess one randomly selected (determined by a random number generating computer program) audio recording from each consenting participant's sessions.

Follow-up phase. Where possible, participants continued to complete outcome measures after their last treatment session. Participants were asked to

continue to complete idiographic VASs daily and standardised measures weekly, for three weeks. Completing follow-up measures enabled the trend of outcome measures to be assessed beyond the completion of all attended sessions. Follow-up data were sent back to services via email or post.

Therapists stored all completed outcome measures in a folder. The data were collected and entered by the Principal Investigator. Data were stored under lock and key at recruitment services, and under password protection electronically. Demographic information and consent forms were stored separately to outcome data. All participants were given the option to receive a summary of the study findings once the study was completed.

Results

Descriptions of recruited participants, treatment delivered, treatment retention, treatment credibility/expectancy and treatment fidelity are presented first, in order to consider the treatment feasibility. In order to answer how effective the intervention was, individual graphical and statistical analyses of idiographic measures are then presented, followed by more general conclusions across participants. This is followed by analyses of whether or not participants made reliable and clinically significant change on standardised and process measures or not. Finally, the acceptability of the treatment is considered with descriptions of findings from ending measures.

Throughout this section, percentages are reported rounded to the nearest percentage. Means (*M*), standard deviations (*SD*), *Tau* values and *p* values are reported to two decimal places, unless to indicate $p < .001$.

Is time-intensive BA a feasible intervention for adults with depression who present to outpatient primary care services?

Treatment recruitment rate. Eight participants were recruited between September 2016 and March 2017; one participant every 23 days. From the sample approached ($n = 60$), only 13% ($n = 8$) went on to take part in the study. However, of those screened who qualified for being included in the study ($n = 9$) 89% did then consent to take part ($n = 8$), indicating high uptake of suitable participants. The main reason for declining participation was being unable to attend sessions time-intensively ($n = 23$). The main reasons for exclusion from participation post-screening were experiencing severe comorbidity (e.g., personality disorder) or requesting treatment that would address the content of negative thoughts (CBT) ($n = 4$; see Figure 1 in Methods).

The six therapists to take part in the study were only 26% of the number of therapists who attended the BA training ($n = 23$), indicating that therapist recruitment into the study was low. Reasons for not taking part in the study were working part-time ($n = 4$), having a full case-load ($n = 10$), and not yet being fully qualified ($n = 3$). Due to the ratio of participants to therapists, the majority of therapists treated one participant. Two therapists treated two participants, though not concurrently.

Participants' demographic and clinical information. The demographic and clinical characteristics of participants recruited into the study can be seen in Table 2, though some details have been changed, to protect participant anonymity. The sample was heterogeneous. The *mean* age was 39 years ($SD = 14.57$, *range* = 21 - 60), and participants were from a range of ethnic backgrounds. The *mean* duration of depressive episodes was 11 months ($SD = 14.27$, *range* = 2 months - 4 years). All participants self-reported experiencing multiple previous episodes of depression ($M = 3.00$, $SD = 0.83$). All but one participant had experienced a previous trial of treatment for previous depressive episodes, though no one reporting three or more previous episodes had previously received MBCT. Of note, previous treatments seemed brief for the majority, except PB, PD and PG. Five participants were taking antidepressant medication, four met criteria for a comorbid diagnosis of generalized anxiety disorder (GAD), and four also had a long-term physical health condition (LTC). The majority of participants were not in a relationship and no one was in full-time employment. All participants had completed O-Levels or gone on to higher education.

Table 2 *Participants' demographic and clinical information.*

P	Service	Sex	Age	Ethnicity	Marital status	Education level	Employment status	Duration of problem	Previous episodes	Previous treatment (duration, year)	Current medication (dose, duration)	Comorbidity
A (PA)	1	F	37	White Portuguese	Single	Undergraduate degree	Unemployed	2 months	2	1.CBT for anxiety (7 sessions in 2015)	None	GAD LTC
B (PB)	1	F	60	White British	Divorced	O-Levels	Retired	10 months	3	1. Psychiatric hospitalisation for depression (duration unknown, 1981) 2. Counselling (1 year, 1990) 3. Rehab (6 months, 2001)	Citalopram (20 mg, 12 months)	LTC
C (PC)	2	F	49	White Mixed European	Separated	Undergraduate degree	Unemployed	4 years	4	1.CBT for low mood (8 sessions in 2015)	Citalopram (20 mg, 9 months)	GAD LTC
D (PD)	2	F	31	Black British / Caribbean	In a Relationship	NVQ	Long-term Sick Leave	4 months	4	1.CBT for low mood (16 sessions in 2011)	Fluoxetine (20 mg, 10 weeks)	Secondary anxiety and panic attacks
E (PE)	1	M	21	White British	Single	A-levels	Unemployed	2 months	3	1.CBT for depression (6 sessions in 2014; 1 session in 2015)	Citalopram (10 mg, 8 weeks)	None
F (PF)	1	F	27	White European	Single	Undergraduate degree	Student	6 months	2	None	None	Secondary anxiety

G (PG)	3	F	28	White British	Cohabiting with Partner	Postgraduate degree	Student	1 year	3	1.Counselling for bereavement (10 sessions in 2014)	None	GAD
H (PH)	1	M	56	White British	In a Relationship	A-levels	Unemployed	6 months	2	1.Counselling (6 sessions in 1992) 2.Counselling (2 sessions in 2008) 3. Counselling (3 sessions in 2016)	Fluoxetine (40 mg, 5 months)	GAD LTC

Note. GAD = generalized anxiety disorder; LTC = long-term condition; NVQ = National Vocational Qualification; P = participant.

Treatment credibility/expectancy. The *mean* credibility score of participants who completed the CEQ was 22 ($SD = 3.64$), and their *mean* expectancy score was 20 ($SD = 3.39$), out of possible subscale totals of 27. This indicates that once participants had an understanding of the treatment rationale they showed high credibility and expectancy for change (see Table 3).

Table 3 *Treatment credibility/expectancy scores.*

Participant	Credibility score	Expectancy score
A	19	18
B	27	24
C	21	17
D	25	25
E	Missing	Missing
F	21	20
G	22	18
H	16	Missing

Treatment duration and retention. All eight participants who consented to take part in the research study received eight or more hours of therapist contact and thus were considered treatment completers. In total 76 sessions were offered, and 68 sessions were attended (89%), indicating high treatment retention. Variation in prompting frequencies and attendance resulted in variations in treatment durations across participants (see Table 4). Two participants (PA & PB) were offered fewer booster sessions than others, due to Service 1 closing over the Christmas holiday

period. Another participant (PF) was offered one fewer booster session following therapist illness. Reasons for participants missing sessions included attending too late ($n = 1$, PE), being unwell ($n = 2$, PD) and having to attend work ($n = 4$, PH) or tribunal meetings ($n = 1$, PA).

On average participants received nine sessions ($SD = 1.41$), or 11 hours and 20 minutes of therapist contact ($SD = 1.62$). During longer treatment sessions, all but one therapist (for PB and PF) opted to have a short 10 to 15 minute break half way through. During breaks, participants most often went for a walk and bought a drink.

All participants received different types and frequencies of prompting, though two therapists reported fading prompting over time. All participants demonstrated replying to prompts at some point during their treatment, and the majority of participants ($n = 6$) were also prompted by an external cheerleader.

Table 4 *Treatment sequences completed by participants.*

Participant	Number of sessions offered	Number of sessions attended	Session(s) missed	Total duration of sessions	Chosen method of prompting	Prompter	Average number of prompts received	Replied to prompts?	Other “cheerleader” involvement?
A	8	7	Session 3	9 hours 10 minutes	Text	Therapist	3	Yes - and often initiated texting.	No
B	9	9	<i>n/a</i>	13 hours 5 minutes	Calls and texts	Therapist	Week 1: 1 text Remaining weeks: 1 call (5-10mins long)	Yes	Yes - one close friend would suggest activities for them to do together.
C	10	10	<i>n/a</i>	12 hours	Email	Assistant Psychologist	2	Yes	Yes - her ex-partner would escort her to sessions and support child care.
D	10	8	Sessions 4 and 5	11 hours 50 minutes	Calls and voicemails	Assistant Psychologist	1	Yes - to calls.	Yes - her sister.

E	10	9	Session 2	11 hours	Calls and texts	Therapist	Week 1: 1 call (10-20minutes) Remaining weeks: Unknown but limited number of texts.	Yes	Yes - his cousin encouraged him to leave the house more often.
F	9	9	<i>n/a</i>	12 hours	Calls	Therapist	Week 1 and 2: 1 call Remaining weeks: Seldom prompted.	Yes	No
G	10	10	<i>n/a</i>	13 hours	Text	Therapist	1 call (one day per week) 3 texts (2 days per week)	Yes	Yes- her brother and mother.
H	10	6	Session 7 onwards	8 hours 45 minutes	Calls and texts	Therapist	3 (though only one day per week)	Yes - Though only during week 1	Yes - his partner.

Note. Prompting took place on weekdays in-between face-to-face sessions and up until Booster Session 1; ‘cheerleaders’ = members of clients support networks who provided external prompting (see Martell et al., 2001).

Treatment fidelity. Only five participants consented to having their sessions recorded. Therefore, five sessions were rated. Acceptable competency standards were demonstrated as the *mean* QoBAS score was 3.74 (*SD* = 0.75.), which exceeds the satisfactory threshold. Reliability between the three assistants' ratings was also acceptable, with an *ICC* of .83.

Summary. Overall, recruitment of participants was slow, and few therapists were able to take part in the research study. However, high uptake of the treatment by suitable participants, high treatment retention, high credibility/expectancy scores and satisfactory fidelity scores for rated sessions implicate that time-intensive BA may be a feasible treatment option for depression.

Can time-intensive BA lead to improvement on idiographic measures of depression symptoms, and are treatment gains maintained over a three week follow-up period?

This section of the results describes individual visual and statistical analyses of idiographic measure data, followed by a summary of the findings across participants. Additional background information is provided for each participant, though again, some has been disguised to protect confidentiality.

Visual analyses were conducted to consider the pattern of individual participants' idiographic data over the duration of their involvement in the study. Although often considered an insensitive method, visual analysis of data more clearly enables the identification of effective interventions (Kazdin, 1998). Guidelines for visual analysis were followed (Kratochwill et al., 2010), including that baselines can be considered stable enough to determine intervention effects when 80% of baseline phase data fall within a 20% range of the median (Gast & Spriggs, 2010). Idiographic

data were graphed on x-y plots using Microsoft Excel, according to standard presentation of multiple baseline SCEDs, and can be seen in Figures PA1 to PH6. Raw data were graphed using solid lines and black square markers. Session days are indicated using circular markers, and significant events are indicated using a “*”, where specific dates were known. Study phases have been separated by dashed vertical lines.

In order to assess change within and between study phases, changes in the central tendency, trend and variability of all idiographic measure data were investigated. Different calculations of central tendency, trend and variability plots were chosen according to Morley’s guidelines (Morley, 2015d). Definitions of key terms used within this section, and when they were calculated are given below (see Table 5).

Table 5 *Explanation of key terms calculated within visual analysis.*

Type of measure	Key term	Explanation	Phase length used for (data points)	Depicted graphically by
Central Tendency or Level	Median	The middle value of rank ordered data or the average of two middle data values when there is an even number of data points in a set.	2 - 4	Dashed horizontal line
Central Tendency or Level	Broadened Median (BMED)	The average of three middle values when ranked in order of magnitude.	> 5	Dashed horizontal line
Trend	Running Median of 2 (RM2)	The average of successive sets of 2 data points throughout a phase, used to investigate systematic shift in central location over time, when data are highly variable.	3	Dotted line
Trend	Running Median of 3 (RM3)	The average of successive sets of 3 data points throughout a phase, used to investigate systematic shift in central location over time, when data are highly variable.	< 10	Dotted line
Trend	Running Median of 5 (RM5)	The average of successive sets of 5 data points throughout a phase, used to investigate systematic shift in central location over time, when data are highly variable.	10+	Dotted line
Variability	Trended Range (TR)	Lines connecting the minimum and maximum data values in each half of a phase, indicating fluctuation of data over time.	3+	Solid black line with diamond marker

It is important to note that the running medians and broadened medians are sometimes not visible on graphs, where they are the same as raw data values. At other times they are not visible at all because they coincide with the x-axis of graphs (indicating values of 0). Graphs depicting trended range can be found in Appendices 25 to 32.

Statistical analyses of idiographic data were conducted using *Tau-U* calculators (www.singlecaseresearch.org/calculators/tau-u), to determine whether or not the visual analyses were supported. Statistical analyses were deemed important as visual analyses only enable us to draw tentative conclusions about data (Morley, 2015c). More conventional statistical analyses were not used as SCED data often violate their necessary assumption that error terms from successive observations are independent (Morley, 2015c). Therefore, to use them would have been considered a threat to the validity of results (Shadish, Rindskopf, Hedges, & Sullivan, 2013).

Tau-U tests were especially designed for use in single-case experimental research. *Tau-U* is a combination of *Mann-Whitney U* (between groups) and *Kendall's Tau* (rank correlation). Therefore, the *Tau* statistic merges measuring the percentage of non-overlap and trend between data points across pairs of phases (e.g., baseline and intervention). Negative trends are indicated by “-”, so for example a *Tau* of -0.50 indicates that 50% of the data in one phase are lower than in its comparative phase. *Tau-U* was chosen as it draws comparisons between phases while controlling for trend in baseline data, which reduces the risk of drawing erroneous conclusions about the cause of change (Parker, Vannest, Davis, & Sauber, 2011). An unresolved issue in the *Tau-U* literature is whether or not to allow contrasts for non-adjacent phases, though taking caution is recommended (Parker & Vannest, 2012). Therefore, comparisons

were made between baseline and intervention phase data (A x B) to determine whether or not participants made improvements on their idiographic measures, following the onset of the intervention. Comparisons between the intervention and follow-up phase (B x C) were made to determine whether or not changes observed at B were maintained over the follow-up period, or changed as a result of the withdrawal of the intervention. Comparisons between phases A and C were not drawn because in this design, effects of C will always have been contaminated by effects of B (Parker & Vannest, 2012). Comparisons between baseline scores and the intervention and follow-up phase combined (A x [B+C]) were also made to determine what the overall impact of receiving the intervention was, in comparison to baseline (Parker & Vannest, 2012). As well as *Tau* statistics, *p* values are reported to demonstrate whether or not comparisons between phases reached significance. *Confidence intervals* defining ranges of values, and the specified probability that *Tau* statistics fell within them, have also been provided. Comparisons that resulted in significant decline in symptoms were considered to demonstrate improvement. After considering each participant individually, *weighted averages* were calculated to form single omnibus *Tau-U* effect sizes that reflected the proportion of non-overlap across all participants on each idiographic measure.

Participant A (PA). Participant A spoke Portuguese as a first language and was fluent in English. She lived in a house with four other friends. She reported that the onset of her current episode of depression coincided with being dismissed from her job. During her treatment she reported no suicidal ideation. PA attended sessions on Mondays and Fridays. She attended six TT sessions and one booster session, one week later.

PA provided seven baseline data points, 29 intervention points, and 21 follow-up points. She rated “I am a failure” as her encapsulated belief and “procrastination” as her chosen symptom. Figures PA1 to PA6 display PA’s outcomes and *Tau-U* analyses of her data are displayed in Table 6. Her anxiety and avoidance data did not demonstrate baseline stability.

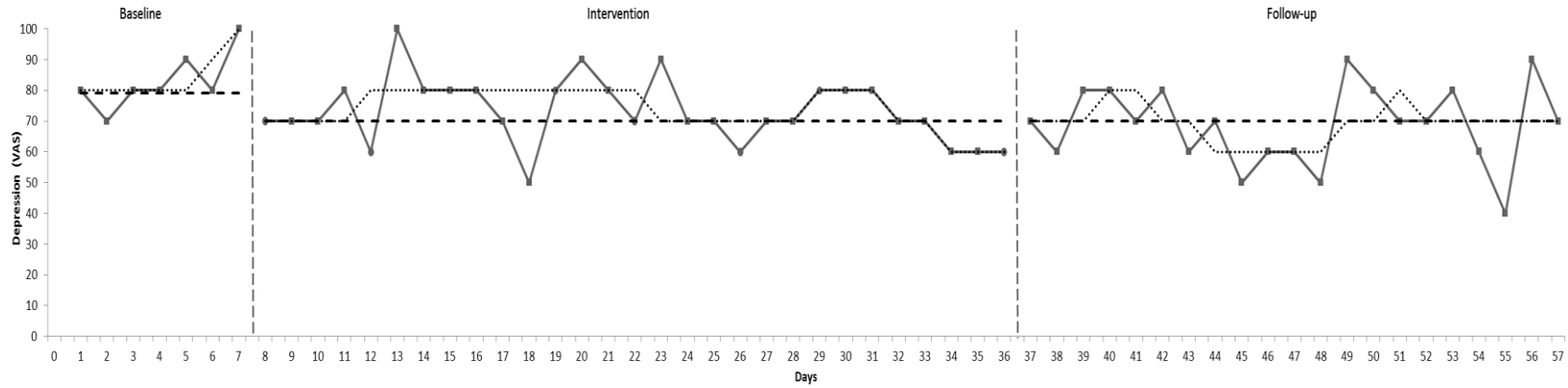


Figure PA1. Depression VAS: raw data (—■—), central tendency (— —) and trend (.....).

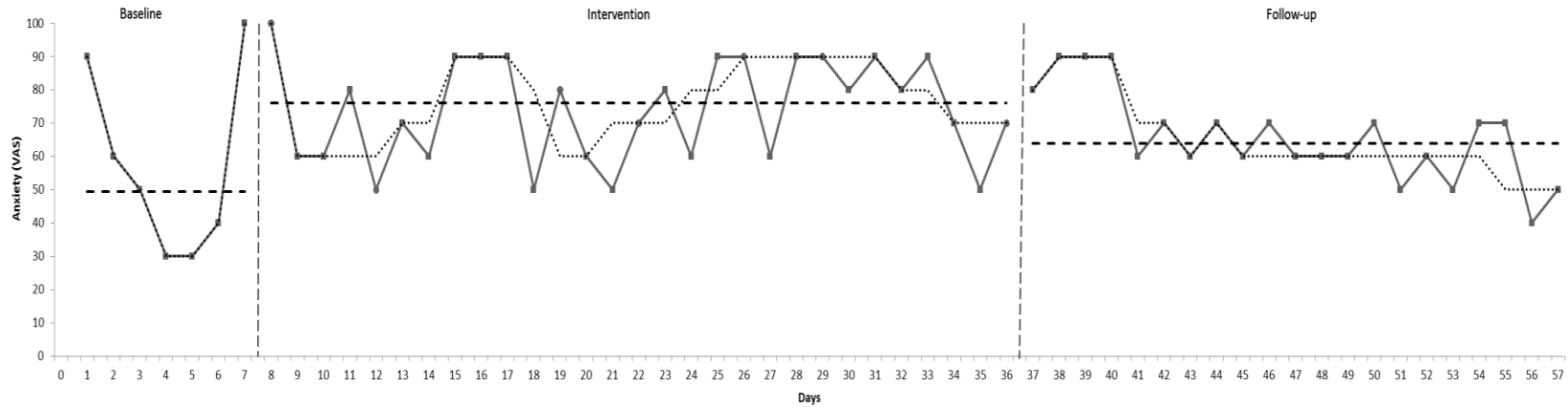


Figure PA2. Anxiety VAS: raw data (—■—), central tendency (— —) and trend (.....).

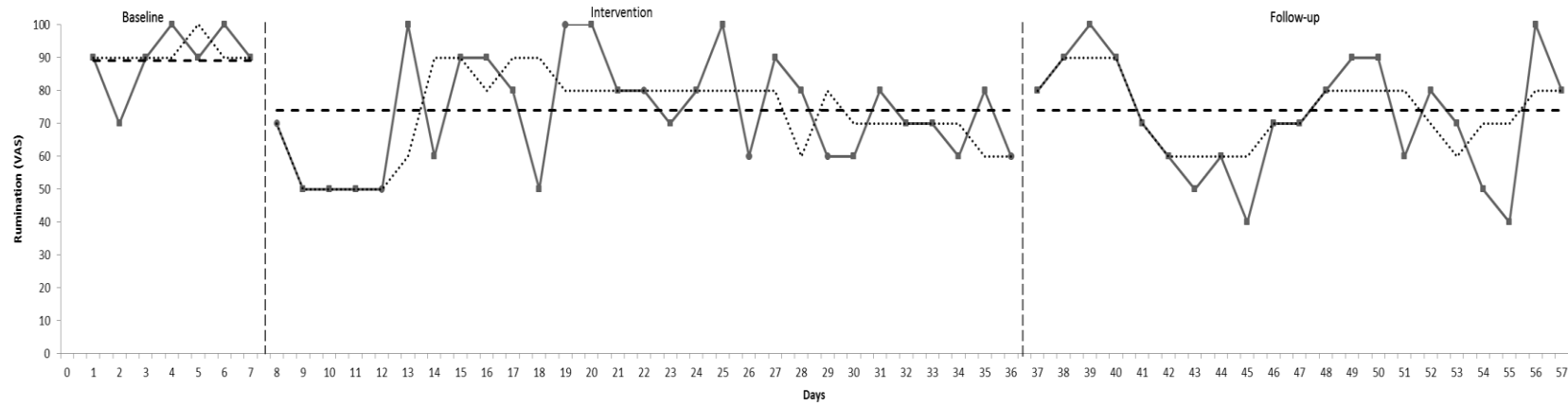


Figure PA3. Rumination VAS: raw data (—■—), central tendency (— —) and trend (·····).

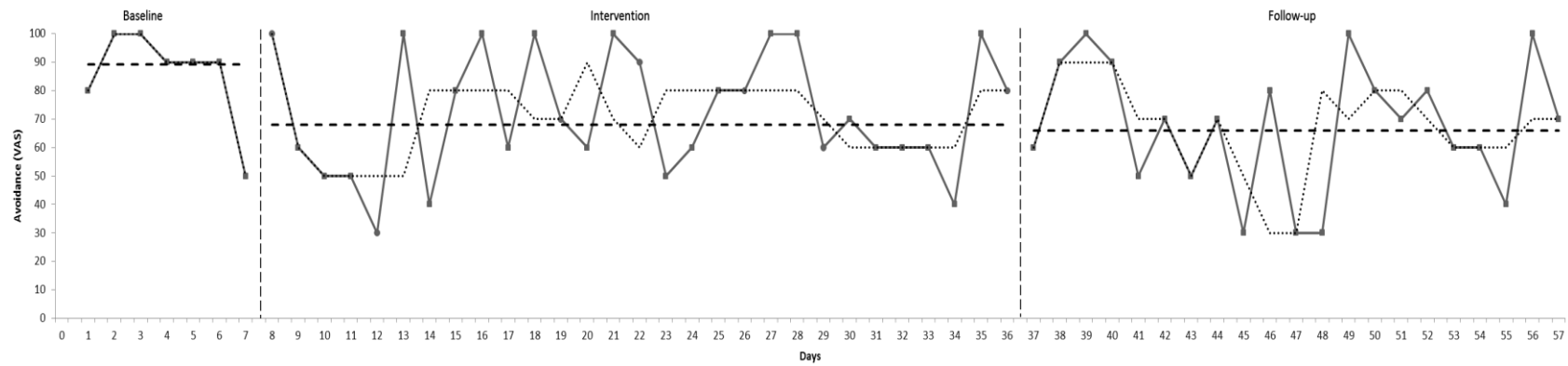


Figure PA4. Avoidance VAS: raw data (—■—), central tendency (— —) and trend (·····).

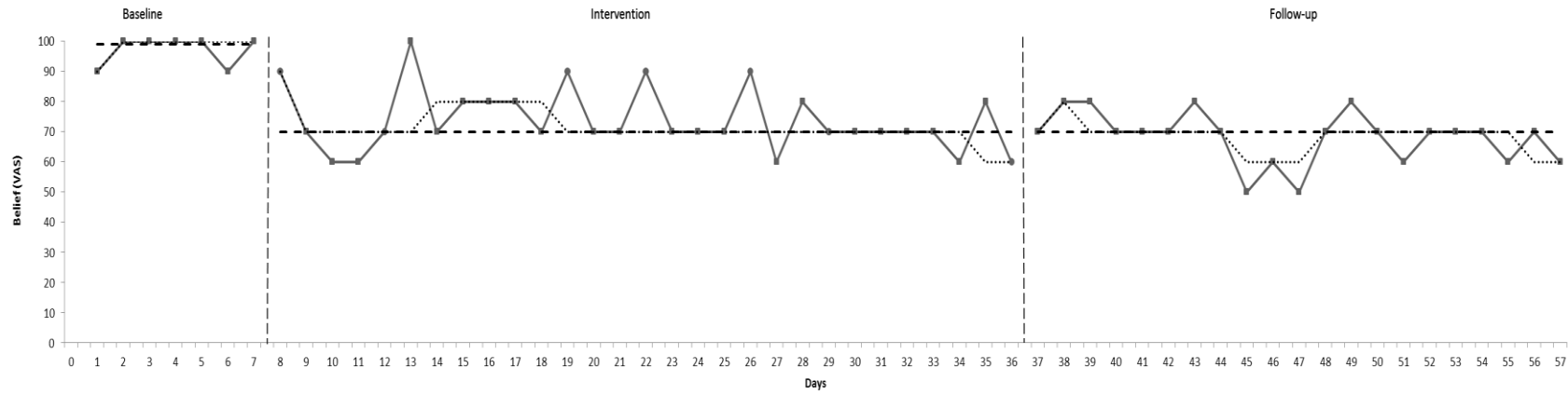


Figure PA5. Belief VAS: raw data (—■—), central tendency (— —) and trend (.....).

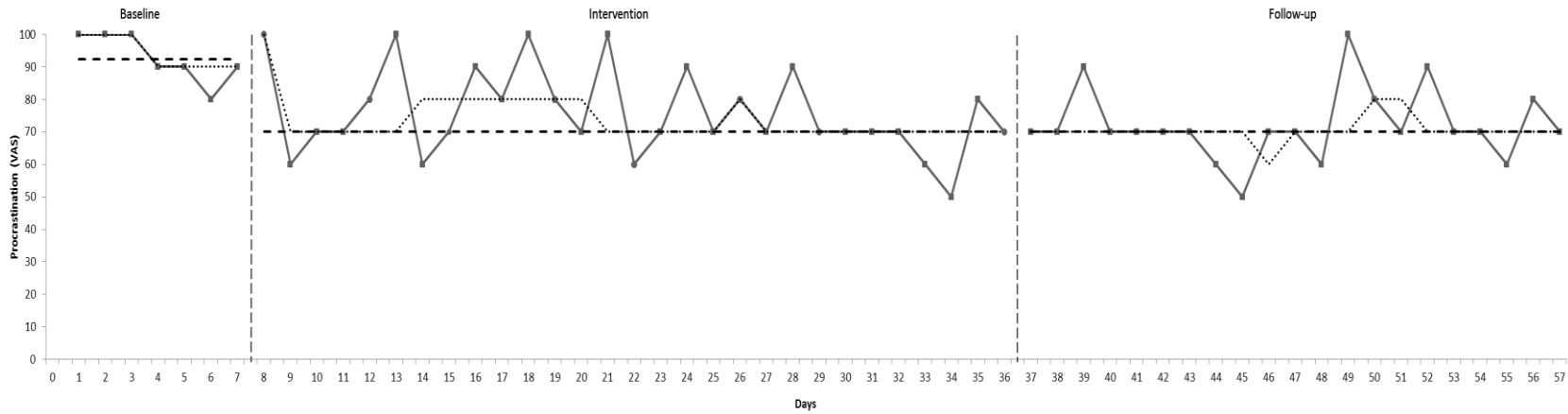


Figure PA6. Procrastination VAS: raw data (—■—), central tendency (— —) and trend (.....).

At baseline all of PA's symptom levels were at or above 50% on her VASs. Her depression showed slight upward trend at baseline, and her avoidance showed slight downward trend, which could be attributed to baseline instability of her avoidance scores, and increasing variability of both. PA's anxiety scores showed extreme variability at baseline, demonstrated by complete reversal in slope. Lines of central tendency indicate that all of PA's symptoms, apart from anxiety (where an increase was observed), showed clear decreases from baseline to intervention, that were maintained at follow-up. PA's level of anxiety decreased between the intervention and follow-up phases but remained higher than found at baseline. There were few suggestions of linear trends in PA's data. The majority of her measures demonstrated high variability in scores, across all phases, limiting the conclusions that can be drawn from her graphs. Of note, variability in her scores, and increases in anxiety are likely to be related to her reported experiences of a family member being newly diagnosed with cancer and her employment tribunal claim.

Non-overlap analyses confirm visual analyses. PA showed significant reductions in her depression, rumination, encapsulated belief, and procrastination levels between baseline and intervention phases, and although proportions of non-overlap reduced, these changes were maintained at follow-up. Her greatest improvement was for her encapsulated belief ratings. However, non-overlap between phases did not reach significance for PA's avoidance levels, and her anxiety showed marked but not significant increase. Her anxiety only decreased significantly following withdrawal of the intervention but this effect was lost when combining the intervention and follow-up phase. Overall, statistical analyses support that time-

intensive BA appeared to have a positive and sustained effect on the majority of PA's idiographic measures.

Table 6 *Summary of tau analyses comparing PA's idiographic outcome measures across the study phases.*

Measure	Comparison	<i>Tau</i>	<i>SD Tau</i>	<i>p</i> value	90% <i>CI</i>
Depression	A x B	-0.51	0.25	.04*	[-0.91, -0.10]
	B x C	-0.18	0.17	.28	[-0.46, 0.09]
	A x (B+C)	-0.55	0.24	.02*	[-0.94, -0.16]
Anxiety	A x B	0.40	0.25	.11	[-0.01, 0.80]
	B x C	-0.45	0.17	<.01**	[-0.57, -0.02]
	A x (B+C)	0.36	0.24	.13	[-0.03, 0.75]
Rumination	A x B	-0.59	0.25	.02*	[-0.99, -0.18]
	B x C	-0.00	0.17	.98	[-0.28, 0.27]
	A x (B+C)	-0.59	0.24	.02*	[-0.98, -0.20]
Avoidance	A x B	-0.32	0.25	.19	[-0.73, 0.09]
	B x C	-0.11	0.17	.53	[-0.38, 0.17]
	A x (B+C)	-0.39	0.24	.06	[-0.79, -0.01]
Encapsulated belief	A x B	-0.92	0.25	<.001***	[-1.00, -0.51]
	B x C	-0.25	0.17	.13	[-0.53, 0.02]

	A x (B+C)	-0.95	0.24	<.001***	[-1.00, -0.57]
Procrastination	A x B	-0.68	0.25	<.01**	[-1.00, -0.28]
	B x C	-0.16	0.17	.33	[-0.44, 0.11]
	A x (B+C)	-0.75	0.24	<.01**	[-1.00, -0.37]

Note. A = Baseline phase; B = Intervention phase; C = Follow-up phase; *CI* = confidence interval; *SD* = standard deviation; * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Participant B (PB). Participant B spoke English as a first language. The onset of her current depressive episode coincided with a combination of events, including bereavement, ongoing relationship difficulties with her daughter, and becoming the legal guardian to her grandchildren. PB experienced passive suicidal ideation but no intent to act on her thoughts. PB attended sessions on Mondays and Fridays. She attended seven time-intensive sessions and two booster sessions, falling one and four weeks after her seventh session.

PB provided seven baseline data points, 50 intervention points, and 21 follow-up points. She rated “I am letting the kids down” as her encapsulated belief and “guilt” as her chosen symptom. PB’s idiographic measures are displayed in Figures PB1 to PB6. Rumination was her only idiographic measure to demonstrate baseline stability. Completed *Tau-U* analyses of her data are displayed in Table 7.

At baseline, all of PB’s idiographic symptom ratings were above 50% on her VASs. Her depression, anxiety and rumination ratings showed upward trajectories in trend across the baseline phase, and her encapsulated belief and guilt ratings showed reversal in trend, indicating that these symptoms were getting worse. In part, this may

be attributed to instability in the majority of PB's measures at baseline. Also, at this time PB had received some distressing news. Within the intervention phase, clear downward trends and reduction in central tendencies were observed for all of PB's idiographic symptoms, with pronounced change in slope during her first week of treatment, indicating rapid change. The majority of her symptoms had also diminished before her booster sessions began. Overall variability of her scores decreased for all measures, increasing confidence in the analyses. All progress was maintained at follow-up. Indeed, on almost all measures, PB's follow-up ratings were at 0 every day. However, the significant baseline variability makes it hard to draw concrete conclusions from PB's visual analyses.

Non-overlap analyses confirm that all of PB's idiographic symptoms significantly decreased between her baseline and intervention phase. *Tau* values between phase B and C suggest that the effects of the intervention were reduced but not lost after its withdrawal, which supports the graphical suggestion that her improvements were maintained at follow-up. Her most consistent improvement was in her rumination ratings. Therefore, time-intensive BA appeared to have a positive and sustained effect on all of PB's idiographic measures.

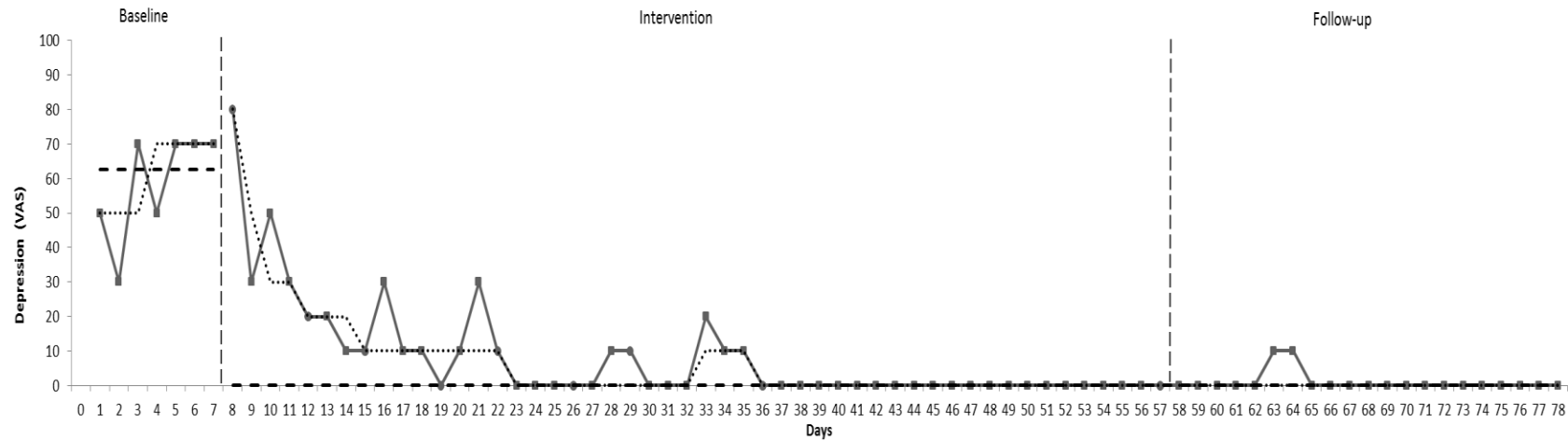


Figure PB1. Depression VAS: raw data (—■—), central tendency (— —) and trend (.....).

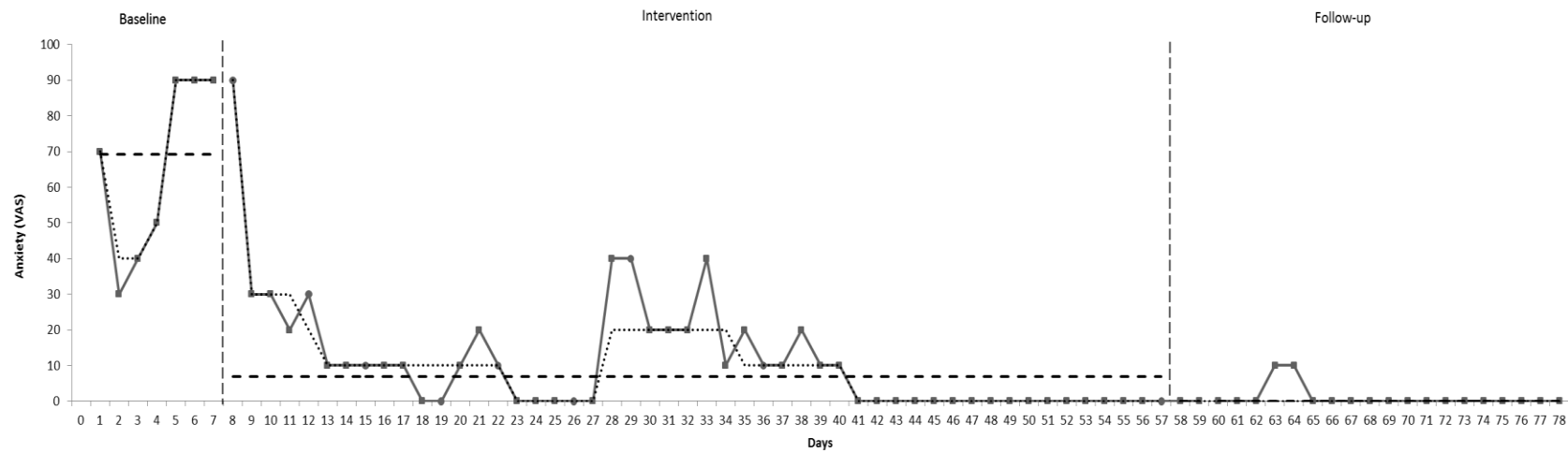


Figure PB2. Anxiety VAS: raw data (—■—), central tendency (— —) and trend (.....).

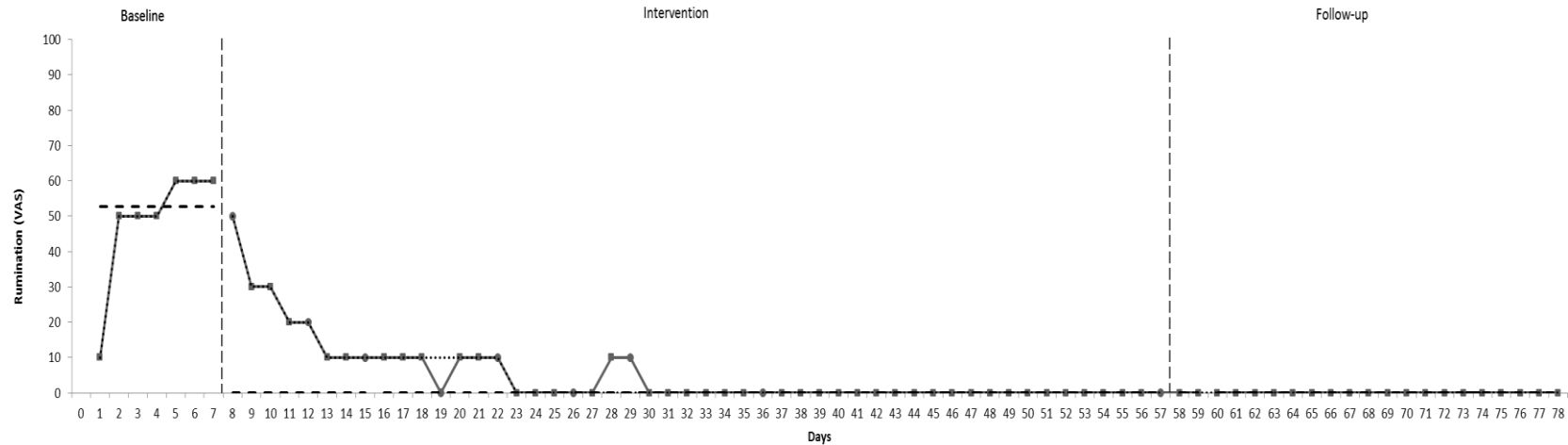


Figure PB3. Rumination VAS: raw data (—■—), central tendency (— —) and trend (.....).

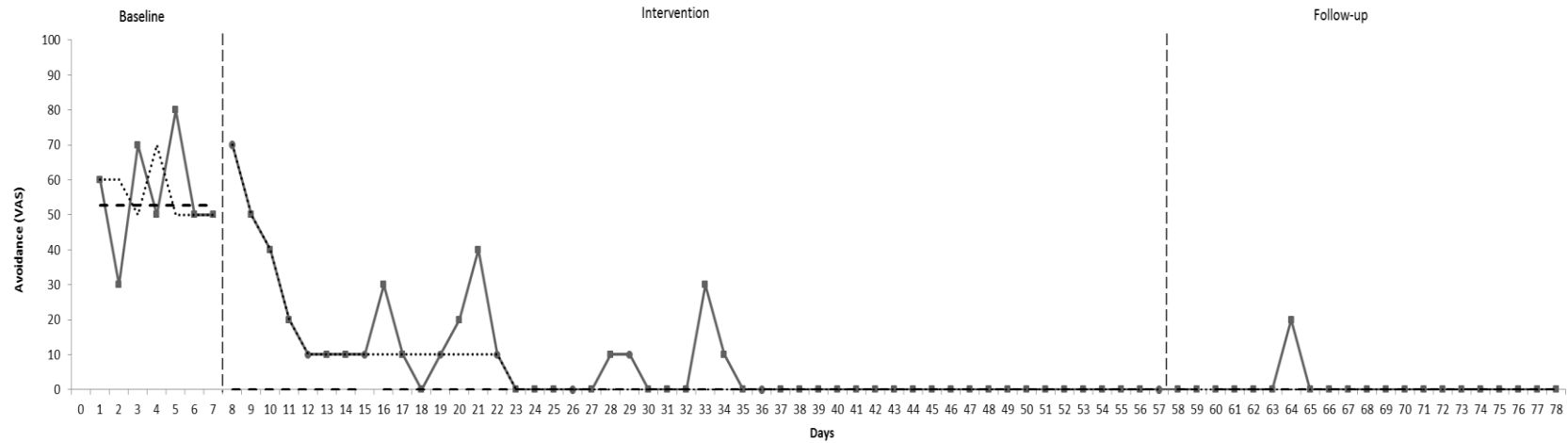


Figure PB4. Avoidance VAS: raw data (—■—), central tendency (— —) and trend (.....).

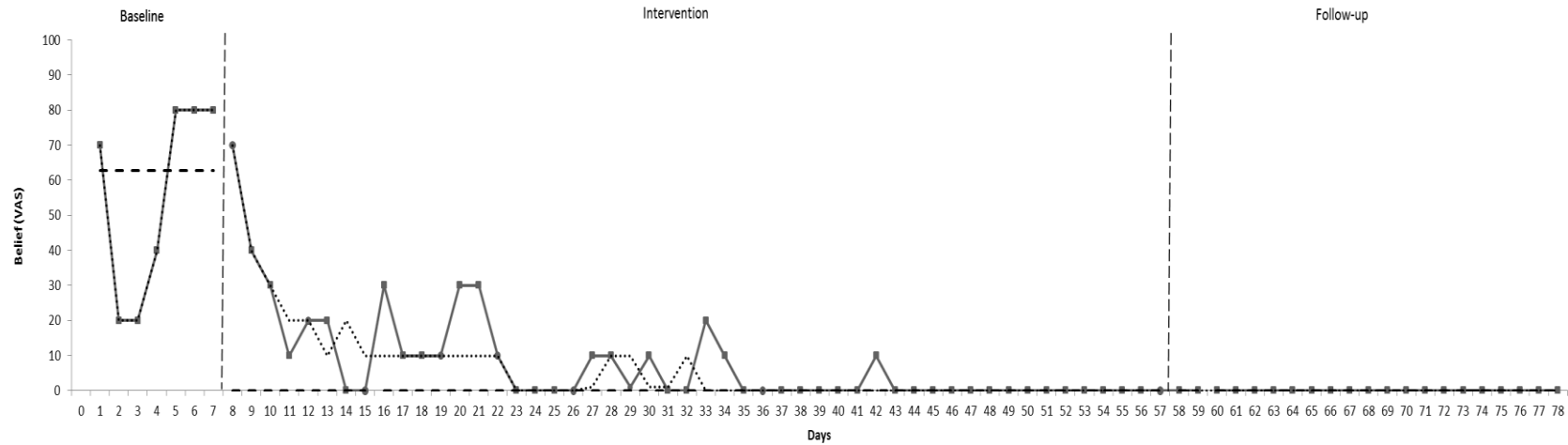


Figure PB5. Belief VAS: raw data (—■—), central tendency (— —) and trend (.....).

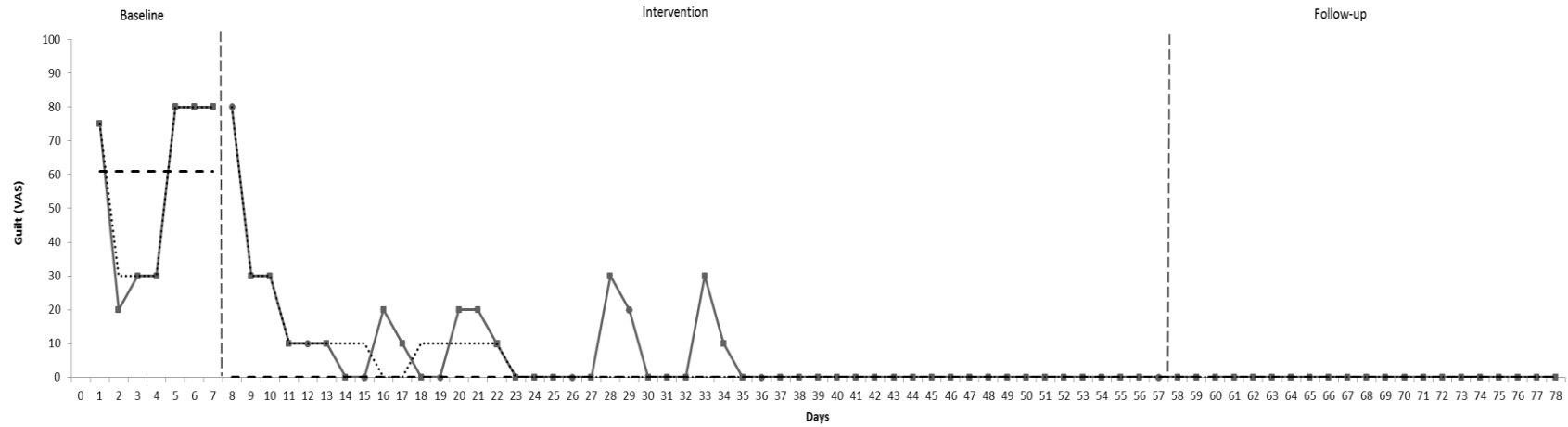


Figure PB6. Guilt VAS: raw data (—■—), central tendency (— —) and trend (.....).

Table 7 Summary of tau analyses comparing PB's idiographic outcome measures across the study phases.

Measure	Comparison	<i>Tau</i>	<i>SD Tau</i>	<i>p</i> value	90% <i>CI</i>
Depression	A x B	-0.94	0.24	<.001***	[-1.00, -0.55]
	B x C	0.25	0.15	.10	[0.00, 0.50]
	A x (B+C)	-0.96	0.23	<.001***	[-1.00, -0.58]
Anxiety	A x B	-0.93	0.24	<.001***	[-1.00, -0.55]
	B x C	0.02	0.15	.91	[-0.23, 0.27]
	A x (B+C)	-0.95	0.23	<.001***	[-1.00, -0.58]
Rumination	A x B	-0.97	0.24	<.001***	[-1.00, -0.59]
	B x C	0.23	0.15	.13	[-0.02, 0.487]
	A x (B+C)	-0.98	0.23	<.001***	[-1.00, -0.60]
Avoidance	A x B	-0.94	0.24	<.001***	[-1.00, -0.55]
	B x C	0.22	0.15	.15	[-0.03, 0.47]]
	A x (B+C)	-0.96	0.23	<.001***	[-1.00, -0.58]
Encapsulated belief	A x B	-0.90	0.24	<.001***	[-1.00, -0.52]
	B x C	0.11	0.15	.45	[-0.13, 0.36]
	A x (B+C)	-0.93	0.23	<.001***	[-1.00, -0.55]
Guilt	A x B	-0.91	0.24	<.001***	[-1.00, -0.53]

B x C	-0.30	0.15	.05	[-0.55, -0.05]
A x (B+C)	-0.94	0.23	<.001***	[-1.00, -0.56]

Note. A = Baseline phase; B = Intervention phase; C = Follow-up phase; CI = confidence interval; SD = standard deviation; *** = $p < .001$

Participant C (PC). Participant C spoke Italian as a first language but was fluent in English. At the time of her treatment she lived at home with her two children. Her current depressive episode coincided with leaving her job. PC experienced suicidal thoughts but no intent. PC attended sessions on Mondays and Thursdays, consisting of seven time-intensive sessions and two booster sessions, at two and four weeks after her seventh session.

PC provided seven baseline data points, 52 intervention data points, and 21 follow-up data points. PC rated “I cannot trust anyone” as her encapsulated belief and “crying” as her idiographic symptom of depression. Her idiographic outcomes are displayed in Figures PC1 to PC6. All of her ratings, apart from crying, demonstrated baseline stability. Completed *Tau-U* analyses of her data are displayed in Table 8.

At baseline, central tendencies of PC’s scores indicated that her idiographic symptoms were all consistently rated within the 50% to 100% range on her VASs. Increasing variability in the majority of her scores limits conclusions that can be drawn about her baseline trends. With the onset of the intervention phase, all of PC’s measures, apart from avoidance and crying, showed immediate decline. However, central tendencies indicate that between baseline and intervention phases PC did not show clear change in her depression, avoidance or crying ratings, and very minimal

decline in her other symptoms. Indeed there were no clear trends in the majority of her data. All of PC's symptoms, besides crying, showed immediate initial decline between the intervention and follow-up phases. However, declines in central tendencies were very minimal, and her rumination and crying levels increased. This meant that by the end of her treatment, all of her symptoms were still rated within the above average to maximum range.

Despite the variability of intervention and follow-up data mainly remaining stable or decreasing, variances were all large, particularly for crying and rumination, making it difficult to draw conclusions from PC's visual analyses. For crying, this is likely to have been influenced by PC using only three ratings (0, 50 and 100).

Non-overlap analyses indicate that while some proportions of PC's idiographic symptoms decreased between her baseline and intervention phase, none of the non-overlap reached significance. Between the intervention and follow-up phases, graphical comparisons between intervention and follow-up phases were supported, with the reduction in her avoidance scores reaching significance. When her idiographic symptom data from the intervention and follow-up phase were combined, PC's overall improvements were significant for anxiety and rumination. Therefore, for the majority of PC's idiographic symptoms, she did not demonstrate significant change associated with her treatment.

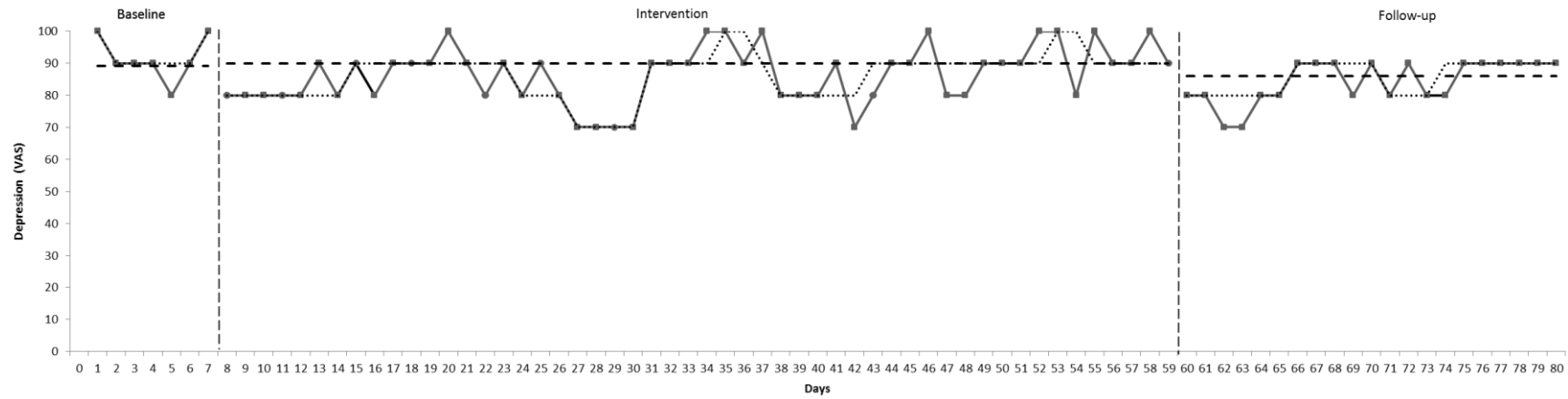


Figure PC1. Depression VAS: raw data (—■—), central tendency (— —) and trend (.....).

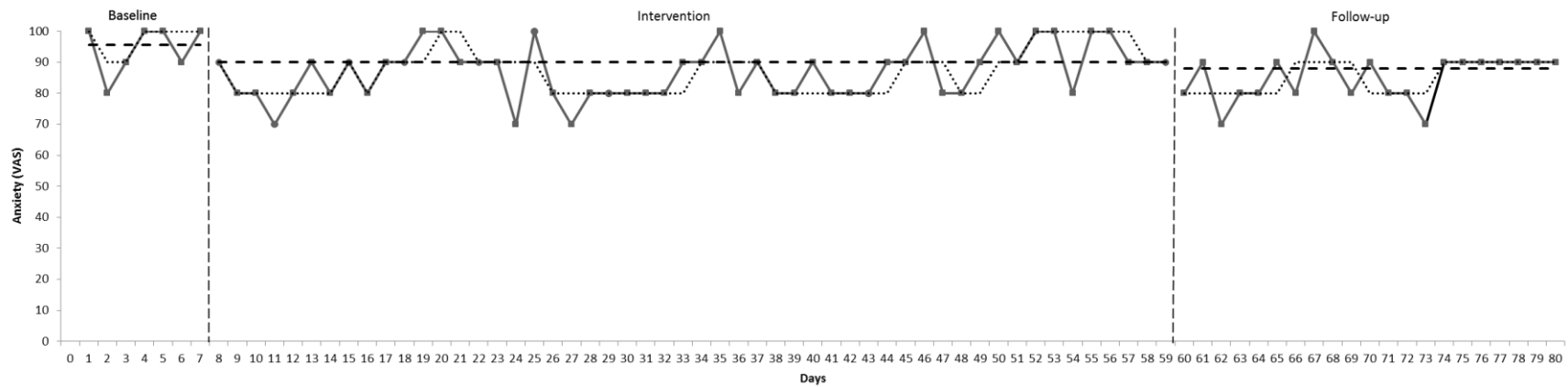


Figure PC2. Anxiety VAS: raw data (—■—), central tendency (— —) and trend (.....).

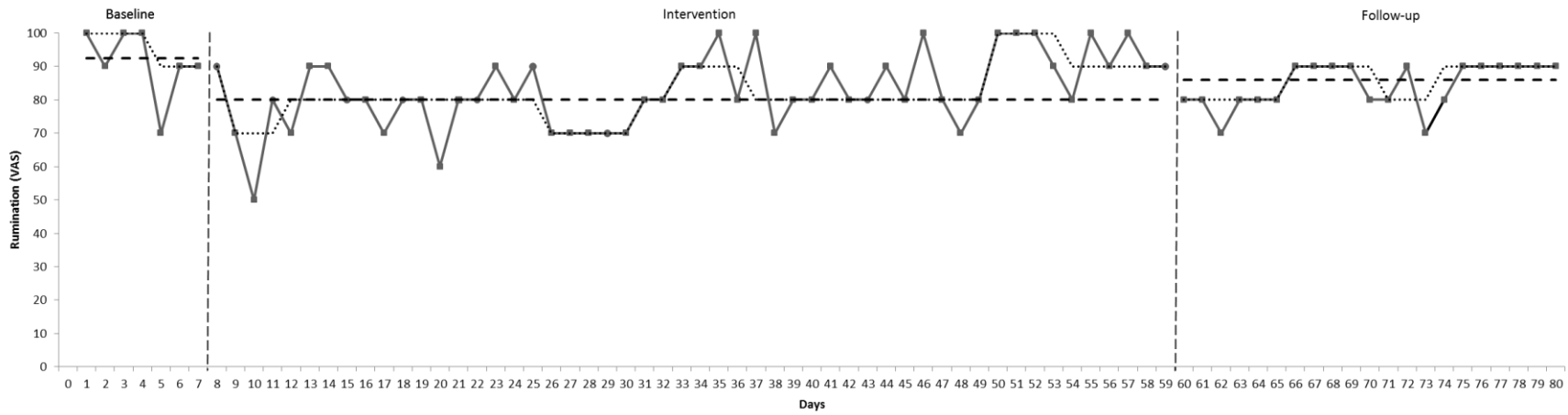


Figure PC3. Rumination VAS: raw data (—■—), central tendency (— —) and trend (.....).

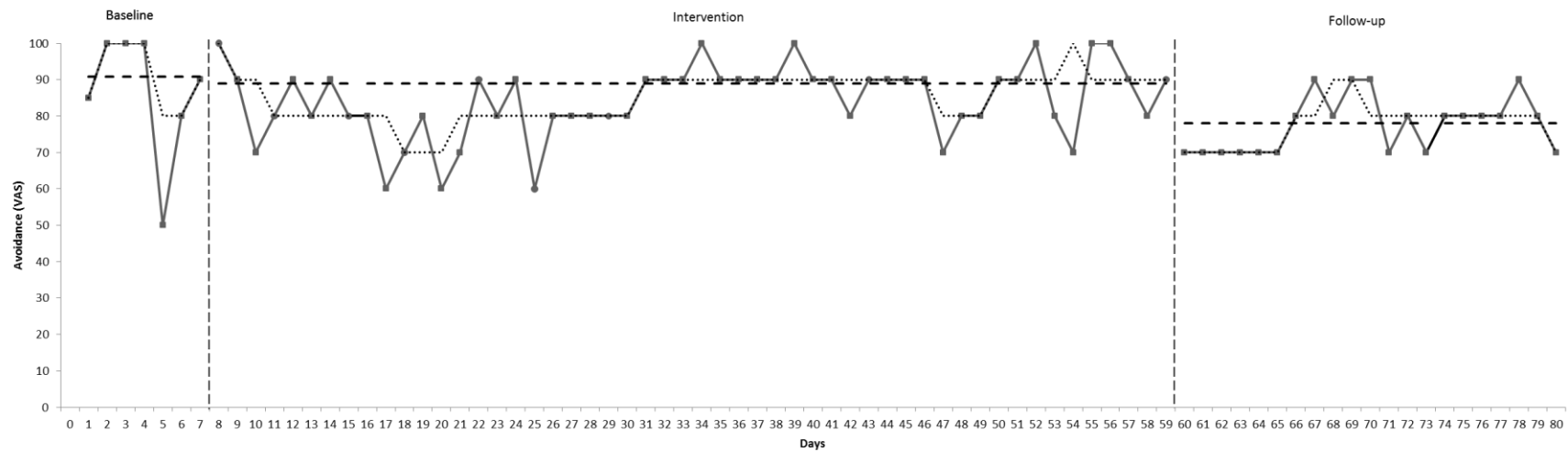


Figure PC4. Avoidance VAS: raw data (—■—), central tendency (— —) and trend (.....).

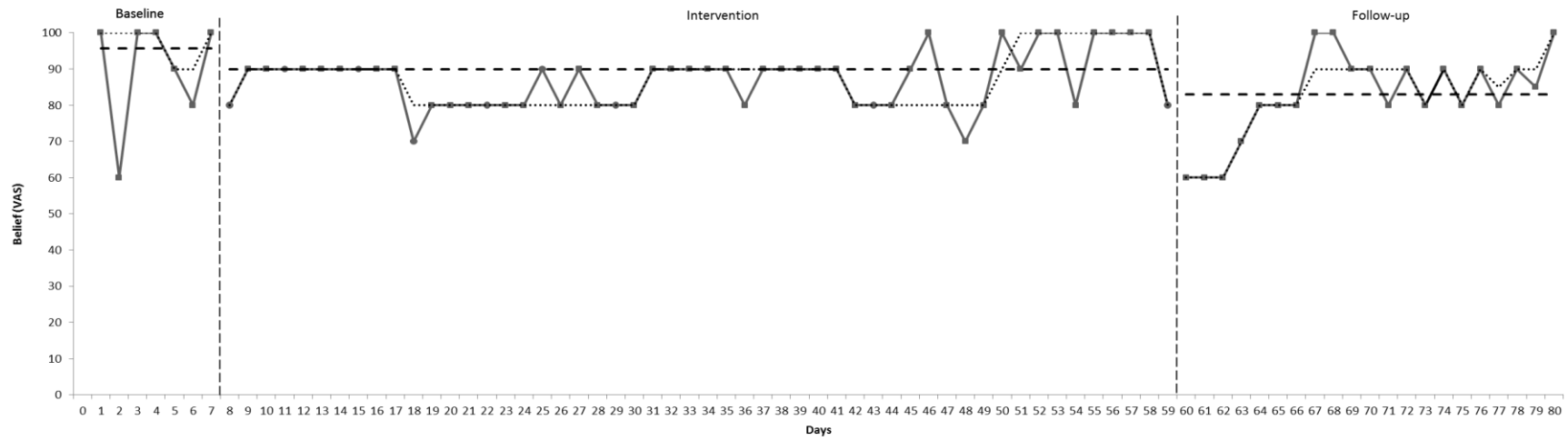


Figure PC5. Belief VAS: raw data (—■—), central tendency (— —) and trend (·····).

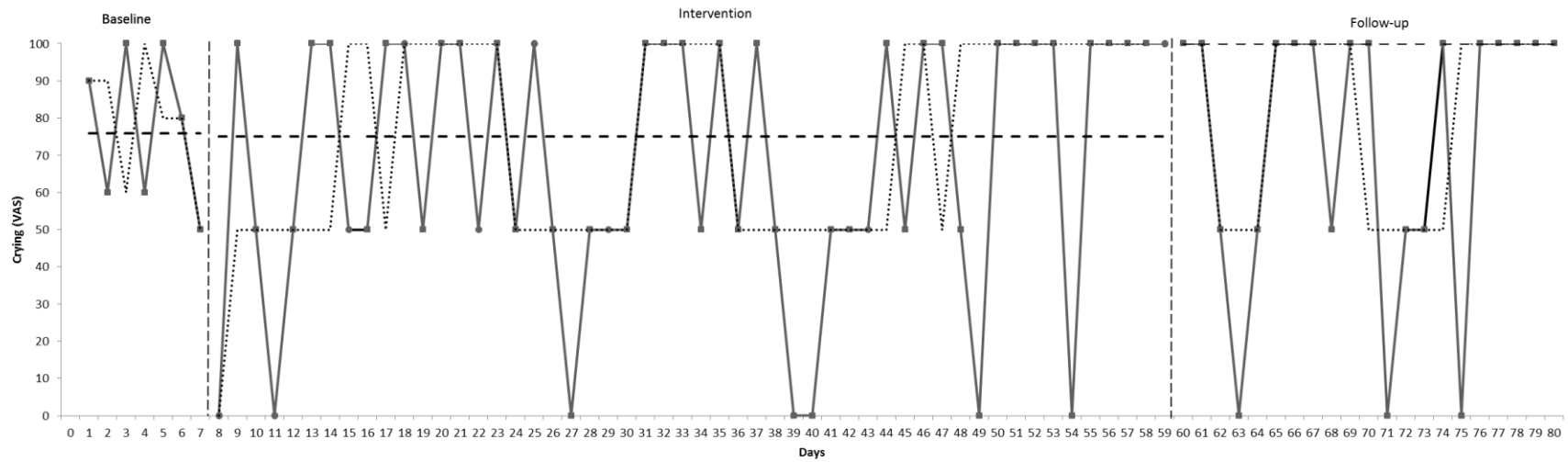


Figure PC6. Crying VAS: raw data (—■—), central tendency (— —) and trend (·····).

Table 8 *Summary of tau analyses comparing PC's idiographic outcome measures across the study phases.*

Measure	Comparison	<i>Tau</i>	<i>SD Tau</i>	<i>p</i> value	90% <i>CI</i>
Depression	A x B	-0.31	0.23	.19	[-0.70, 0.08]
	B x C	-0.14	0.15	.36	[-0.39, 0.11]
	A x (B+C)	-0.36	0.23	.11	[-0.74, 0.01]
Anxiety	A x B	-0.46	0.23	.05	[-0.85, -0.08]
	B x C	-0.09	0.15	.56	[-0.33, 0.16]
	A x (B+C)	-0.50	0.23	.03*	[-0.88, -0.12]
Rumination	A x B	-0.45	0.23	.06	[-0.83, -0.06]
	B x C	0.10	0.15	.52	[-0.15, 0.34]
	A x (B+C)	-0.46	0.23	.04*	[-0.84, -0.09]
Avoidance	A x B	-0.22	0.23	.35	[-0.61, 0.17]
	B x C	-0.42	0.15	.01*	[-0.67, -0.17]
	A x (B+C)	-0.31	0.23	.18	[-0.67, 0.07]
Encapsulated belief	A x B	-0.30	0.23	.21	[-0.68, 0.09]
	B x C	-0.19	0.15	.20	[-0.44, 0.06]
	A x (B+C)	-0.32	0.23	.16	[-0.70, 0.06]
Crying	A x B	-0.09	0.23	.70	[-0.48, 0.30]

B x C	0.09	0.15	.51	[-0.15, 0.35]
A x (B+C)	-0.04	0.23	.87	[-0.42, 0.34]

Note. A = Baseline phase; B = Intervention phase; C = Follow-up phase; *CI* = confidence interval; *SD* = standard deviation; * = $p < .05$

Participant D (PD). Participant D spoke English as a first language. She lived at home with her four children. Her current depressive episode coincided with being unhappy with a restructuring at her work place, and relationship difficulties with her partner. PD attended sessions on Mondays and Fridays. She attended five time-intensive sessions, had another 45 minute intensive session over the phone, and attended three booster sessions at one, two and four weeks after her final intensive session.

PD provided 14 baseline data points, 51 intervention data points, and 21 follow-up data points. She rated “I am a fuck up” as her encapsulated belief and how “withdrawn” she was as her chosen symptom. Her idiographic measures are displayed in Figures PD1 to PD6. Only PD’s depression and encapsulated belief ratings met baseline stability. Completed *Tau-U* analyses of her data are displayed in Table 9.

At baseline, lines of central tendency indicate that the majority of PD’s scores fell above 50% on her VASs, though her anxiety appeared low. Downward trajectories in trend were clearly present for her rumination scores, and slight for her depression scores, though these may have been influenced by high variability in scores and the fact that she collected her measures over the Christmas holidays.

During the intervention phase, lines of central tendency indicate that all of PD's symptoms, apart from anxiety (where an increase was observed), showed clear but non-immediate reductions. Trend lines indicate that PD's scores tended to either increase or remain stable across her first four sessions and then decreased or remained stable between days 24 and 48 (approximately). These downward trends appeared more pronounced and immediate than they did at baseline, but were incongruent with PD's report of self-harm and heightened suicidal ideation at her fifth session. Over the last two weeks of her treatment, reverse upward trajectories in her idiographic symptoms were observed, and these were either stable or continued to increase at follow-up, where all central tendencies of her symptoms increased. It is thought this deterioration in her symptoms was influenced by her experience of a traumatic event, or it could also represent a cyclical nature to PD's depression. Indeed, variability in PD's scores was pronounced during the intervention phase, and although variability reduced by follow-up, her visual analyses bears interpreting with caution.

Non-overlap analyses confirm that between her baseline and intervention phases PD made significant improvement in all of her idiographic symptoms, except anxiety, but that the withdrawal of the intervention was associated with significant increases in all of her idiographic symptoms, indicating that her progress was lost and reversed. Comparisons between the baseline phase and the combined intervention and follow-up phases, show that overall PD only made significant improvements on her encapsulated belief ratings, and that her anxiety significantly increased over the total course of the study.

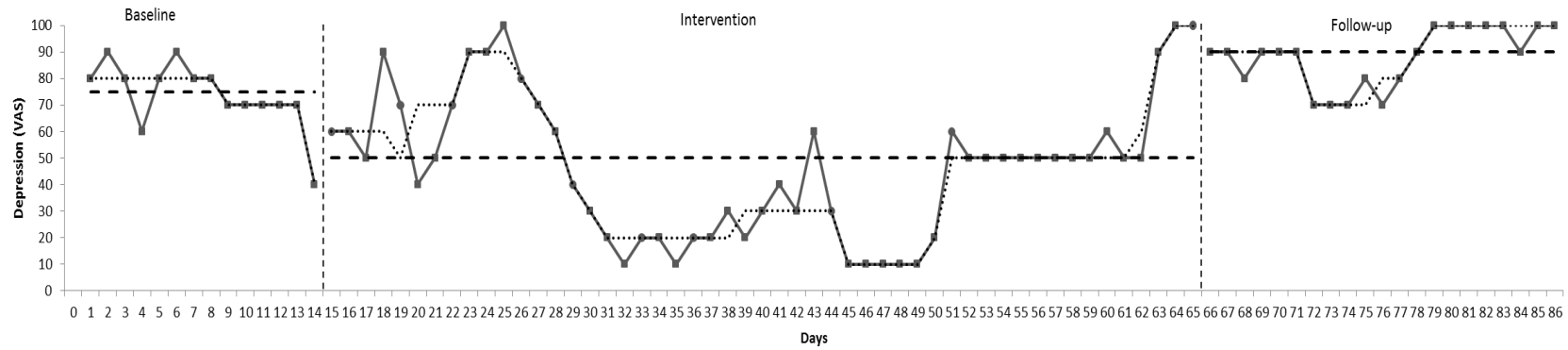


Figure PD1. Depression VAS: raw data (—■—), central tendency (— —) and trend (·····).

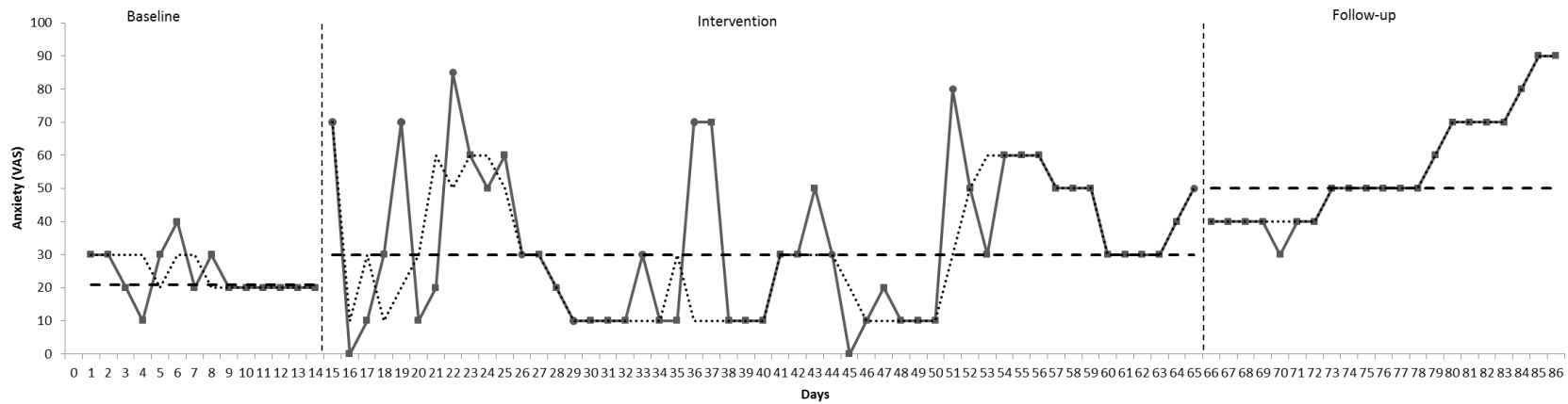


Figure PD2. Anxiety VAS: raw data (—■—), central tendency (— —) and trend (·····).

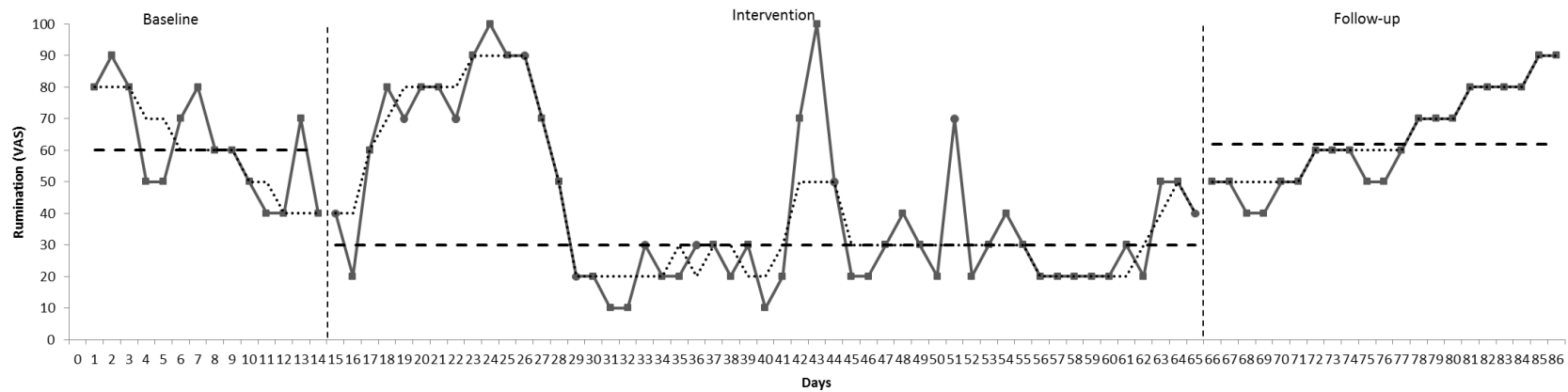


Figure PD3. Rumination VAS: raw data (—■—), central tendency (— —) and trend (.....).

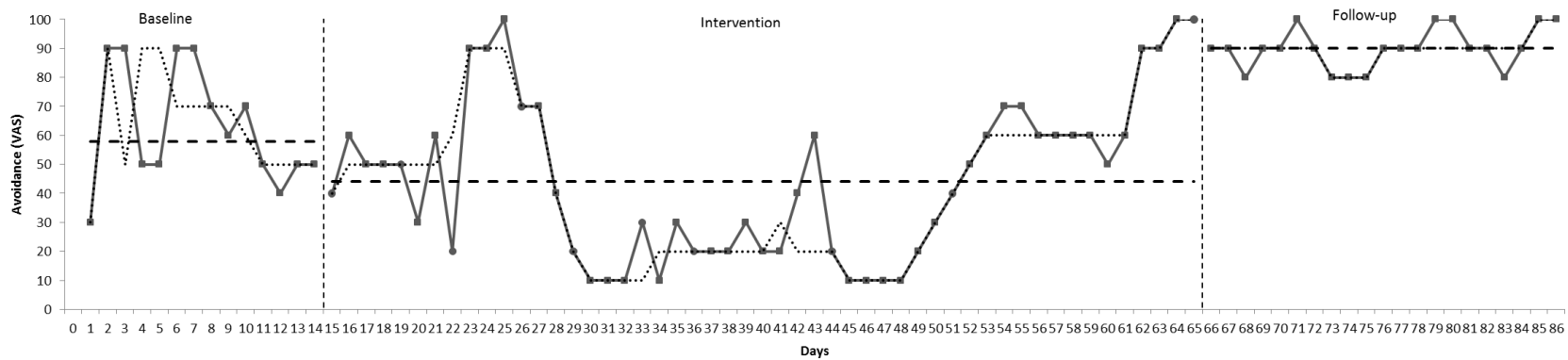


Figure PD4. Avoidance VAS: raw data (—■—), central tendency (— —) and trend (.....).

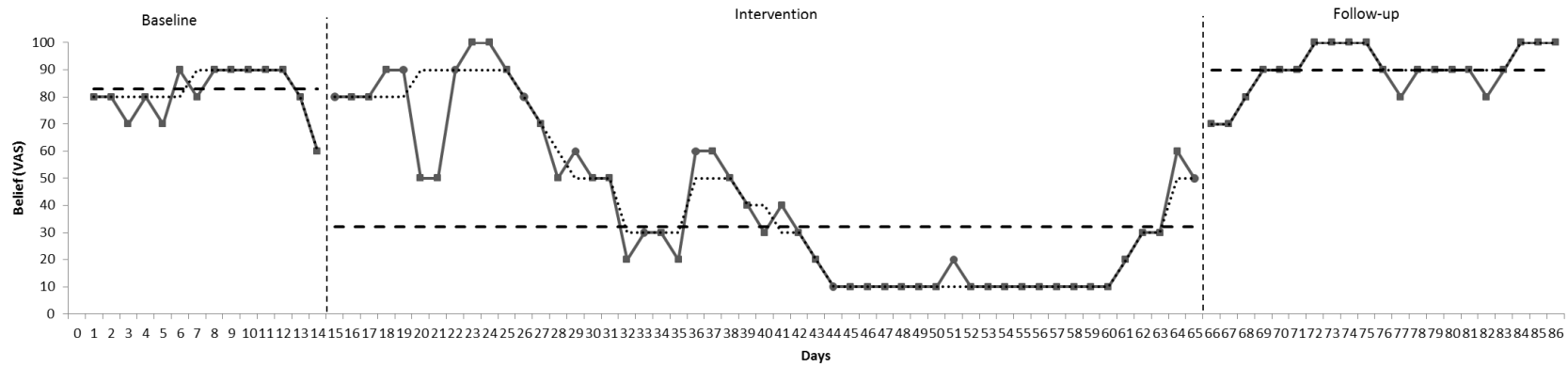


Figure PD5. Belief VAS: raw data (—■—), central tendency (— —) and trend (· · · · ·).

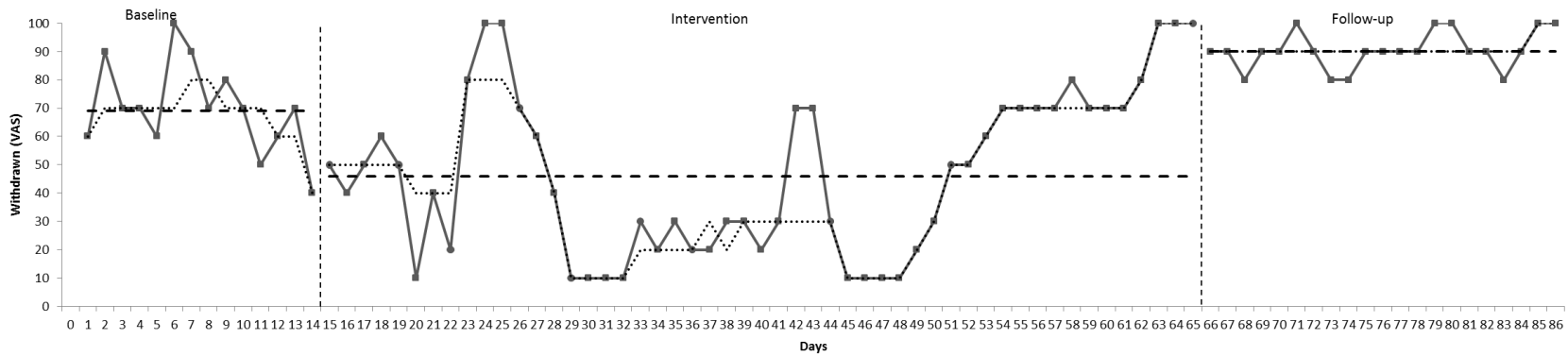


Figure PD6. Withdrawal VAS: raw data (—■—), central tendency (— —) and trend (· · · · ·).

Table 9 Summary of tau analyses comparing PD's idiographic outcome measures across the study phases.

Measure	Comparison	<i>Tau</i>	<i>SD Tau</i>	<i>p</i> value	90% <i>CI</i>
Depression	A x B	-0.55	0.18	<.01**	[-0.84, -0.26]
	B x C	0.80	0.15	<.001***	[0.55, 1.00]
	A x (B+C)	-0.21	0.17	.21	[-0.49, 0.07]
Anxiety	A x B	0.18	0.18	.32	[-0.11, 0.47]
	B x C	0.54	0.15	<.001***	[0.55, 1.00]
	A x (B+C)	0.40	0.17	.02*	[0.13, 0.68]
Rumination	A x B	-0.43	0.18	.01*	[-0.72, -0.15]
	B x C	0.53	0.15	<.001***	[0.28, 0.77]
	A x (B+C)	-0.29	0.17	.09	[-0.57, -0.01]
Avoidance	A x B	-0.37	0.18	.04*	[-0.66, -0.08]
	B x C	0.82	0.15	<.001***	[0.57, 1.00]
	A x (B+C)	-0.05	0.17	.75	[-0.37, 0.20]
Encapsulated belief	A x B	-0.73	0.18	<.001***	[-1.00, -0.44]
	B x C	0.84	0.15	<.001***	[0.59, 1.00]
	A x (B+C)	-0.37	0.17	.03*	[-0.65, -0.10]
Withdrawn	A x B	-0.46	0.18	<.01**	[-0.75, -0.17]

B x C	0.82	0.15	<.001***	[0.57, 1.00]
A x (B+C)	-0.11	0.17	.51	[-0.39, 0.17]

Note. A = Baseline phase; B = Intervention phase; C = Follow-up phase; *CI* = confidence interval; *SD* = standard deviation; * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Participant E (PE). Participant E spoke English as a first language. He lived at home with his mother. The onset of PE’s current depressive episode coincided with him being unemployed and feeling unsure of his life direction. PE attended sessions on Mondays and Fridays. PE experienced regular suicidal ideation but nil suicidal intent. He attended six time-intensive sessions and three booster sessions, one, two and three weeks after his sixth session.

PE provided seven baseline data points and 39 intervention data points, but did not consent to collecting follow-up measures, stating that outcome measure completion caused him to ruminate more. Of note, after missing his second treatment session PE misplaced four days’ worth of idiographic measures. He rated “There is something fundamentally wrong with me” as his encapsulated belief and “apathy” as his chosen symptom. His idiographic measures are displayed in Figures PE1 to PE6. Only his depression and avoidance measures were stable at baseline. Completed *Tau-U* analyses of his data are displayed in Table 10.

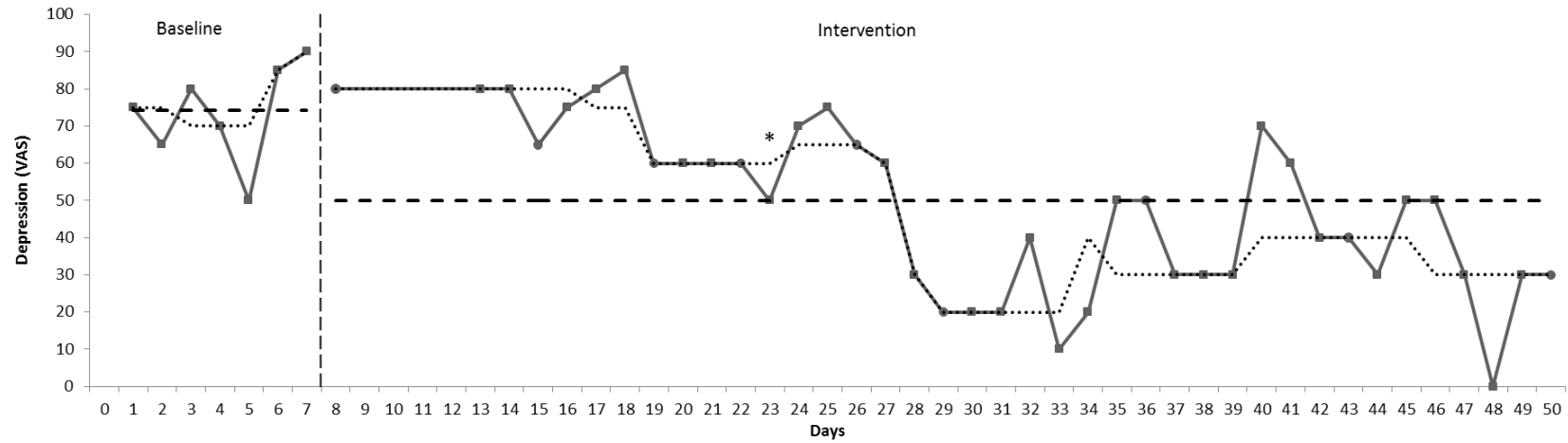


Figure PE1. Depression VAS: raw data (—■—), central tendency (— —) and trend (· · · · ·).

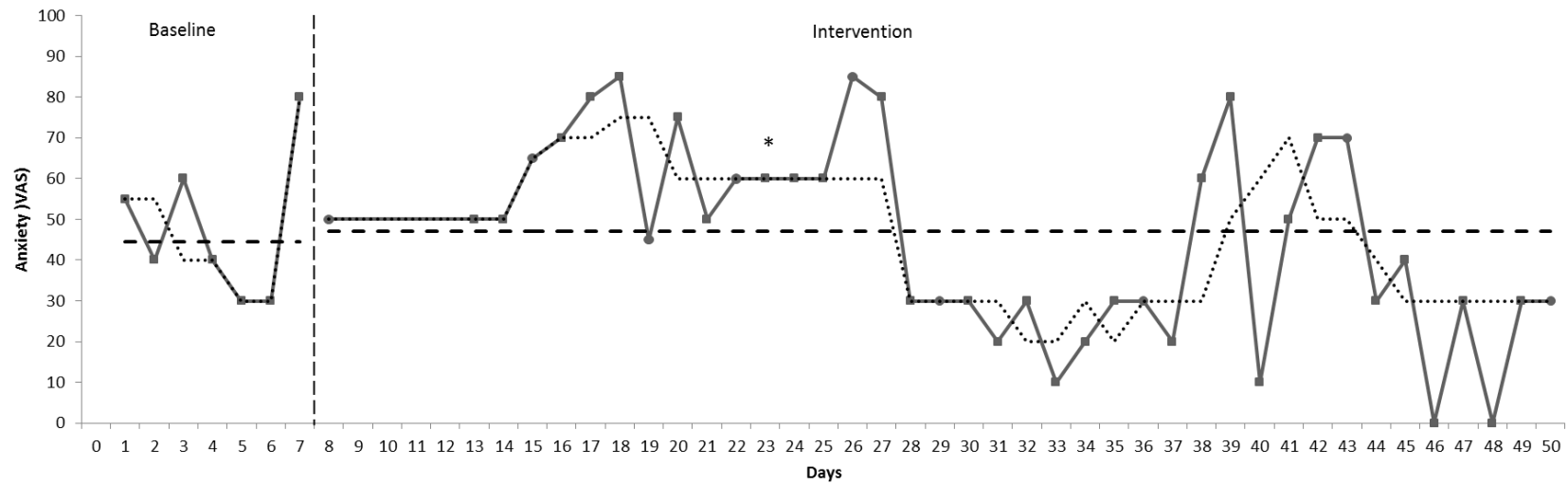


Figure PE2. Anxiety VAS: raw data (—■—), central tendency (— —) and trend (· · · · ·).

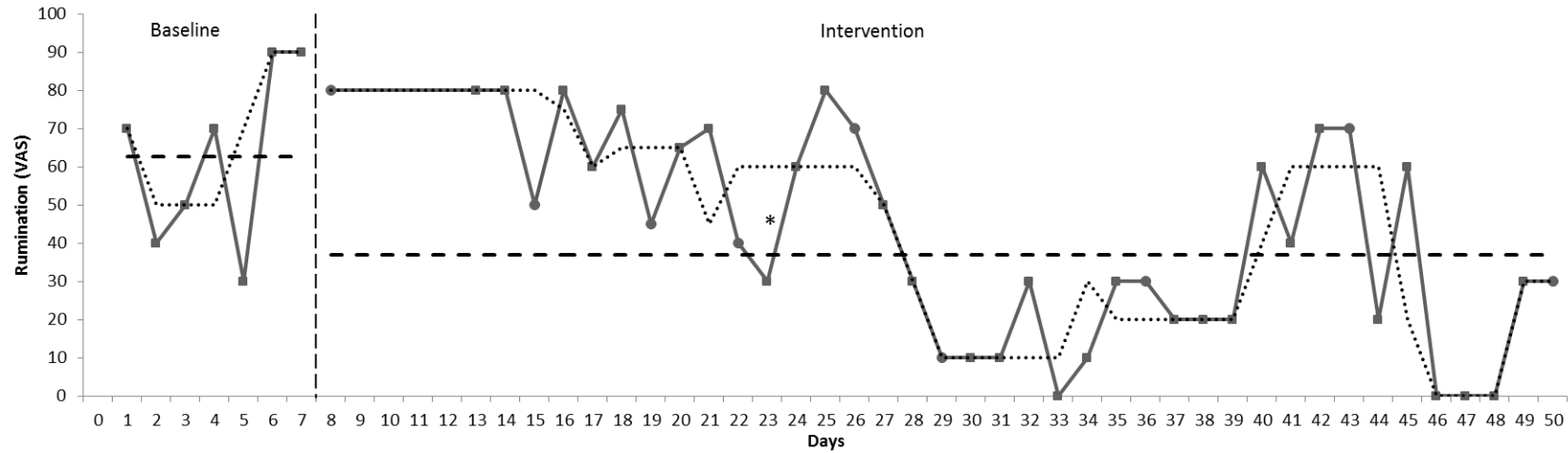


Figure PE3. Rumination VAS: raw data (—■—), central tendency (— —) and trend (.....).

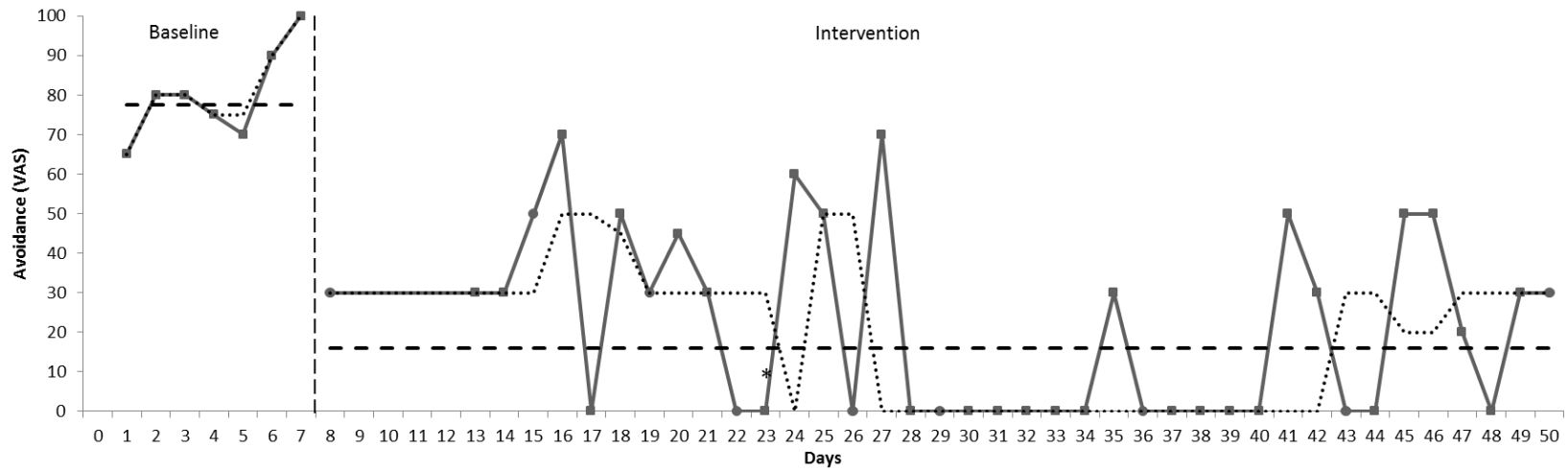


Figure PE4. Avoidance VAS: raw data (—■—), central tendency (— —) and trend (.....).

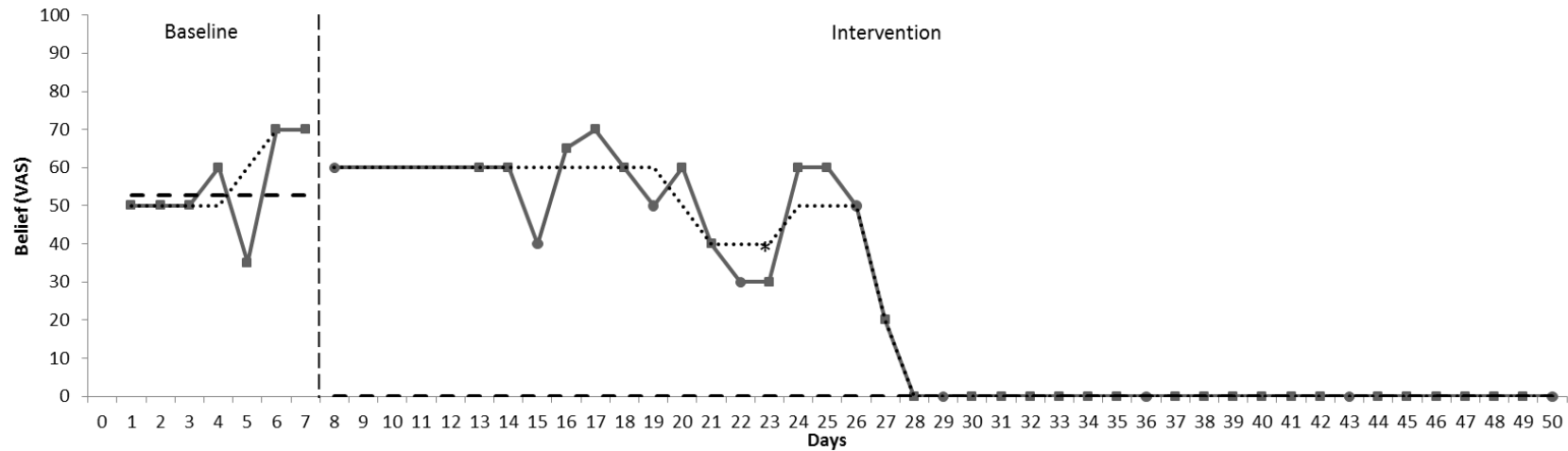


Figure PE5. Belief VAS: raw data (—■—), central tendency (— —) and trend (.....).

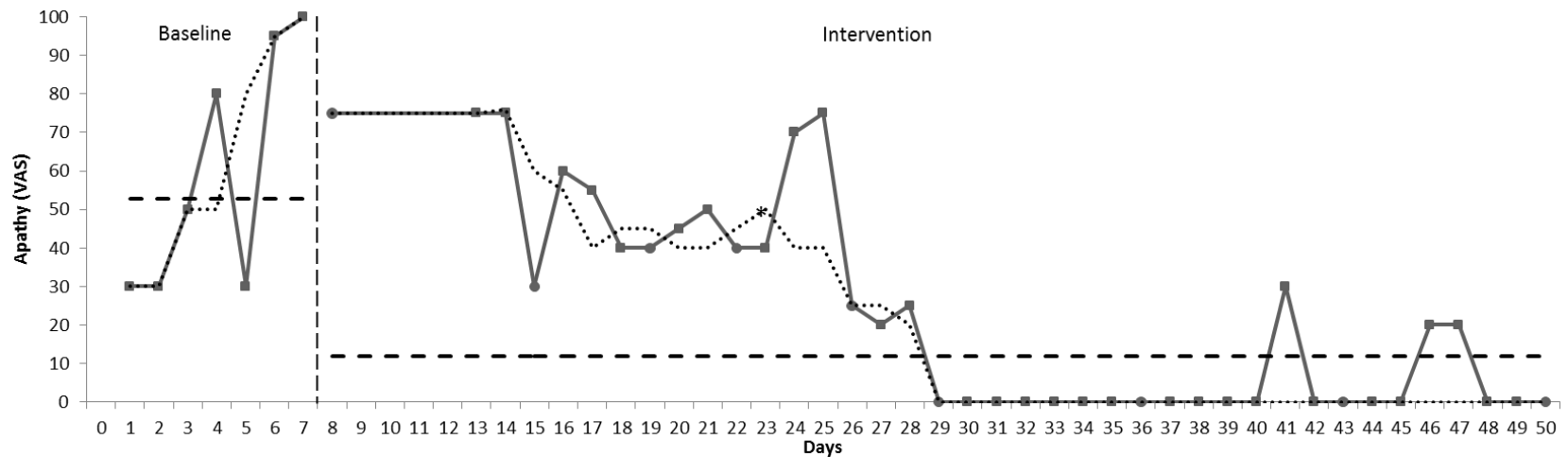


Figure PE6. Apathy VAS: raw data (—■—), central tendency (— —) and trend (.....).

At baseline, lines of central tendency indicate that PE's idiographic symptom ratings most often fell above 50% on his VASs. There were upward trajectories in trends for all of his symptoms except anxiety, indicating deterioration in these symptoms. However, all of PE's measures showed an obvious increase in variability across the baseline phase, which might have been attributable to instability in the majority of his measures at baseline, but reduces confidence in trends. Within the intervention phase, clear decreases in central tendency and trend were observed for all of PE's idiographic symptoms, except anxiety. Most pronounced declines in PE's score trends appeared to occur before his booster sessions. Of note, trends in PE's scores did fluctuate, for example during the final two weeks of his treatment (for anxiety, rumination and avoidance) and in particular after losing a friend to suicide (see *). PE reported that his bereavement initially lowered his mood but eventually challenged his encapsulated belief as a man that he admired had also "suffered". This is evident where his scores increased following the bereavement and then showed a stepped decline. Alongside baseline instabilities and high variability in data across both of his study phases, caution must be applied to the visual analyses, and it is not possible to conclude whether or not his progress was maintained over time.

Non-overlap analyses support that PE idiographic symptoms showed significant proportions of decline between the intervention and baseline phases for his depression, avoidance, encapsulated belief and apathy ratings, and were most pronounced for his avoidance. Proportions of decline in his anxiety and rumination scores did not reach significance. Therefore, time-intensive BA appears to have had a significant positive effect on the majority of PE's idiographic symptoms.

Table 10 *Summary of tau analyses comparing PE's idiographic outcome measures across the study phases.*

Measure	Comparison	<i>Tau</i>	<i>SD</i>	<i>p</i> value	90% <i>CI</i>
		<i>Tau</i>			
Depression	A x B	-0.66	0.24	<.01**	[-1.00, -0.26]
Anxiety	A x B	-0.06	0.24	.80	[-0.46, 0.33]
Rumination	A x B	-0.45	0.24	.06	[-0.85, -0.06]
Avoidance	A x B	-0.98	0.24	<.001***	[-1.00, -0.58]
Encapsulated belief	A x B	-0.64	0.24	<.01**	[-1.00, -0.24]
Apathy	A x B	-0.69	0.24	<.01**	[-1.00, -0.31]

Note. A = Baseline phase; B = Intervention phase; C = Follow-up phase; *CI* = confidence interval; *SD* = standard deviation; * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Participant F (PF). Participant F spoke Portuguese as a first language but was fluent in English. At the time of her treatment she was living with four friends. Her current depressive episode followed a difficult relationship break-up. PF attended sessions on Mondays and Fridays. She attended seven core sessions and two optional booster sessions. Due to therapist illness, her seventh session took place four days after her sixth session and booster sessions fell one and three weeks after her seventh session.

PF provided 14 baseline data points, 47 intervention data points, and only 14 follow-up data points. PF rated “I am not good enough” as her encapsulated belief and “lack of energy” as her chosen symptom. PF’s idiographic measures are displayed in

Figures PF1 to PF6. Only her depression and encapsulated belief ratings demonstrated baseline stability. Completed *Tau-U* analyses of her data are displayed in Table 11.

At baseline, lines of central tendency indicate that the majority of PF's idiographic symptoms scores fell close to 50% on her VASs. There were clear upward trajectories in her baseline trends for rumination and avoidance, indicating deterioration in these symptoms. Lines of trend and central tendency indicate that clear gradual declines in all of PF's idiographic symptoms, except avoidance, were associated with the intervention onset. Central tendencies showed further improvement at follow-up, and trends either continued to decline or remained stable. The highest levels of improvement occurred in the first and last weeks of PF's treatment, but during the last week this improvement occurred following deterioration. Variability of all of PF's scores increased over both the intervention and follow-up phases. This, in addition to baseline variability makes it difficult to draw concrete conclusions about PF's lasting progress from visual analyses. During the second week of her treatment, PF returned to university following the Christmas holidays, and over the course of her treatment she reported being subjected to stalking. Though not clear, these events might have influenced the variability in her scores.

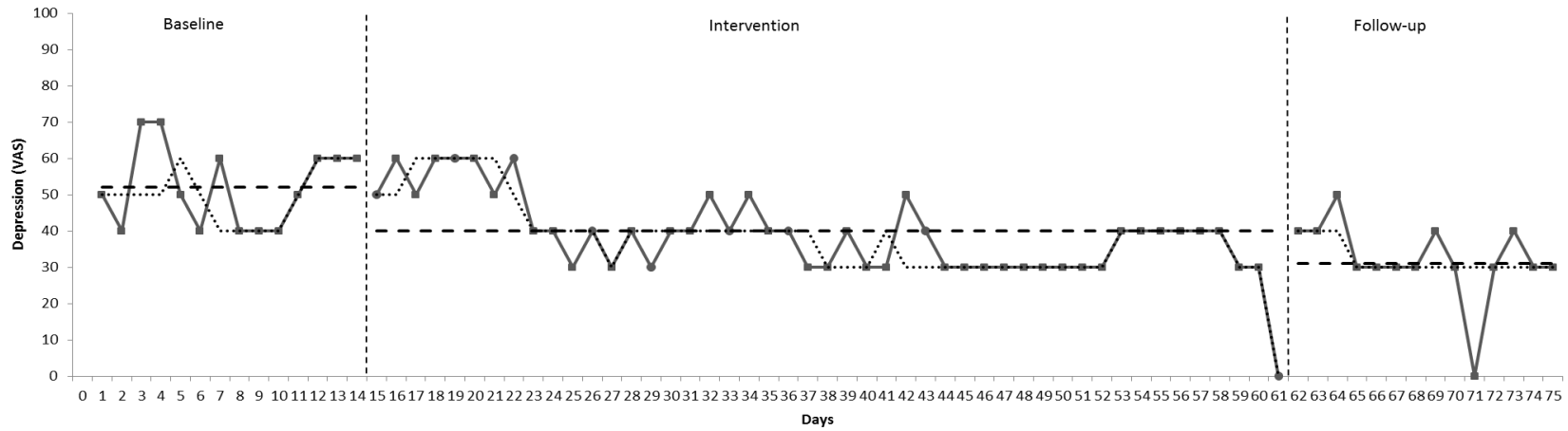


Figure PF1. Depression VAS: raw data (—■—), central tendency (— —) and trend (.....).

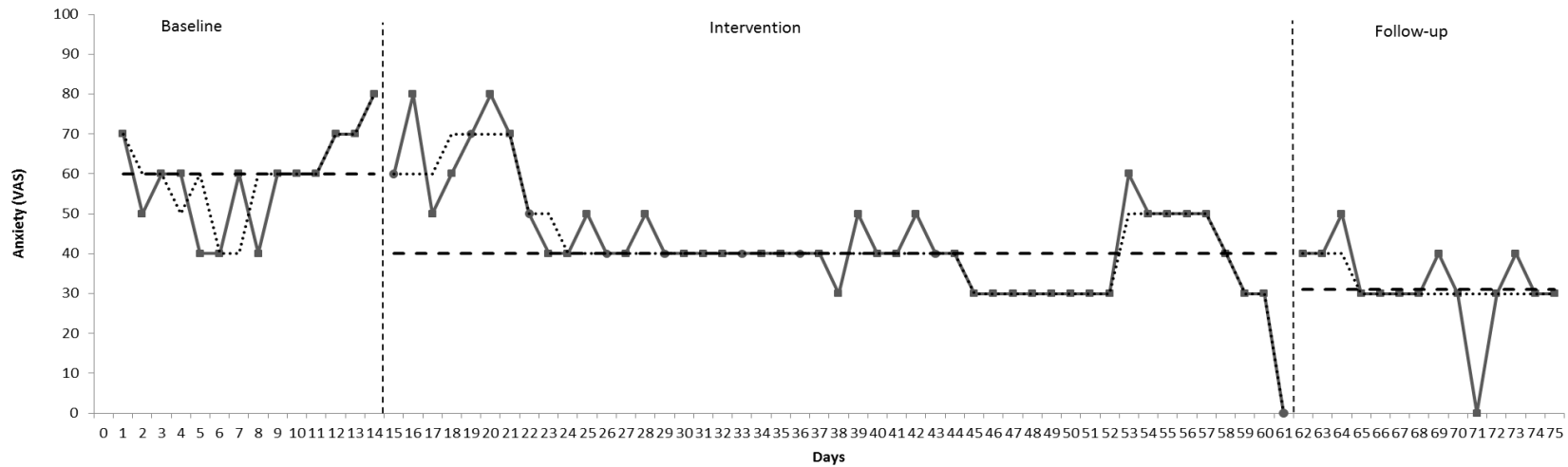


Figure PF2. Anxiety VAS: raw data (—■—), central tendency (— —) and trend (.....).

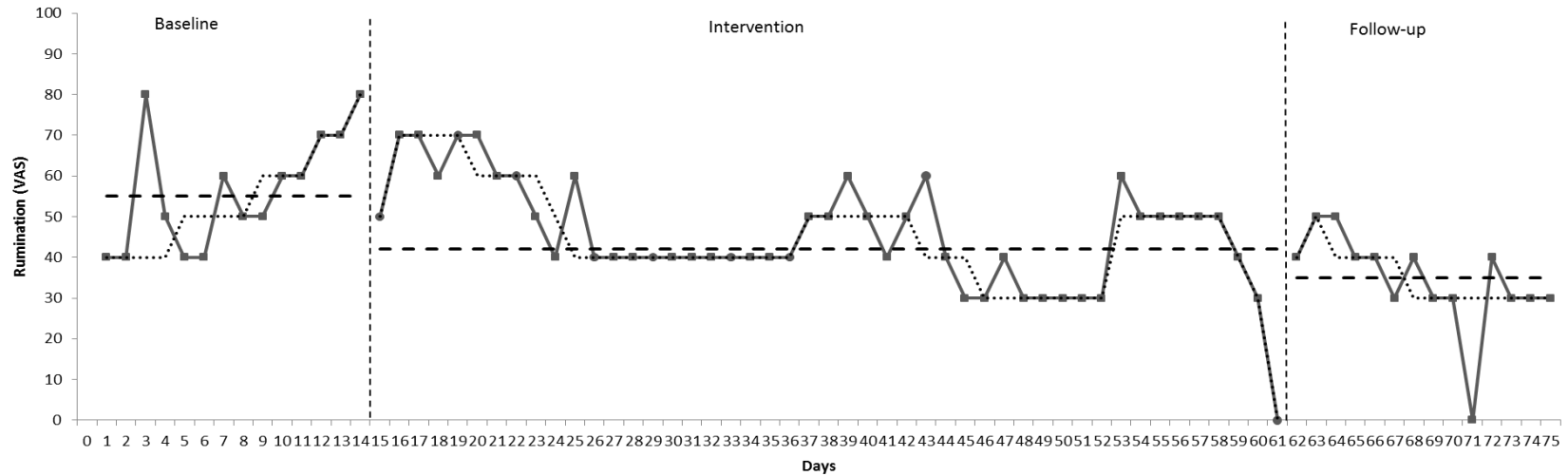


Figure PF3. Rumination VAS: raw data (—■—), central tendency (— —) and trend (.....).

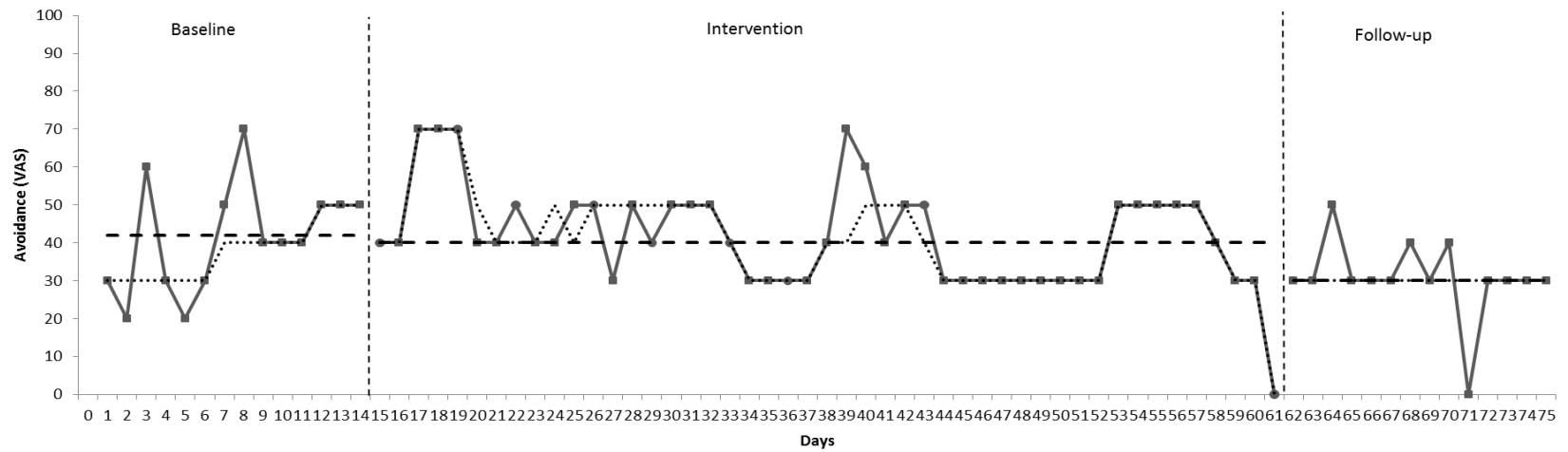


Figure PF4. Avoidance VAS: raw data (—■—), central tendency (— —) and trend (.....).

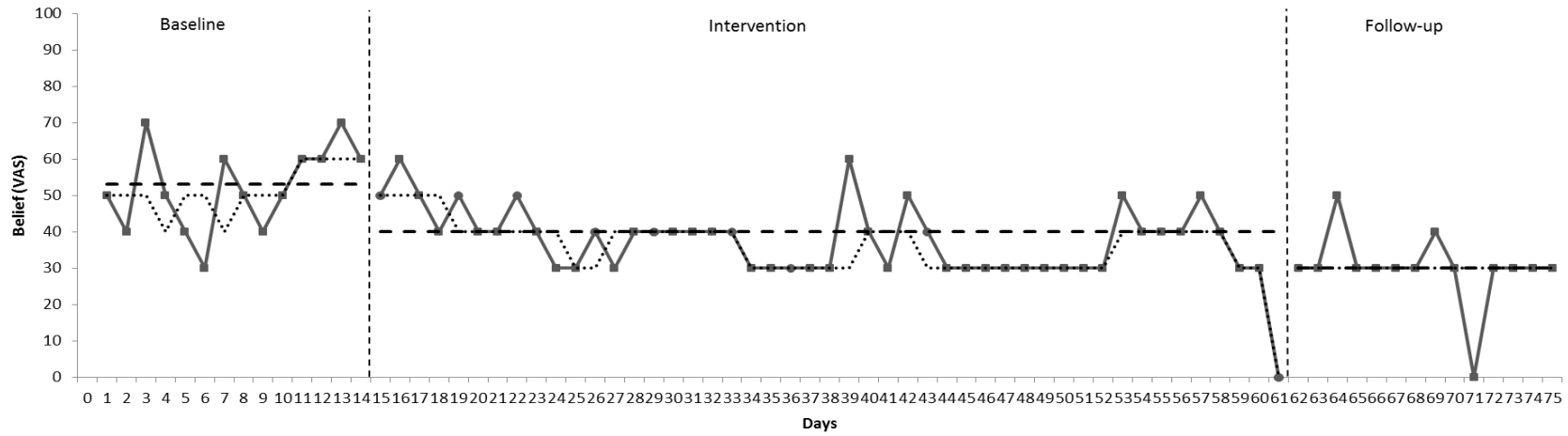


Figure PF5. Belief VAS: raw data (—■—), central tendency (— —) and trend (.....).

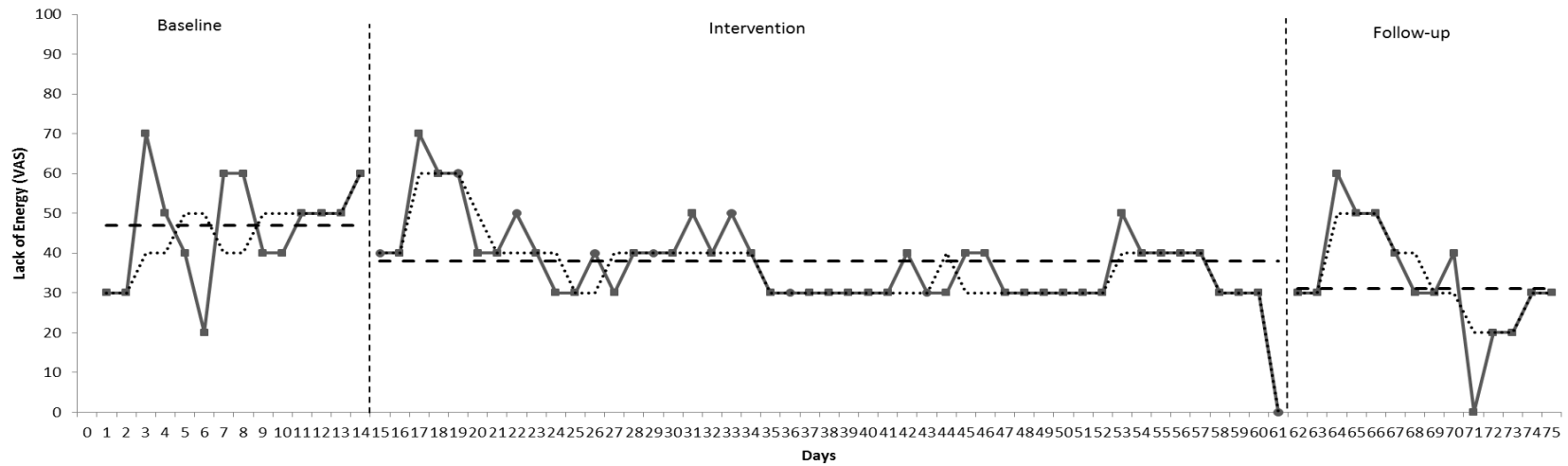


Figure PF6. Lack of Energy VAS: raw data (—■—), central tendency (— —) and trend (.....).

Non-overlap analyses support that between PF's baseline and intervention phases she showed significant reductions in all of her idiographic symptoms, except avoidance. Her greatest improvement was in her encapsulated belief ratings. Though a proportion of her depression and anxiety scores were higher after the withdrawal of the intervention, indicating a reduction in the effect of the intervention following its end, this did not reach significant levels and so, as suggested by the visual analysis, the effects of the intervention were not lost. PF's ratings of rumination, avoidance and her encapsulated belief showed further significant reduction after the withdrawal of the intervention. Overall, when intervention and follow-up phases were combined, PF showed significant improvement on all of her idiographic symptoms, except avoidance.

Table 11 *Summary of tau analyses comparing PF's idiographic outcome measures across the study phases.*

Measure	Comparison	<i>Tau</i>	<i>SD Tau</i>	<i>p</i> value	90% <i>CI</i>
Depression	A x B	-0.60	0.18	<.001***	[-0.89, -0.31]
	B x C	0.34	0.18	.05	[0.05, 0.63]
	A x (B+C)	-0.65	0.17	<.001***	[-0.94, -0.37]
Anxiety	A x B	-0.60	0.18	<.001***	[-0.89, -0.30]
	B x C	0.17	0.18	.32	[-0.12, 0.47]
	A x (B+C)	-0.67	0.17	<.001***	[-0.95, -0.38]
Rumination	A x B	-0.48	0.18	<.01**	[-0.77, -0.19]

	B x C	-0.46	0.18	<.01**	[-0.76, -0.17]
	A x (B+C)	-0.55	0.17	<.01**	[-0.83, -0.27]
Avoidance	A x B	0.02	0.18	.93	[-0.28, 0.31]
	B x C	-0.48	0.18	<.01**	[-0.77, -0.19]
	A x (B+C)	-0.08	0.17	.63	[-0.37, 0.20]
Encapsulated	A x B	-0.65	0.18	<.001***	[-0.94, -0.36]
belief	B x C	-0.41	0.18	.02*	[-0.71, -0.12]
	A x (B+C)	-0.70	0.17	<.001***	[-0.98, -0.42]
Lack of	A x B	-0.42	0.18	.02*	[-0.71, -0.13]
energy	B x C	-0.20	0.18	.25	[-0.49, 0.09]
	A x (B+C)	-0.44	0.17	.01*	[-0.72, -0.15]

Note. A = Baseline phase; B = Intervention phase; C = Follow-up phase; *CI* = confidence interval; *SD* = standard deviation; * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Participant G (PG). Participant G spoke English as a first language. At the time of her assessment she lived with two friends and her partner. Her current depressive episode coincided with adapting to being in a relationship and losing a sense of independence. PG attended sessions on Tuesdays and Fridays. She attended all 10 available, with booster sessions one, two and four weeks post session seven.

PG provided seven baseline data points for most of her idiographic measures, but only three for her chosen symptom. She provided 50 intervention phase data

points. Her follow-up data were collected beyond the submission deadline for this report and so are not reported here. PG rated “I am a failure” as her encapsulated belief and “despair” as her chosen symptom. PG’s idiographic measures are displayed in Figures PG1 to PG6. Her depression, rumination and despair ratings demonstrated baseline stability. Completed *Tau-U* analyses of her data are displayed in Table 12.

At baseline, lines of central tendency indicate that the majority of PG’s idiographic symptom scores fell above 50% on her VASs. There were upward trajectories in trend for her depression, anxiety, and rumination scores, indicating deterioration of these symptoms. During the intervention phase, all of PG’s idiographic symptoms showed clear downward trends and reduction in central tendencies. PG’s most pronounced improvements were observed before her booster sessions began. While the majority of measures showed decreasing variances in their ratings during the intervention, the variability of PG’s scores was very high. One factor potentially influencing PG’s scores was that two days before her first session, her long-term relationship ended, (see *) causing PG to experience increased suicidal ideation. Therefore, PG’s visual analyses need interpreting with caution, plus no conclusions about the maintenance of her progress can be drawn.

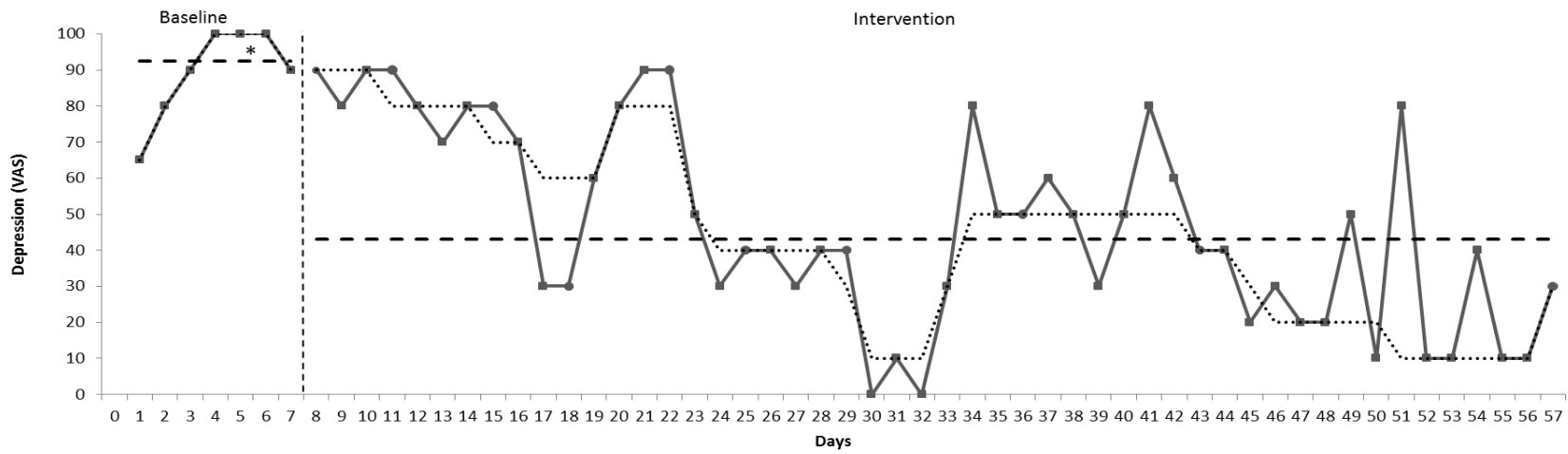


Figure PG1. Depression VAS: raw data (—■—), central tendency (— —) and trend (.....).

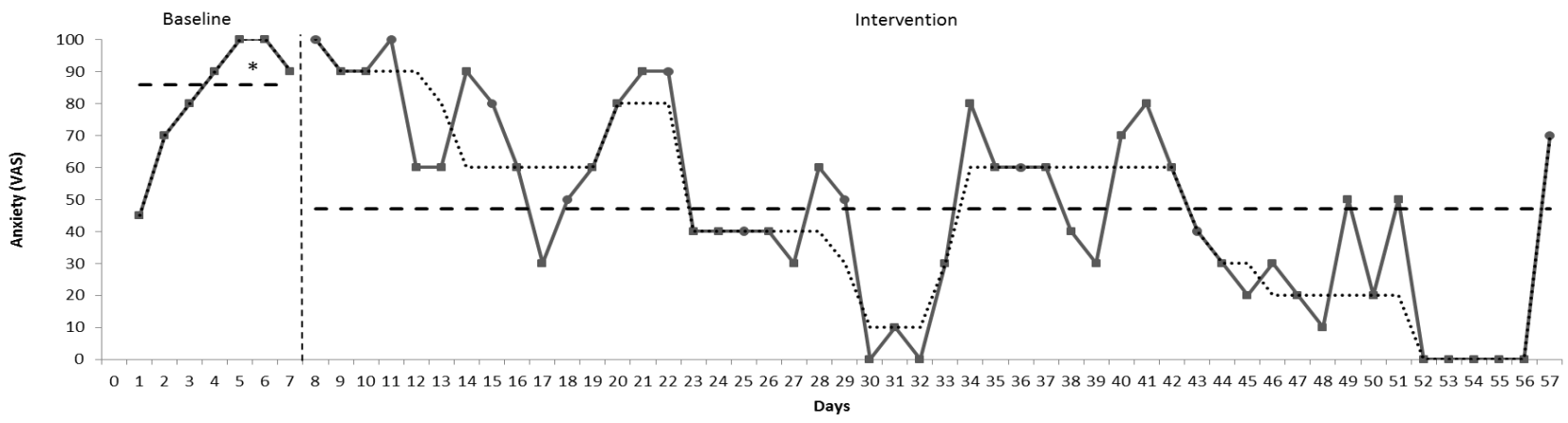


Figure PG2. Anxiety VAS: raw data (—■—), central tendency (— —) and trend (.....).

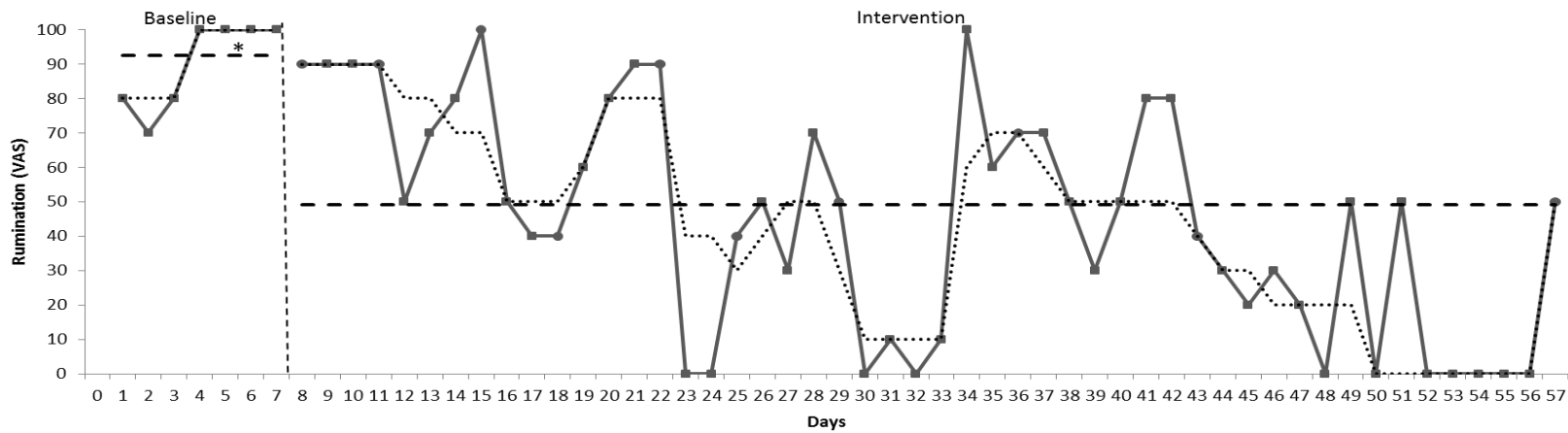


Figure PG3. Rumination VAS: raw data (■—), central tendency (— —) and trend (.....).

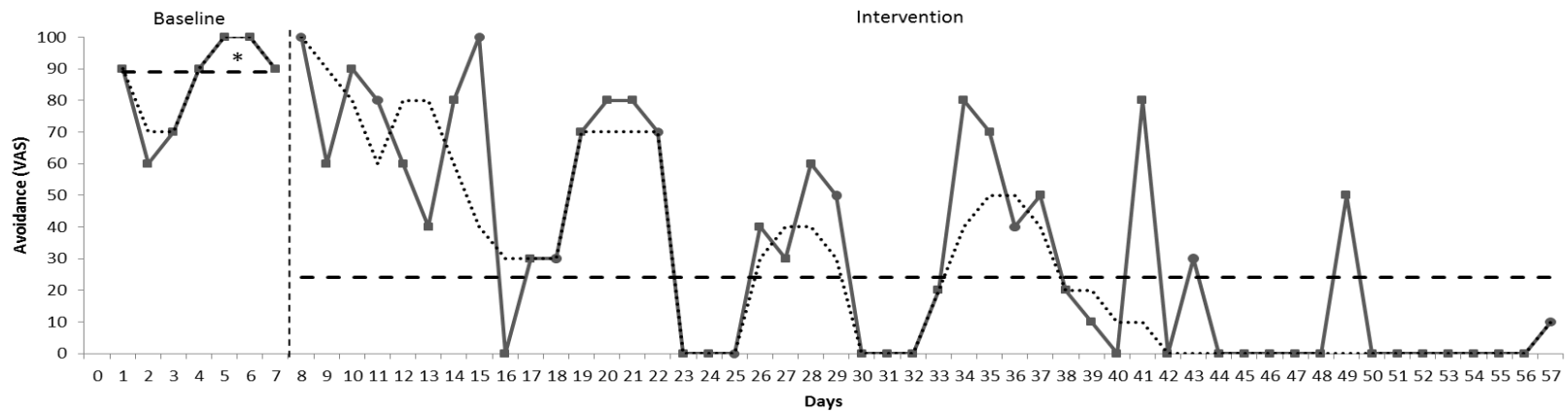


Figure PG4. Avoidance VAS: raw data (■—), central tendency (— —) and trend (.....).

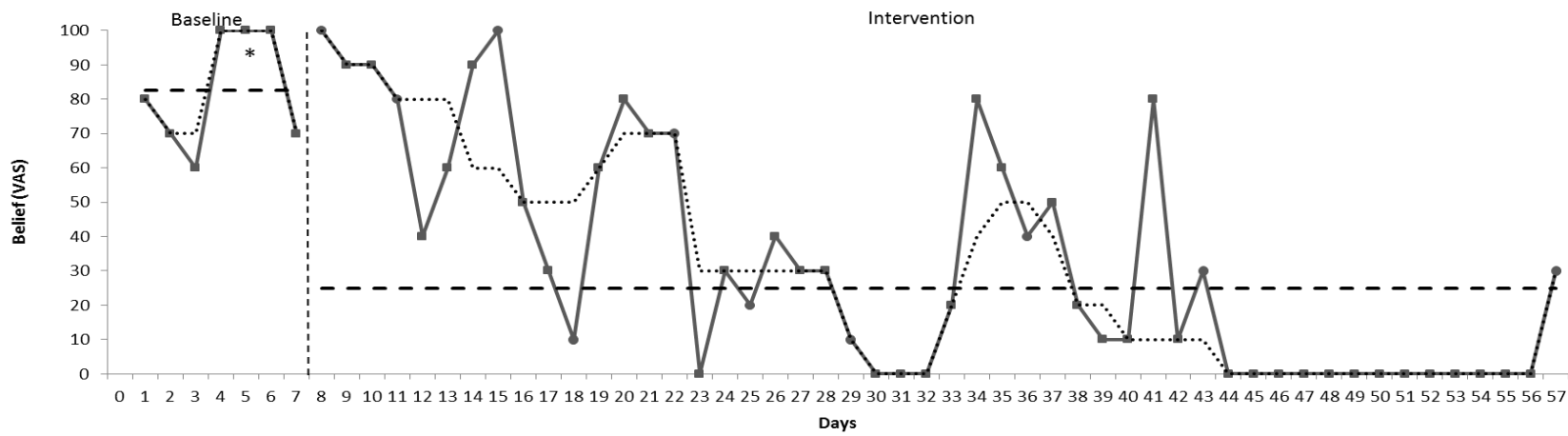


Figure PG5. Belief VAS: raw data (—■—), central tendency (— —) and trend (.....).

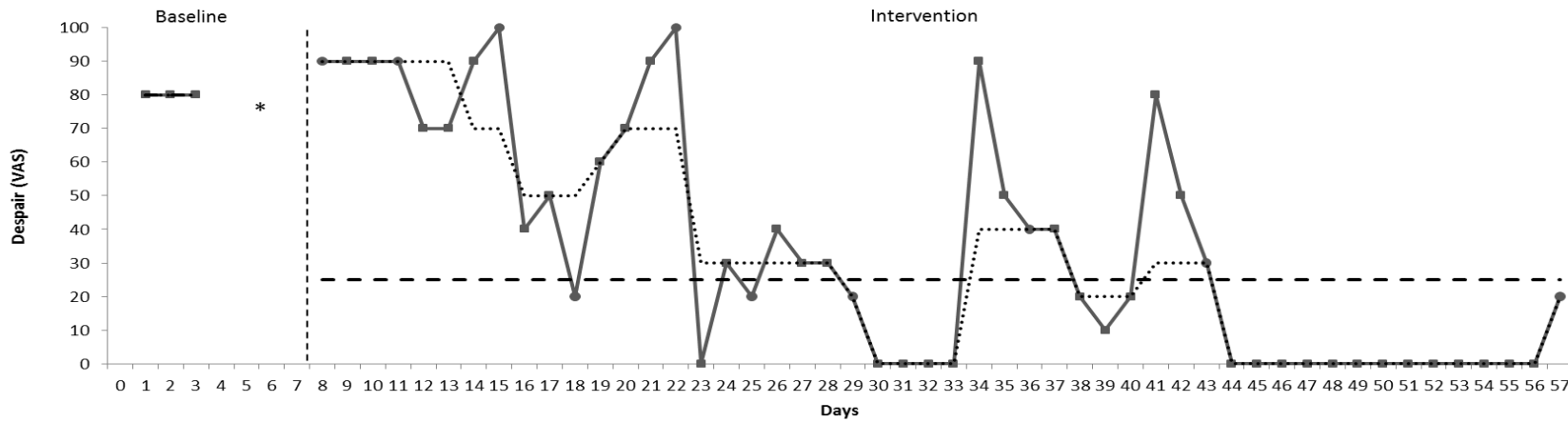


Figure PG6. Despair VAS: raw data (—■—), central tendency (— —) and trend (.....).

Non-overlap analyses indicate that between baseline and intervention phases all of PG's idiographic symptoms showed high proportions of improvement, and were significant for all measures apart from her despair, for which she provided less, and therefore, lower powered data. Her greatest progress was seen in her depression scores.

Table 12 Summary of tau analyses comparing PG's idiographic outcome measures across the study phases.

Measure	Comparison	<i>Tau</i>	<i>SD Tau</i>	<i>p</i> value	90% <i>CI</i>
Depression	A x B	-0.83	0.24	<.001***	[-1.00, -0.45]
Anxiety	A x B	-0.71	0.24	<.01**	[-1.00, -0.33]
Rumination	A x B	-0.78	0.24	<.001***	[-1.00, -0.40]
Avoidance	A x B	-0.81	0.24	<.001***	[-1.00, -0.42]
Encapsulated belief	A x B	-0.76	0.24	<.01**	[-1.00, -0.37]
Despair	A x B	-0.62	0.35	.07	[-1.00, -0.05]

Note. A = Baseline phase; B = Intervention phase; C = Follow-up phase; *CI* = confidence interval; *SD* = standard deviation; * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Participant H (PH). Participant H spoke English as his first language. He described his current depressive episode as coinciding with a couple of bereavements, as well as getting older and feeling as though he had less time to achieve his aspirations. During his treatment, PH reported that he had experienced frequent suicidal ideation for the past 10 years but that he had no intent to act on his thoughts.

PH attended sessions on Mondays and Fridays. He attended six treatment sessions in total, though his fifth session was only 30 minutes long and conducted over the telephone because PH needed to attend a job interview. After this, his involvement in the study ended as he got a job abroad.

In total, PH provided seven baseline data points and 19 intervention data points. PH rated his belief “I am a failure”, and his chosen symptom, “sadness”. PH’s idiographic measures are displayed in Figure PH1 to PH6. None of PH’s measures, apart from his avoidance rating, were stable at baseline. Completed *Tau-U* analyses of his data are displayed in Table 13.

At baseline, PH’s rumination, encapsulated belief, and sadness appeared to demonstrate decreasing trend, with ratings falling below 50% at points. All of PH’s scores also showed increasing variability across the phase, which could be attributed to instability in the majority of PH’s responses, but decreases the confidence in trends. All measures apart from anxiety (where a small increase was observed) showed clear reductions in central tendency during treatment. Consistent trends in scores were less clear and rather more cyclical. Indeed, the majority of PH’s scores initially increased, followed by negative slope appearing most pronounced between his second and third sessions, but then reversing between Session 3 and 4 and declining again between Session 4 and 6.

Alongside baseline instabilities and high variability of all data, it was not possible draw concrete conclusions about PH’s progress from visual analyses. Of note, some of his declines in symptoms during the intervention phase occurred at a similar pace to declines observed over the baseline phase (e.g., rumination). Also, despite requesting that PH’s medication dosage was kept stable, he halved his dose at

approximately day 14 (see *), which may account for some rapid increases in his daily symptom measures. PH's procurement of a job could also have influenced his outcomes.

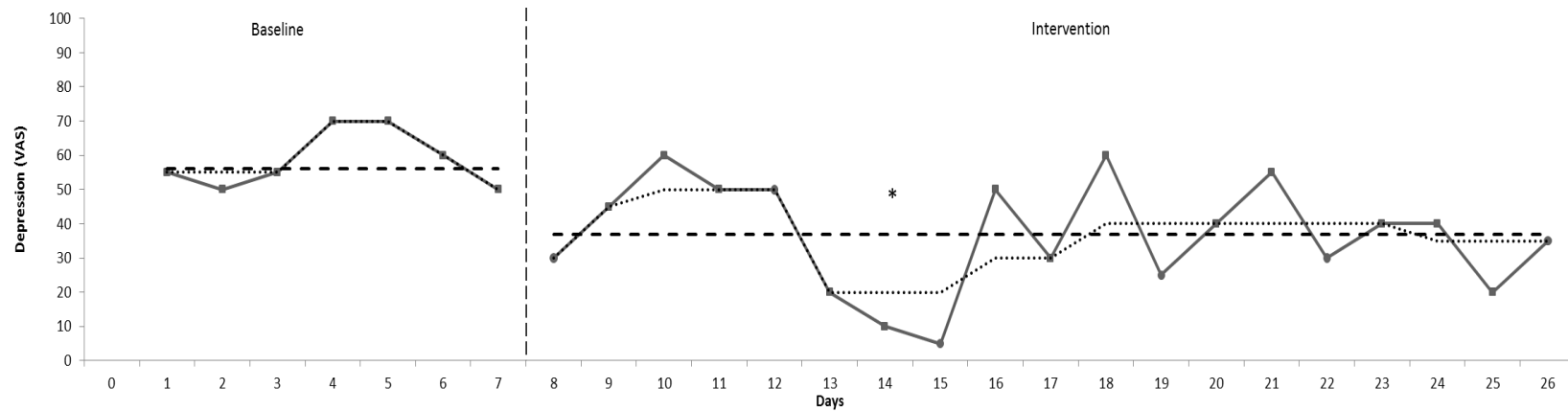


Figure PH1. Depression VAS: raw data (—■—), central tendency (— —) and trend (.....).

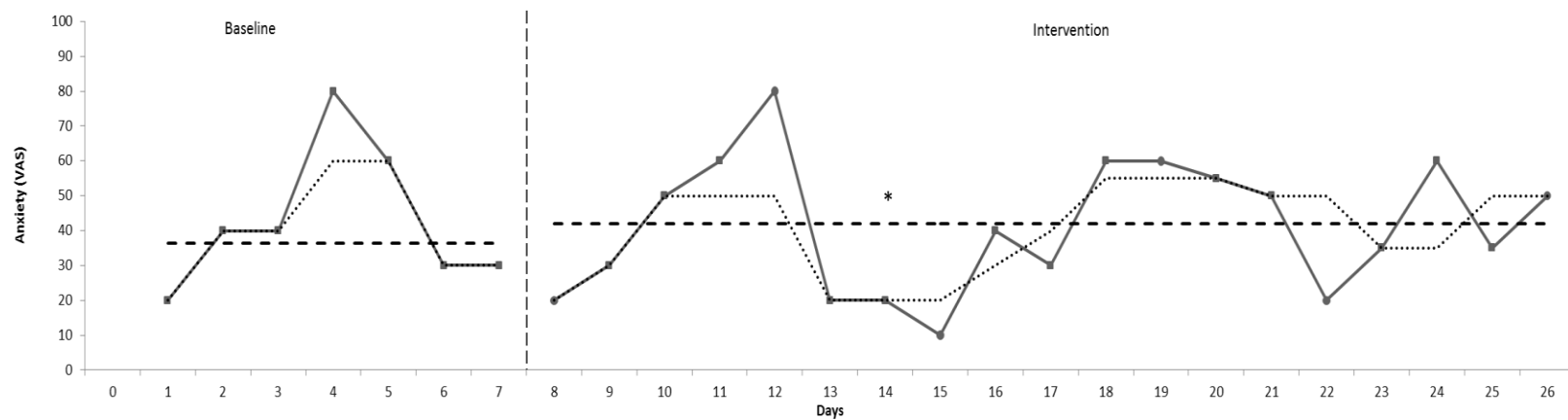


Figure PH2. Anxiety VAS: raw data (—■—), central tendency (— —) and trend (.....).

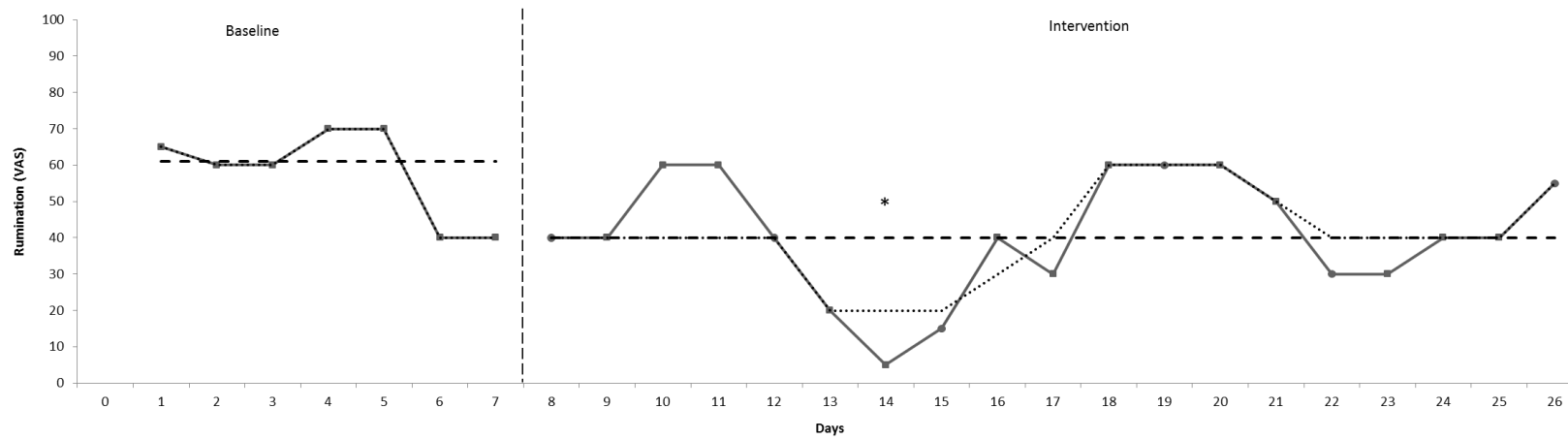


Figure PH3. Rumination VAS: raw data (—■—), central tendency (— —) and trend (.....).

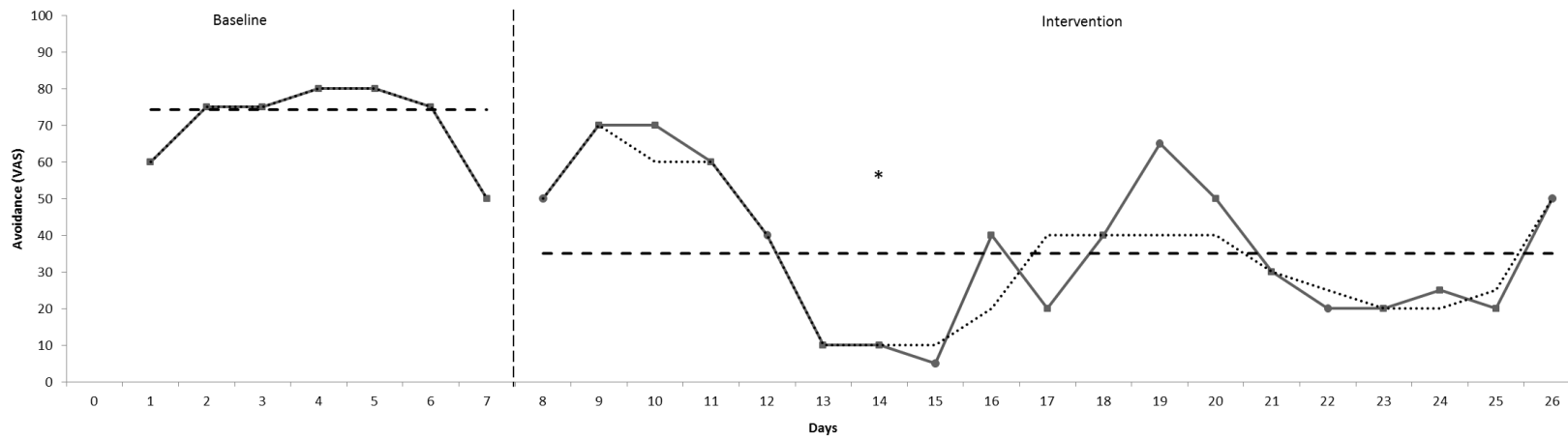


Figure PH4. Avoidance VAS: raw data (—■—), central tendency (— —) and trend (.....).

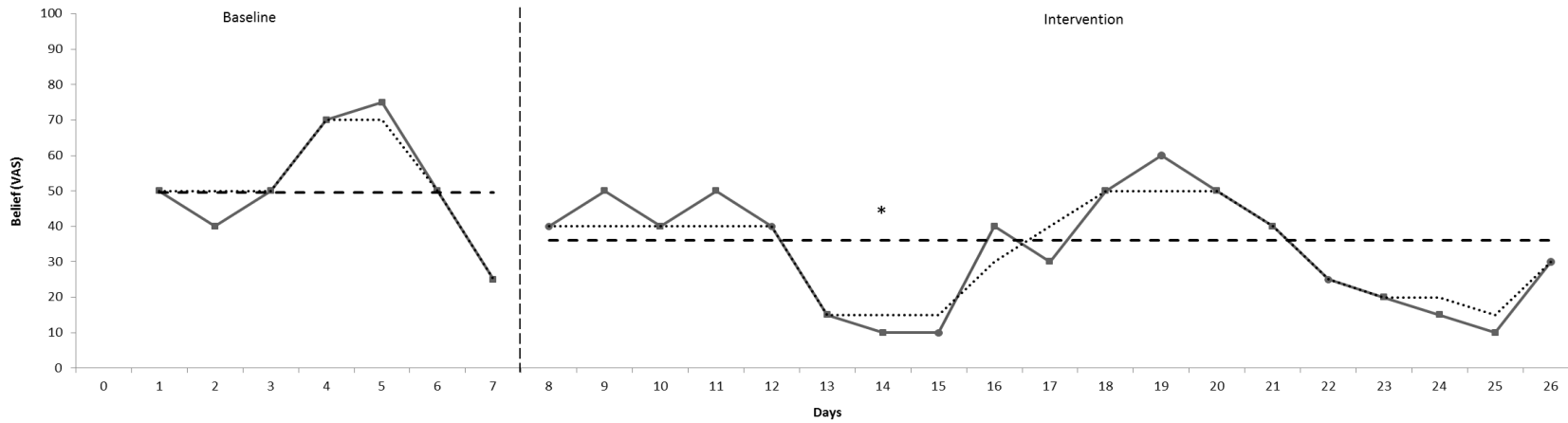


Figure PH5. Belief VAS: raw data (—■—), central tendency (— —) and trend (.....).

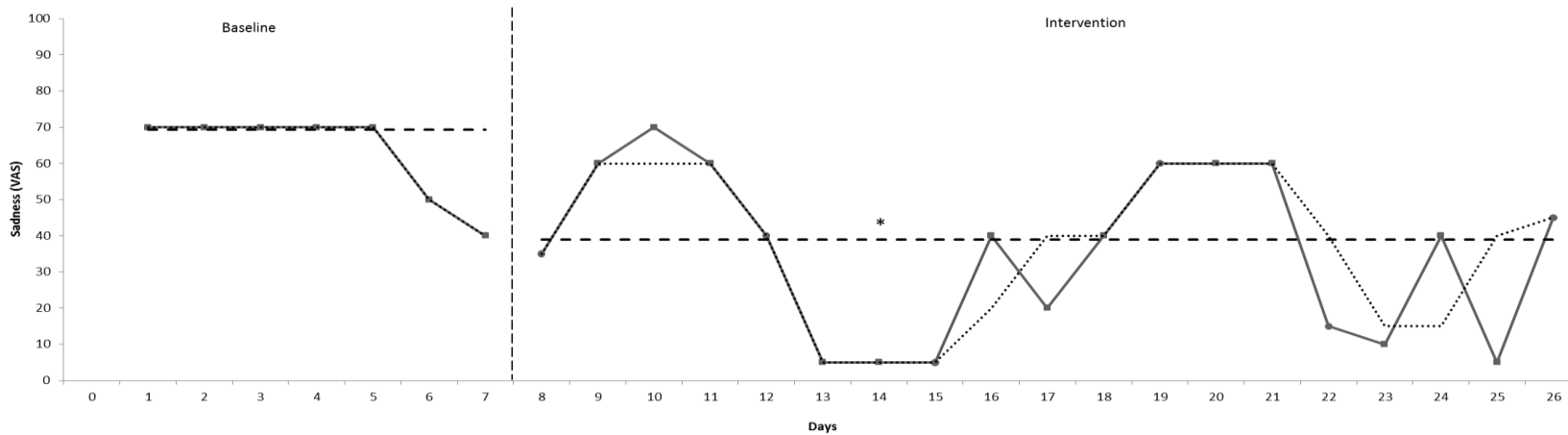


Figure PH6. Sadness VAS: raw data (—■—), central tendency (— —) and trend (.....).

Non-overlap analyses indicate that between baseline and intervention phases PH showed significant reductions in all of his idiographic symptoms, apart from anxiety. The analyses show that his most marked improvement was in his avoidance levels. Therefore, overall, positive effects of the intervention were evident for the majority of PH's idiographic symptoms.

Table 13 *Summary of tau analyses comparing PH's idiographic outcome measures across the study phases.*

Measure	Comparison	<i>Tau</i>	<i>SD Tau</i>	<i>p</i> value	90% <i>CI</i>
Depression	A x B	-0.80	0.26	<.01**	[-1.00, -0.35]
Anxiety	A x B	-0.03	0.26	.91	[-0.46,0.40]
Rumination	A x B	-0.62	0.26	.02*	[-1.00, -0.20]
Avoidance	A x B	-0.86	0.26	<.001***	[-1.00, -0.44]
Encapsulated belief	A x B	-0.56	0.26	.03*	[-0.99, -0.14]
Sadness	A x B	-0.74	0.26	<.01**	[-1.00, -0.31]

Note. A = Baseline phase; B = Intervention phase; C = Follow-up phase; *CI* = confidence interval; *SD* = standard deviation; * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Summary of patterns across participants. The findings described illustrated the differential responses of eight participants all receiving time-intensive BA. Almost all baseline measures fell in the moderate to maximum range on VASs. Only PD, PE and PH's anxiety levels, and PF's avoidance and chosen symptom levels were below 50% at baseline. Overall, at baseline, the majority of instability in idiographic

outcomes was shown in anxiety and chosen symptom ratings, whereas the least instability at baseline was shown in depression ratings. In addition, there did not appear to be clear differences in where trends in idiographic measures were identified at baseline. Overall, visual analyses demonstrated that the majority of participants (six) showed improvements in most of their idiographic symptoms, with the majority of change appearing maintained at follow-up.

Statistical analyses were mostly supportive of visual analyses. Relative to baseline, the majority of participants (between five and seven) made significant improvements in all symptoms, except for anxiety, where least improvement was achieved (see Table 14). For those who did not make significant change on symptoms between baseline and intervention phases, visual analysis confirmed that most participants still appeared to be improving over time, except three participants whose anxiety scores were increasing (PA, PD & PH), two participants whose anxiety appeared stable (PC & PE), and one participant whose depression appeared stable (PC). Highest rates of significant improvement were seen for depression and encapsulated belief ratings. PB was the only participant to show significant declines on all idiographic symptom ratings, whereas in contrast, PC only demonstrated significant improvement in her anxiety ratings. PB had no comorbid mental health diagnosis, whereas PC met criteria for GAD and had the most chronic case of depression. On other measures, though only observationally examined, there were no clear differences in demographic characteristics and baseline symptom scores between those who did and did not reach significant improvement in idiographic symptoms. As mentioned, PC and PG not demonstrating significant improvements in

their chosen symptoms may have been influenced by less reliability in the measure and a lack of power, respectively.

Table 14 *Summary of statistical change across participants.*

Idiographic measure	Phase comparison	Number significantly improved (P)	No significant change (P)	Significant deterioration (P)
Depression	A x B	7 (all except PC)	1 (PC)	0
	B x C	0	4 (PA, PB, PC & PF)	1 (PD)
	A x (B+C)	3 (PA, PB & PF)	2 (PC & PD)	0
Anxiety	A x B	3 (PB, PF, PG)	5 (PA, PC, PD, PE & PH)	0
	B x C	1 (PA)	3 (PB, PC, PF)	1 (PD)
	A x (B+C)	3 (PB, PC, & PF)	1 (PA)	1 (PD)
Rumination	A x B	6 (PA, PB, PD, PF, PG & PH)	2 (PC & PE)	0
	B x C	1 (PF)	3 (PA, PB & PC)	1 (PD)
	A x (B+C)	4 (PA, PB, PC & PF)	1 (PD)	0
Avoidance	A x B	5 (PB, PD, PE, PG & PH)	3 (PA, PC & PF)	0
	B x C	2 (PC & PF)	2 (PA & PB)	1 (PD)
	A x (B+C)	1 (only PB)	4 (PA, PC, PD & PF)	0

Encapsulated belief	A x B	7 (PA, PB, PD, PE, PF, PG & PH)	1 (PC)	0
	B x C	1 (PF)	3 (PA, PB, PC)	1 (PD)
	A x (B+C)	4 (PA, PB, PD & PF)	1 (PC)	0
Chosen symptom	A x B	6 (PA, PB, PD, PE, PF & PH)	2 (PC & PG)	0
	B x C	0	4 (PA, PB, PC & PF)	1 (PD)
	A x (B+C)	3 (PA, PB & PF)	2 (PC & PD)	0

Of those who provided follow-up data ($n = 5$), the majority of participants demonstrated no significant change in their symptoms following the withdrawal of the intervention. Proportions of non-overlap indicated that effects of the intervention were reduced, however visual analysis of those making no significant changes, confirmed that the majority of participants ($n = 4$) improvements were either maintained or continued. PC's non-significant changes were only in the direction of worsening for her rumination and crying levels. However, all of PD's symptoms increased significantly. The highest rate ($2/5$) for *further* significant improvement was shown in avoidance. No participants showed further significant improvement in depression or chosen symptom ratings at follow-up. Besides PD experiencing a traumatic event during her treatment, there were no clear differences between who did or did not show change in scores following the withdrawal of the intervention.

When combining scores from the intervention and follow-up phase relative to baseline, the majority of participants ($n = 3$ to 4) showed significant improvements in idiographic symptoms, apart from for avoidance, where only PB showed significant overall improvement. However, the majority of participants who showed significant improvement in avoidance levels following the intervention did not complete follow-up measures, which influences this result. PC's rumination showed added significant improvement. PD's only symptom to demonstrate significant improvement overall was her encapsulated belief, and her level of anxiety significantly worsened. Therefore, combining phase B and C reduced the apparent effects of removing the intervention on her scores. Clear differential responses may be a result of high variability across the data, and participants experiencing a variety of ongoing life-stressors.

Weighted averages of non-overlap of data between phases (see Table 15) indicate that across all participants, all idiographic symptoms showed significant decline between baseline and intervention phases, with encapsulated beliefs decreasing the most and anxiety decreasing the least. Between intervention and follow-up phases the proportion of depression ratings that increased showed significance, and all other symptoms showed no significant change but decline in effects. When combining data from intervention and follow-up phases, relative to baseline, significant declines were still evident on all idiographic symptom ratings, with encapsulated beliefs still showing the most improvement. However, due to the non-concurrent design of the study, high variability in change over time demonstrated from individual effects, and the influence of external events, *weighted averages* are

not recommended to be the basis for drawing conclusions from this data (Parker & Vannest, 2012).

Table 15 *Weighted averages of non-overlap of data between phases and across all participants.*

	Comparison	<i>Tau</i>	<i>p</i> value	95% <i>CI</i>
Measure				
Depression	A x B	-0.64	<.001***	[-0.80, 0.00]
	B x C	0.22	<.01**	[0.08, 0.36]
	A x (B+C)	-0.53	<.001***	[-0.72, -0.35]
Anxiety	A x B	-0.28	<.001***	[-0.44, 0.00]
	B x C	0.07	.31	[-0.07, 0.21]
	A x (B+C)	-0.25	<.01**	[-0.44, -0.07]
Rumination	A x B	-0.59	<.001***	[-0.74, -0.40]
	B x C	0.10	.18	[-0.05, 0.23]
	A x (B+C)	-0.55	<.001***	[-0.74, -0.38]
Avoidance	A x B	-0.51	<.001***	[-0.67, -0.35]
	B x C	0.02	.75	[-0.12, 0.16]
	A x (B+C)	-0.32	<.001***	[-0.51, -0.14]
Encapsulated belief	A x B	-0.69	<.001***	[-0.84, -0.52]
	B x C	0.04	.60	[-0.10, 0.18]
	A x (B+C)	-0.64	<.001***	[-0.82, -0.46]
Chosen symptom	A x B	-0.56	<.001***	[-0.73, 0.39]
	B x C	0.06	.38	[-0.08, 0.20]
	A x (B+C)	-0.43	<.001***	[-0.61, -0.25]

Note. A = Baseline phase; B = Intervention phase; C = Follow-up phase; *CI* = confidence interval; *SD* = standard deviation; *Weighted averages* = combined effect-size; * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Can time-intensive BA lead to reliable and clinically significant change on standardised and process measures of depression and anxiety, and are treatment gains maintained over a three week follow-up period?

The MADRS, PHQ-9, GAD-7, BAD-SF, and DAS-SF were used to identify participants who displayed (a) reliable change (RC) and (b) clinically significant change (CSC; Jacobson & Traux, 1991) in their symptomatology from baseline to end of treatment and follow-up points. Comparison of pre and post-intervention scores were based on single baseline scores or an average of each participant's baseline scores where they had more than one. Post-BA scores were calculated from participants' final session scores. Where follow-up data were available, their final follow-up scores were used.

Of note, where participants did not complete one item on outcome measures, missing items were replaced with substitution of a *mean* score calculated from completed scale items. Where participants did not complete entire measures or more than one item on outcome measures, data were considered 'missing', as indicated in Tables 17 to 21. Jacobson and Traux's (1991) formula (see below) for calculating reliable change indexes (*RCI*) was used to calculate *RCIs* for the current study's standardised and process measures.

$$RCI = \frac{M^1 - M^2}{SE_{diff}}$$

Generally, RC refers to a magnitude of observed change that is more than can be explained by measurement error alone. Within the formula, M^1 refers to outcome scores before the intervention, and M^2 refers to scores post-intervention. The *standard*

error of difference (SE_{diff}) was calculated as $\sqrt{2} \times SEM^2$ where *SEM* refers to the *standard error of measurement*. *SEM* is calculated as $SD \times \sqrt{(1-r)}$ where *r* refers to the reliability of the measure being used. The current study used Cronbach's alphas (α) as measures of internal reliability. Where papers reported more than one α , for outcome measures the median was used. According to their formula, a *RCI* of more than ± 1.96 would indicate statistically reliable change (Jacobson & Traux, 1991).

In order to achieve clinically significant change (CSC), reliable change (RC) must be indicated first. Criterion "a" was used to determine CSC when normative data from a non-clinical population were not available (Morley, 2015b). This is defined as post-treatment or follow-up scores falling outside of the range of the clinical population, and being at least two *standard deviations* above or below baseline scores of a clinical sample (Jacobson & Traux, 1991). Criterion "b" was used to determine CSC when normative data from a non-clinical population were available. This is defined as post-treatment or follow-up scores falling within 1.96 *standard deviations* of the *mean* of the non-clinical population *mean* (Jacobson & Traux, 1991). Criterion "b" was used as opposed to criterion "c" as clinical and non-clinical norms did not overlap.

Table 16 below shows the reference data used to calculate RCIs and CSC for each of the standardised and process measures. In accordance with its aims, the current study also sought to determine rates of treatment response. For participants to be classified as treatment responders, they had to meet criteria for both reliable and CSC on one or both measures of depression.

Table 16. Reference data used to calculate RC and CSC

Measure	Cronbach's alpha (source)	Clinical norm reference data (source)	Non-clinical norm reference data (source)	CSC criterion
MADRS	Median $\alpha = .93$ (Montgomery & Åsberg, 1979)	Mean = 25.60, SD = 4.70 (Cunningham, Wernroth, Knorrning, Berglund, & Ekselius, 2011)	n/a	A
PHQ-9	$\alpha = .89$ (Kroenke & Spitzer, 2002)	Mean = 17.30, SD = 5.00 (McMillan, Gilbody, & Richards, 2010)	Mean = 3.30, SD = 3.80 (Kroenke & Spitzer, 2002)	B
GAD-7	$\alpha = .92$ (Spitzer et al., 2006)	Mean = 12.60, SD = 5.10 (Richards et al., 2016)	Mean = 3.20, SD = 3.50 (Löwe et al., 2008)	B
BAD-SF	$\alpha = .82$ (Manos et al., 2011)	Mean = 21.70, SD = 7.45 (Dimidjian et al., 2017)	n/a	A
DAS-SF	$\alpha = .84$ (Beevers et al., 2007)	Mean = 22.37, SD = 6.06 (Beevers et al., 2007)	n/a	A

Note. CSC = clinically significant change, as indicated by Jacobson & Traux, 1991

Reliable and clinically significant change on the MADRS. Overall analysis of MADRS scores indicated that by the end of their treatment, seven participant's scores demonstrated RC (see Table 17). Of these, three also met criteria for CSC (PB, PC, & PE). Of those who provided follow-up measures ($n = 5$), three met criteria for RC, of whom two also met criteria for CSC (PB, PF). PA and PB maintained their treatment outcomes, and PF demonstrated further improvement post-treatment. However, by follow-up PC's scores had increased to indicate that she had made no improvement over the longer course of the study, and in fact her final MADRS measure was higher than her initial measures, indicating that her symptoms of depression got worse. Of note, no participants MADRS scores showed stable and continuous decline over time. The only participant to demonstrate CSC across intervention and follow-up phases (PB) first indicated CSC as early on as Session 3. In fact, if end of treatment measures had been taken from Session 7 PD and PG would also have demonstrated reliable and clinically significant change.

Table 17 Summary of participants' weekly MADRS scores.

P	Baseline phase			Intervention phase						Follow-up phase				
	Screening	Assessment	Baseline 1	Baseline 2	Session 1	Session 3	Session 5	Session 7	Booster 1	Booster 2	Booster 3	Follow-up 1	Follow-up 2	Follow-up 3
A	35	39	39	<i>n/a</i>	26	Missing	29	37	23 ^{RC}	<i>n/a</i>	<i>n/a</i>	30	18	25 ^{RC}
B	31	31	31	<i>n/a</i>	32	14	13	5	7	2 ^{CSC}	<i>n/a</i>	2	2	2 ^{CSC}
C	38	39	39	<i>n/a</i>	45	35	30	13	45	9 ^{CSC}	<i>n/a</i>	34	33	41
D	36	33	37	35	31	20	41	13	10	14	36	23	Missing	37
E	26	30	30	<i>n/a</i>	34	35	Missing	Missing	5	7	5 ^{CSC}	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
F	34	35	30	25	36	30	22	Missing	20	19 ^{RC}	<i>n/a</i>	15	15	14 ^{CSC}
G	36	36	45	<i>n/a</i>	48	33	29	11	20	14	18 ^{RC}	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
H	31	37	37	<i>n/a</i>	30	25	26 ^{RC}	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>

Note. MADRS = Montgomery Åsberg Depression Rating Scale (range: 0-60); P = participant; Reliable change (^{RC}) and clinically significant change (^{CSC}) indicated by Jacobson & Traux, 1991.

A Microsoft Excel spreadsheet of The Leeds Reliable Change Indicator (Morley & Dowzer 2014) was used to graph reliable and CSC on the MADRS. A scatterplot of participants pre-treatment and post treatment MADRS scores can be seen in Figure 3 and a plot of their pre-treatment and follow-up scores is shown in Figure 4. Participants pre-treatment depression scores can be read off the x-axis and their corresponding post-treatment/follow-up scores can be read from the y-axis.

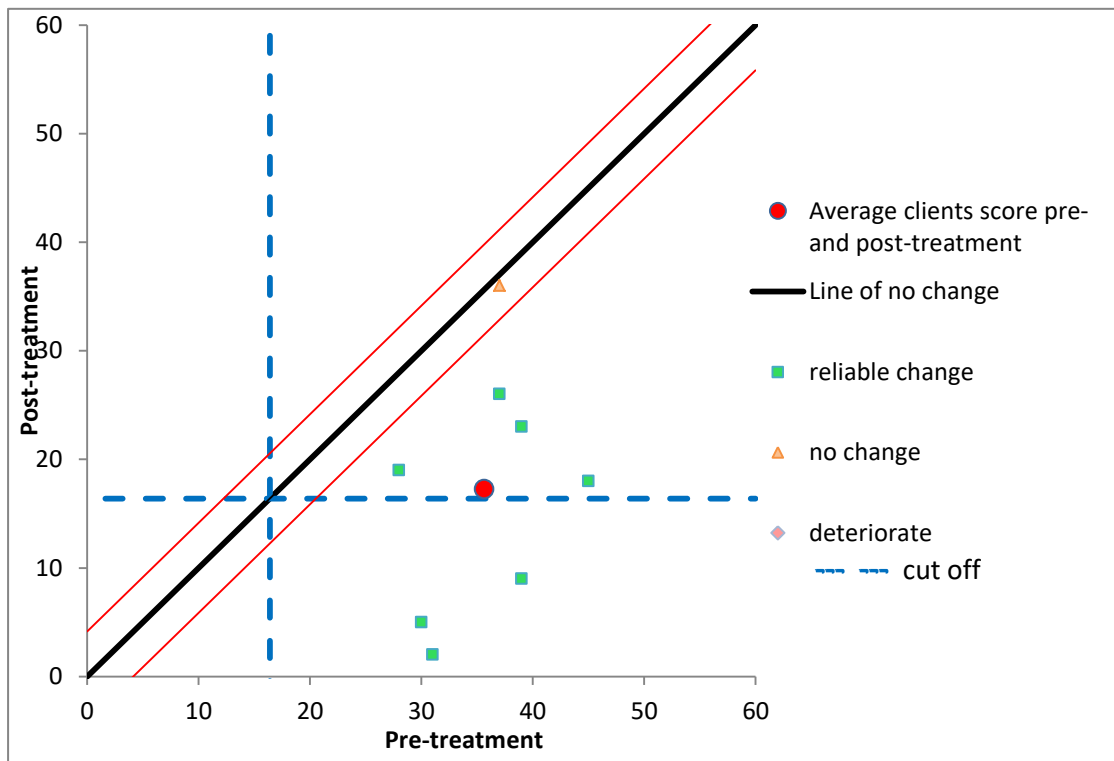


Figure 3. Scatter plot of baseline to end of treatment MADRS scores.

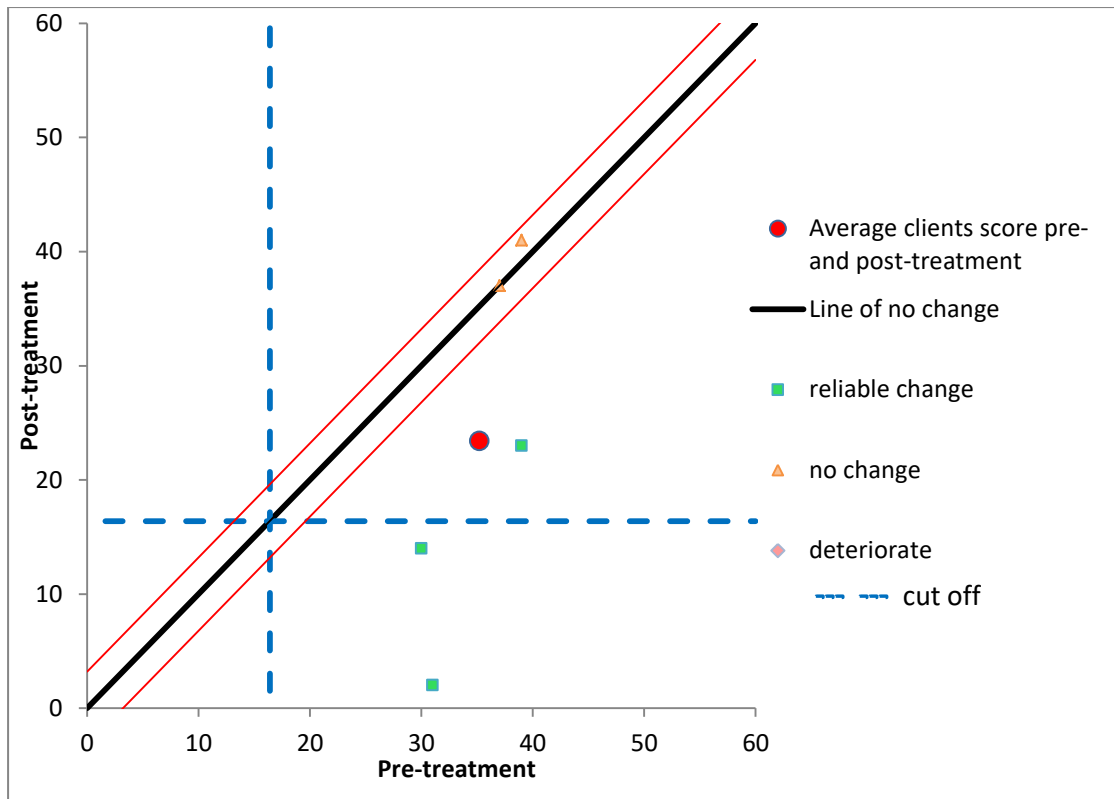


Figure 4. Scatter plot of baseline to follow-up MADRS scores.

Reliable and clinically significant change on the PHQ-9. Overall analysis of PHQ-9 scores indicated that by the end of their treatment, four participants' scores demonstrated RC (see Table 18). Of these, three also met criteria for CSC (PB, PE, & PG), and two (PB, PG) demonstrated CSC as early on as Session 2 and Session 7, respectively. Of those who provided follow-up measures ($n = 5$), three met criteria for reliable and CSC (PA, PB, PF). Therefore, PA and PF showed continued improvement on PHQ-9 scores post-intervention.

Of note decline of scores were not stable and consistent for any participant. In addition, PD demonstrated making reliable and clinically significant change on the majority of her PHQ-9 measures. However, these effects were lost by her final session.

Table 18 Summary of participants' weekly PHQ-9 scores.

P	Baseline phase			Intervention phase						Follow-up Phase				
	Screening	Assessment	Baseline	Baseline	Session	Session	Session	Session	Booster	Booster	Booster	Follow-up	Follow-up	Follow-up
			1	2	1	3	5	7	1	2	3	1	2	3
A	16	15	15	<i>n/a</i>	13	15	15	16	13	<i>n/a</i>	<i>n/a</i>	12	10	10 ^{CSC}
B	13	10	10	<i>n/a</i>	13	5	6	3	2	0 ^{CSC}	<i>n/a</i>	0	0	0 ^{CSC}
C	16	19	19	<i>n/a</i>	17	15	19	15	20	17	<i>n/a</i>	13	13	17
D	21	18	18	15	15	10	14	8	7	6	17	Missing	Missing	16
E	17	17	19	<i>n/a</i>	16	10	17	12	7	8	7 ^{CSC}	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
F	23	14	13	14	12	14	8	7	9	9	<i>n/a</i>	9	9	6 ^{CSC}
G	20	14	25	<i>n/a</i>	24	18	14	2	7	4	6 ^{CSC}	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
H	17	17	17	<i>n/a</i>	22	18	11 ^{RC}	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>

Note. PHQ-9 = Patient Health Questionnaire (range: 0-27); P = participant; Reliable change (^{RC}) and clinically significant change (^{CSC}) indicated by Jacobson & Traux, 1991.

Reliable and clinically significant change on the GAD-7. Overall analysis of GAD-7 scores indicated that by the end of their treatment, six participants' scores demonstrated RC (see Table 19). Of these, five also met criteria for CSC (PA, PB, PE, PF, and PG). Only PB's anxiety measures demonstrated consistent decline over time, and again her CSC was demonstrated by Session 3. PE had demonstrated CSC by Booster 1 and PF and PG had demonstrated CSC by Session 5. Of those who provided follow-up measures ($n = 5$, 63%), three met criteria for reliable and CSC (PA, PB, PF). Therefore, all those who made reliable and CSC post-treatment, and provided follow-up measures, maintained their progress on the GAD-7. Of note, PD's anxiety levels did demonstrate reliable and CSC on the majority of her weekly measures, apart from her final session.

Table 19 Summary of participants' weekly GAD-7 scores.

P	Assessment	Baseline phase			Intervention phase						Follow-up phase		
		Baseline 1	Baseline 2	Session 1	Session 3	Session 5	Session 7	Booster 1	Booster 2	Booster 3	Follow-up 1	Follow-up 2	Follow-up 3
A	14	13	<i>n/a</i>	9	7	9	14	9 ^{CSC}	<i>n/a</i>	<i>n/a</i>	12	7	9 ^{CSC}
B	11	11	<i>n/a</i>	11	3	2	1	1	0 ^{CSC}	<i>n/a</i>	0	0	0 ^{CSC}
C	18	18	<i>n/a</i>	16	18	17	14	17	16	<i>n/a</i>	Missing	13	16
D	10	12	9	7	8	12	6	4	5	10	Missing	Missing	9
E	8	10	<i>n/a</i>	11	11	12	10	6	6	6 ^{CSC}	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
F	9	10	14	14	14	9	5	7	7 ^{CSC}	<i>n/a</i>	7	7	6 ^{CSC}
G	9	20	<i>n/a</i>	20	17	9	2	6	2	3 ^{CSC}	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
H	17	17	<i>n/a</i>	13	9	12 ^{RC}	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>

Note. GAD-7 = Generalized Anxiety Disorder Scale (range: 0-27); P = participant; Reliable change (^{RC}) and clinically significant change (^{CSC}) indicated by Jacobson & Traux, 1991.

Reliable and clinically significant change on the BADS-SF. All

participants apart from PC demonstrated RC in their BADS-SF scores. PB and PE demonstrated CSC; though this was calculated using PB's Session 1 score as her baseline measure (see Table 20). Of note, all participants' activation scores fluctuated over time. In addition, all those who made reliable or CSC had demonstrated this outcome at some point prior to their booster sessions.

Table 20 *Summary of participants' weekly BADS-SF scores.*

P	Baseline phase			Intervention phase					
	Baseline 1	Baseline 2	Session 1	Session 3	Session 5	Session 7	Booster 1	Booster 2	Booster 3
A	7	<i>n/a</i>	16	13	17	25	28 ^{RC}	<i>n/a</i>	<i>n/a</i>
B	Missing	<i>n/a</i>	19	45	31	22	40	42 ^{CSC}	<i>n/a</i>
C	6	<i>n/a</i>	3	3	3	19	9	5	<i>n/a</i>
D	22	20	26	28	40	38	18	32 ^{RC}	Missing
E	12	<i>n/a</i>	23	27	Missing	47	Missing	Missing	43 ^{CSC}
F	19	21	22	24	33	33	29	30 ^{RC}	<i>n/a</i>
G	4	<i>n/a</i>	9	32	15	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
H	18	<i>n/a</i>	18	21	26	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>

Note. BAD-SF = Behavioural Activation Scale - Short Form (range: 0-54); P = participant; Reliable change (^{RC}) and clinically significant change (^{CSC}) indicated by Jacobson & Traux, 1991.

Reliable and clinically significant change on the DAS-SF. Only PB showed reliable and CSC on the DAS-SF (see Table 21). PG showed reliable but not CSC, which was obtained by Session 5. Of note, despite all participants' scores fluctuating in both directions, the majority of scores remained fairly stable. Both PC and PD showed deterioration in their DAS-SF scores, though not to a reliable or significant degree.

Table 21 *Summary of participants' weekly DAS-SF scores.*

P	Baseline Phase		Intervention Phase						
	Baseline 1	Baseline 2	Session 1	Session 3	Session 5	Session 7	Booster 1	Booster 2	Booster 3
A	25	n/a	24	26	23	25	21	n/a	n/a
B	Missing	n/a	21	14	12	11	12	10 ^{CSC}	n/a
C	20	n/a	23	21	21	22	25	24	n/a
D	14	15	17	16	17	17	17	17	18
E	19	n/a	19	18	18	18	18	12	17
F	22	23	23	23	Missing	Missing	23	22	
G	29	n/a	29	23	21	19	21	18	21 ^{RC}
H	20	n/a	20	21	Missing	n/a	n/a	n/a	n/a

Note. DAS-SF = Dysfunctional Attitudes Scale (range:0-36); P = participant; Reliable change (^{RC}) and clinically significant change (^{CSC}) indicated by Jacobson & Traux, 1991.

Summary of reliable and clinically significant change. All participants showed improvements in standardised and process measures at some point over the study duration. At the end of their treatment, the majority of participants made RC (improvement) on the MADRS, whereas only half of the participants made RC on the PHQ-9. Conversely, by follow-up, the same three participants demonstrated RC on both the MADRS and PHQ-9 (PA, PB and PF). Following the assumption that overall treatment responders were those who demonstrated reliable and CSC on one or both standardised measures of depression, half of the participants (PB, PC, PE & PG) were considered treatment responders at the end of their treatment. For those who completed follow-up data, three (PA, PB and PF) were considered treatment responders. Of note, at the end of treatment, although response rates were the same on both measures of depression, PC was only a treatment responder according to the MADRS, whereas PG was only a treatment responder according to the PHQ-9. At follow-up, PA was only a treatment responder according to the PHQ-9, and so response rates were higher on the PHQ-9 than they were for the MADRS. Therefore there were visible differences between levels of treatment response on self-report and clinician-rated measures.

The majority of participants made reliable change in their GAD-7 scores across intervention and follow-up phases of the study. By the end of treatment, those who made CSC on a measure of depression all made CSC on the GAD-7, except PC. By follow-up, all those who made CSC on a measure of depression also made CSC on the GAD-7. The GAD-7 and PHQ-9 showed the highest rates of CSC.

Overall, the highest proportion of RC on all measures across the intervention phase was shown in BADS-SF scores, though only two participants reached CSC. The lowest proportion of change across all measures was found for the DAS-SF.

Responders versus non-responders. Due to the small sample size, and incomplete follow-up measures, statistical comparison of responders and non-responders was deemed inappropriate. From merely observing the data, there did not appear to be any specific background characteristics that distinguished responders from non-responders at post-treatment. However, at follow-up all non-responders had reported experiencing more than three previous episodes of depression at baseline, and their baseline PHQ-9 scores also appeared higher than those of responders. Of note, all non-responders at follow-up had been treated at Site 2, and all follow-up responders had been treated at Site 1. The only known distinguishing features between the therapy delivered at either site, was that therapists from Site 1 had been qualified for longer than therapists at Site 2, and prompting was conducted by an Assistant Psychologist as opposed to the therapists at Site 2.

PB was the only participant that was a consistent treatment responder across all phases of the study. It was observed that she did not have any comorbid mental health diagnoses and her therapist mentioned believing that her strong concentration had facilitated her outcomes. Despite PC, being considered a responder (on the MADRS) at her final treatment session she consistently did not show improvement on all other standardised and process measures. In comparison to PB (the consistent responder), PC had higher depression and anxiety symptomatology at baseline, a comorbid diagnosis of GAD and lower credibility/expectancy ratings of the treatment. PC also had the most chronic case of depression of all participants. PD was a

consistent non-responder and this is likely to have been related to her experience of a traumatic event during her treatment. Though not statistically analysed here, these differences between responders and non-responders may be related to treatment response.

Further treatment. At the end of their treatment, six participants were not actively seeking further treatment for depression (PA, PB, PE, PF, PG, & PH). PC was referred on to IPT for depression. PD was also referred on for more sessions, following the traumatic incident that she experienced during her treatment. PA reported intending to seek further treatment for anxiety management, and PH also expressed a desire to re-engage in longer-term therapy when he had the time, however it is not yet known if these intentions were pursued.

Do participants' and therapists' evaluations of the intervention indicate that it is considered an acceptable treatment?

Quantitative outcomes of acceptability of the intervention. No adverse effects (e.g., increases in suicidal intention or persistently worsening outcome measure scores) were reported during treatment. A *mean* score of 27.86 (*SD* = 4.49) on the CSQ indicated high treatment satisfaction relative to a maximum score of 32 (see Table 22). Of note, even those who did not recover appeared satisfied with their treatment, and the lowest satisfaction rating came from PE, who did recover. On average, participants rated time-intensive BA as highly acceptable ($M = 81.43$, $SD = 21.16$, $range = 40 - 100$) relative to a maximum score of 100. PC provided the lowest acceptability rating of the treatment.

Table 22 *Client satisfaction and treatment acceptability scores.*

Participant	Total CSQ score	Acceptability rating
A	28	80
B	32	90
C	28	40
D	32	100
E	19	100
F	26	70
G	30	90

Note. Percentage scores have been rounded to one whole number; PH did not complete the CSQ.

Mean scores from VASs (rated 0-100) revealed that therapists viewed time-intensive BA as highly acceptable ($M = 66.67$, $SD = 16.33$, $range = 50 - 90$), and ratings of the utility of time-intensive BA were also above average ($M = 60.00$, $SD = 16.73$, $range = 40 - 80$). Therapists reported high confidence in delivering time-intensive BA as a first-line treatment for depression ($M = 66.67$, $SD = 23.38$, $range = 30 - 90$). Finally, if permitted by their services, the average likelihood of therapists choosing to work with BA using this time-intensive approach in future was also high ($M = 69.17$, $SD = 26.54$, $range = 40 - 100$).

Summary. Descriptive analyses indicated that time-intensive BA was a highly acceptable treatment for the majority of participants and therapists. Of note, therapists considered the intervention less acceptable than participants did.

Discussion

This study employed a SCED and sought to explore whether or not (a) time-intensive BA was a feasible intervention for adult outpatients with depression, (b) it was effective at reducing adult outpatients' idiographic symptoms of depression, (c) it was associated with reliable and clinically significant change on standardised and process measures of depression and anxiety (d) any existing effects were maintained after a follow-up period, and (e) to assess what were participant and therapist perceptions of the acceptability of the treatment. This section summarises the key study findings in relation to the research questions and hypotheses and considers how the findings relate to existing literature in the area. Potential implications of the findings are then considered. Finally, strengths and limitations of the study are reported, and recommendations made for future research.

The multiple baseline SCED provided data for eight participants from baseline to end of treatment, and five participants also completed follow-up measures. Overall, recruitment, retention, credibility/expectancy and treatment fidelity data indicated that the intervention was feasible. Visual and statistical analysis of daily idiographic data demonstrated that for the majority of participants ($n = 5$ to 7), time-intensive BA was associated with significant improvement in all idiographic symptoms of depression, except anxiety. Statistical analysis showed that seven participants made reliable change (Jacobson & Traux, 1991) on at least one standardised measure of depression, and that at the end of their treatment, four participants were considered treatment responders. Only three participants showed significant improvements in their idiographic measure of anxiety, whereas the majority of participants ($n = 5$) made reliable and clinically significant change in their standardised anxiety levels. Most

participants ($n = 3$ or 4) who completed follow-up indicated either maintenance or improvement of progress on both idiographic and standardised measures of depression and anxiety. However, only one or two participants made reliable and clinically significant change on their weekly process measures of activation and dysfunctional attitudes. On average, evaluations of the acceptability of the intervention were high. Overall, there seems reason to investigate further the development of an optimal time-intensive BA for depression.

Is time-intensive BA a feasible intervention for adults with depression who present to outpatient primary care services?

Due to the exploratory nature of this research, it was not hypothesised whether or not time-intensive BA would be a feasible intervention for treating adult depression in primary care. However, multiple sources of data have provided encouraging support for its feasibility. First, all potential participants who met criteria for taking part in the study, except one, consented to participate. This shows that the majority of eligible participants considered time-intensive BA a credible idea. Second, treatment retention was high, and all eight participants were considered treatment completers. The finding that no participants dropped-out of their treatment is very encouraging when considering the evidence to show that attrition from numerous existing depression treatments is so high (Cooper & Conklin, 2015). In fact, the current study's drop-out rate was lower than found for other rigorous studies of BA's efficacy, when delivered at the traditional rate (Dimidjian et al., 2006; Richards et al., 2016; Sturmey, 2009), suggesting (tentatively) that delivering BA time-intensively might discourage drop-out. This finding supports previous qualitative research that concluded that TT improves client motivation, engagement and focus (Bevan et al.,

2010). The current study's treatment design also had lower drop-out rates than some previous brief and time-intensive behavioural activation treatments (Folke et al., 2015a; Hopko et al., 2003a; Nasrin et al., 2017; Read et al., 2017; Snarski et al., 2011; Turner et al., 1979; Zeiss et al., 1979), which provides encouraging support for the amount and spacing of BA delivered herein. These differences might be accounted for by the majority of previous studies recruiting either non-clinical or inpatient samples. Thirdly, participants rated credibility of the treatment highly, indicating they had faith in the treatment's feasibility. Fourth, although only a small proportion of audio recordings were rated using the QoBAS ($n = 5$), their demonstration of acceptable treatment fidelity shows some promise for the feasibility of the intervention being plausibly attributed to valid implementation of the intervention, at least for these rated sessions.

Although treatment retention was high, only a small proportion of the sample screened was considered eligible to take part in the study, and recruitment was slow. This could be explained by barriers to treatment (Mohr et al., 2010), and difficulty finding participants who met the strict inclusion criteria but were also willing to commit to the research requirements. The finding that some referrals declined involvement in the study due to a preference to receive CBT, suggests that the lay population may be less aware of BA and evidence suggesting its advantages in comparison to other treatments (Dimidjian et al., 2006; Dobson et al., 2008; Ekers et al., 2008; 2014; Richards et al., 2016; Sturme, 2009). The low rate of therapist recruitment into the study indicates that therapists could feel less able/willing to take part in research, or that busy primary care settings such as IAPT may not be the most feasible setting for TT or efficacy research to take place.

The characteristics of the sample recruited show that TT was generally attractive to a heterogeneous sample. The finding that all participants were out of work, and a high proportion of participants were single with comorbid physical health conditions and anxiety, supports the current understanding that depression is associated with pronounced secondary difficulties (Donohue & Pincus, 2007; Veale, 2008) and comorbidity (Kessler et al., 1994; Rosenthal, 2003). However, the decision not to exclude participants with previous episodes of depression appeared to lead to the selection of participants who reported experiencing two or more previous episodes of depression and moderate to severe baseline levels of depression. Nevertheless, this finding reflects evidence of depression's recurring nature (Richards, 2011) and increasing severity with subsequent episodes (Kendler et al., 2000). Still, it is worth highlighting the finding that none of the current sample were in full-time employment, and that the majority had experienced previous weekly psychological interventions that were not BA (and in some cases only attended a few sessions). While this indicates that the current samples' demographic characteristics are likely to be representative of those who would be able to adhere to the time-intensive BA schedule, and might explain the lower drop-out rates, it also suggests that, for the current sample, time-intensive BA may have been attractive and credible as a *new* and potentially *faster* approach to promoting recovery from *recurrent* depression, rather than simply as being a more accessible treatment (e.g., for those with time restrictions and personal commitments). If true, this would add weight to Oldfield et al.'s (2011) suggestion that TT could be more attractive to those with a more immediate desire to recover, or those who have not responded to weekly treatment. However, these hypotheses are only hypothetical at this point.

Can time-intensive BA lead to improvement on idiographic measures of depression symptoms, and are treatment gains maintained over a three week follow-up period?

Given the existence of research to suggest that time-intensive behavioural activation has promising, as opposed to detrimental effects (Folke et al., 2015b; Gawrysiak et al., 2009; Hopko et al., 2003a; Nasrin et al., 2017; Snarski et al., 2011), it was hypothesised that following the intervention, participants would have made improvements in their idiographic symptoms of depression, and that owing to similarities between their characteristics and treatment functions (Hopko et al., 2006), these effects would generalise to idiographic measures of anxiety. Overall, the majority of participants (between five and seven) showed significant decline in all idiographic symptom levels, except anxiety. Therefore, time-intensive BA shows promise as an effective intervention for reducing idiographic symptoms of depression, but, as some participants did not make significant improvements on all idiographic measures, and the lowest level of significant improvement was seen for anxiety, the hypothesis is only partially supported.

The findings are consistent with previous studies that found support for the effectiveness of one-session or time-intensive behavioural activation for depression (Folke et al., 2015a; 2015b; Gawrysiak et al., 2009; Hopko et al., 2003a; Nasrin et al., 2017; Taylor & Marshall., 1977; Snarski et al., 2011), but build on these by delivering the more empirically supported BA (Martell et al., 2001; Kanter et al., 2010), twice-weekly, within a sample of outpatients who met criteria for MDD, where multiple therapists delivered the treatment, and treatment fidelity was rated. Therefore, the current study adds external validity of findings to the literature. The observation that

levels of non-overlap of scores generally reduced following the withdrawal of the intervention reflects wide understanding that strength in effects of interventions are not permanent. However, visual analysis confirmed that the majority of participants' progress was maintained over the follow-up period, with only one participant showing significant deterioration in idiographic symptoms.

It is possible that the positive findings can be explained by behavioural models of depression (Ferster, 1973; Lewinsohn, 1974) and BA's mechanism of extinguishing unhelpful behaviours that maintain depression, while increasing engagement in pleasant activities and response-contingent positive environmental reinforcement (Martell et al., 2001). Indeed, this is indicated as the treatment fidelity demonstrated acceptable compliance with BA, and the majority of participants showed significant declines in their avoidance and rumination levels between the baseline and intervention phases. Significant improvements also suggest that emotional processing of events that coincided with depressive episodes (Rachman et al., 1979) extinction of unhelpful reinforcement patterns (Mackintosh, 1974 as cited in Oldfield et al., 2011, p. 8), and retention of session content (Grey et al., 2009) increased over the shorter treatment duration. However, specific mechanisms of change were not assessed and require further investigation to move beyond speculation.

The finding that idiographic anxiety ratings showed the lowest rate of improvement, and that although not to significant levels, some participants showed increases in anxiety levels during the intervention, is aligned with previous less compelling evidence of one-session BATD's effects on anxiety in students and carers (Gawrysiak et al., 2009; Read et al., 2016), and does not add much weight to the

argument for behavioural activation as an integrated treatment for anxiety and depression (Hopko et al., 2006; 2016). However, there are several potential explanations for these findings. It is known from this study and previous qualitative research (Bevan et al., 2011) that engaging in time-intensive therapy can be overwhelming. It is possible that the time-pressure of the treatment duration increased a sense of urgency and accountability for some participants to get better, provoking anxiety. What is more, unlike some of the other VASs (e.g., rumination and avoidance) BA does not aim to directly target specific stimulus-response patterns that maintain anxiety (Martell et al., 2001), and three participants whose anxiety levels did not improve (PA, PC and PG) had GAD. Therefore, they may have benefitted from further GAD-specific treatment (NICE, 2011). Furthermore, as all participants reported experiencing ongoing life-stressors concurrent to their treatment, it is understandable that anxiety levels did not reduce for everyone. The finding that some participants showed improvement in anxiety levels after the withdrawal of the intervention supports that time-intensive BA could have had a more gradual impact on individual's anxiety, as shown in previous research following time-intensive dental phobia treatment (Haukebo et al., 2008). As proposed by Abramowitz et al., (2003), an explanation for this pattern of change could be that participants were more able to generalise their therapy skills to new and varied real life contexts.

The discovery that idiographic measures of encapsulated beliefs showed the most marked decline overall provides support for component analysis studies, which show that cognitive strategies are not *necessary* for eliciting cognitive change (Longmore & Worrell, 2007). Therefore, this finding highlights the promise of BA's focus (through functional analysis of covert behaviours) on the *utility* as opposed to

the *content* of thoughts, which was further supported by the high rates of reductions in rumination levels.

It is worth highlighting other general explanations of where significant improvements were not made on idiographic measures. These include participants having lower baseline levels of symptoms (e.g., PE's anxiety and PF's avoidance) to begin with, and smaller data sets being subject to Type II error (e.g., PG's despair). Furthermore, the variability of idiographic data was consistently high. In line with previous evidence to suggest that individual differences predict variability in the course of depression (Bennabi et al., 2015), ongoing life-stressors reported by all participants may also have moderated outcomes. Indeed, this was most clearly indicated where PD's scores reversed following her experience of a traumatic incident. It is also possible that variability of data signified some participants having more cyclical depression. These potential explanations require further investigation.

Can time-intensive BA lead to reliable and clinically significant change on standardised and process measures of depression and anxiety, and are treatment gains maintained over a three week follow-up period?

Reliable and clinically significant change in standardised depression scores. As above, it was hypothesised that following the intervention, participants would have made improvements (reliable change) in their standardised measures of depression symptoms. Owing to the lack of existing research on time-intensive BA in outpatient services, the current study did not set out directional hypotheses on whether or not such improvement would reach criteria for reliable *and* clinically significant change. As seven participants made reliable change on at least one standardised measure of depression, the hypothesis was accepted. However, 50% (4/8) to 60%

(3/5) of participants being considered treatment responders (meeting reliable and clinically significant change on one or both standardised measures of depression) at the end of treatment and follow-up periods, respectively, indicates that, according to standardised measures, time-intensive BA was clinically and significantly effective for *some* but not *all* participants. The current study's response levels are lower than the 76% found to make significant symptomatic improvement (50% decrease in outcome scores from baseline) following a trial of weekly BA (Dimidjian et al., 2006), which could be explained by their noted potential bias of allegiance effects and differences in the studies sample characteristics. In fact, contrary to the current study, Dimidjian et al., (2006) excluded participants who had not responded to treatment for depression within the previous year. The current study's response rate is more comparable to the 64% of responders (50% decrease in outcome scores from baseline) obtained from the most recent non-inferiority trial of weekly BA in comparison to CBT (Richards et al., 2016), and general depression treatment response rates found within IAPT services (Richards & Borglin, 2011). These similarities could potentially be explained by the studies targeting similar UK populations, however, importantly, the findings show that our time-intensive BA could be as effective as existing, empirically supported and recommended pacing of BA.

In terms of existing *time-intensive* behavioural activation literature, the current findings compare favourably to intensive behavioural group therapy (Barrera, 1979), and a 90 minute session of BATD delivered as a preventative intervention for non-depressed carers (Read et al., 2016). The current study's self-report response rates at the end of treatment ($n = 3$, 38%) are consistent with self-reported levels of treatment response following time-intensive BATD in inpatient settings (Folke et al., 2015b).

However, the current study findings are more modest in comparison to levels of responders ($n = 3$, 50%) found on clinician-rated measures of inpatient response. Gawrysiak et al., (2009) also found superior response rates ($n = 13$, 93%) following their 90 minute one-session BATD treatment for depressed university students. Besides true differences in treatment effects, discrepancies in the proportions of participants considered to be treatment responders across studies could be explained by methodological differences between study designs, such as therapy settings, samples recruited, sensitivities of the outcome measures, use of different types of behavioural activation, and different definitions of treatment response.

Although only five participants completed follow-up measures, the finding of higher response rates at follow-up in comparison to end of treatment, due to additional participants meeting response criteria, indicates that for some participants symptoms of depression that were measured by standardised questionnaires continued to decline after the withdrawal of the intervention. This change could be explained by participants' therapy skills (e.g., individual functional analysis) improving after more independent practice. In addition, some activation might have required more gradual and repeated (as opposed to immediate) reinforcement (Lewinsohn, 1974; Folke et al., 2015b). Future empirical research is needed to test these assumptions.

It is interesting that levels of treatment response, as well as which participants were considered responders, differed on the MADRS and the PHQ-9 at follow-up. Discrepancies between these clinician and self-report rated measures could be explained by reporting bias, clinicians and participants having different standards for outcomes, or variation in the content and weighting of items of the MADRS and PHQ-9 (Cuijpers et al., 2010). For example, the PHQ-9 relies more on physical

symptoms of depression than the MADRS does. Other possible explanations that could account for the findings include individual demographic differences such as gender, baseline depression, comorbidity severity (Carter, Frampton, Mulder, Luty, & Joyce, 2010), cognitive deficits (Shenal, Harrison, & Demaree, 2003), and personality dimensions (Rane et al., 2010) of those who completed follow-up measures. Discrepancies could also be a result of extraneous variables such as incidental measurement error. These assumptions are neither supported nor rejected here as the current study did not examine moderators of effects, or how outcomes were conceptualised by clinicians and participants. Regardless, the discrepancies support evidence that clinician and self-report rated measures are not equivalent (Uher et al., 2012).

Another interesting observation was the speed at which some participants responded to treatment. PB was considered a treatment responder as early as Session 2, and, although visual analyses indicated that there were no clear patterns of treatment sessions leading to immediate decreases in idiographic symptom scores, trend lines of four participants indicated that the bulk of their progress had occurred before booster sessions. This is supportive of previous research that concluded that rates of symptom change are associated with session frequency (Bohni et al., 2009; Ehlers et al., 2010), regardless of the total number of sessions attended (Erekson et al., 2015; Gutner et al., 2016; Reese et al., 2011). Considering that the current NICE guidelines for depression (2009) recommend that behavioural activation consists of 16 to 20 sessions delivered over 12 to 16 weeks, the findings show that individuals respond to treatment at different rates, and that some clients with depression will require lower quantities of therapy. Indeed, this is also supportive of previous

evidence that success and temporal response following treatment are heterogeneous, and that behavioural activation is applicable for some but not all clients with depression (Manos et al., 2011; Santos et al., 2016; Stavrakakis et al., 2015). While such findings are no doubt in part attributed to extraneous variables, where some clients respond to treatment faster than others, there may be scope for service waiting list times to reduce following the delivery of time-intensive BA.

Reliable and clinically significant change in standardised anxiety scores.

In contrast to the idiographic measure outcomes, standardised anxiety measure outcomes were consistent with the hypothesis that time-intensive BA leads to improvement in anxiety levels. The majority of participants made reliable and clinically significant change in their anxiety levels, at both the end of their treatment ($n = 5$) and at follow-up points ($n = 3$). These findings are supportive of previous studies that have shown anxiety levels according to the GAD-7 decrease following weekly BA (e.g., Richards et al., 2016), and that TTs of anxiety have shown efficacy (Ehlers et al., 2014; Storch et al., 2007). Five out of six participants (83%) who were considered treatment responders on depression measures also made reliable and clinically significant change in their anxiety scores, and all depression responders also met reliable and clinically significant change in their anxiety scores. Therefore, the finding here *does* support the theory that anxiety and depression have a shared diathesis (Barlow & Campbell, 2000; Minneka et al., 1998), and that there may be reason to use transdiagnostic interventions for mixed anxiety and depression (Hopko et al., 2006). On the other hand, the increasing rate of participants showing reliable and clinically significant change on their GAD-7 scores by follow-up was also supportive of treatment effects continuing over-time (Haukebo et al., 2008), as shown

by some participants' idiographic measures of anxiety. Explanations for inconsistencies between idiographic and standardised measure outcomes are considered below (see Idiographic vs. standardised measures).

Reliable and clinically significant change in standardised activation

scores. In comparison to baseline, the majority of participants made reliable change in their levels of activation on the BADS-SF. Therefore, the hypothesis that participants would make improvement in BADS-SF scores is accepted. It is promising that the relatively new and less empirically researched BADS-SF supports idiographic measures of avoidance, as this further implies validity of the study findings and BA's mechanism of increasing activation levels (Ryba, Lejuez, & Hopko, 2014; Santos et al., 2016). However, only two participants met criteria for *clinically significant* change in activation levels, which seems surprising, considering that four participants were deemed responders on depression measures. Explanations for this discrepancy are unclear given the existence of contradictory evidence that amount of activity is (Busch et al., 2010; Mazzucchelli et al., 2009) and is not (Herschenberg et al., 2014; Ryba et al., 2014) associated with positive change following behavioural activation. However, the current study's BADS-SF findings are consistent with those of Folke et al., (2015b) who found that, following their intensive BA/TD intervention, their entire inpatient sample met criteria for reliable change on the BADS-SF, whereas no one made clinically significant change. The finding could be explained by the current time-intensive BA not allowing enough time in between sessions for some participants to practice therapy skills to a sufficient level for clinically significant change. Not reaching clinically significant change could also indicate that participants had not reaped the full potential of the intervention. Perhaps they had not returned to

their normal repertoires, achieved all of their activation goals, or maybe their goals had been less value-based. Furthermore, our time-intensive BA might not have allowed enough time for functional changes in brain regions that mediate reward responsiveness to occur (Dichter et al., 2009). In addition, it may be that activation was not a predominant mechanism of change for all (Santos et al., 2016). As suggested by Barrera (1979), participants' activation levels might have benefitted from a longer self-monitoring period. Moreover, due to the lack of existing rigorous research that has used the BADS-SF, within similar designs to the current study, the reference statistics that were used to calculate cut-offs for clinically significant change were less representative of the current sample, and could have influenced results.

As process measures were not collected over the follow-up phase, it is not possible to draw conclusions about the maintenance of change in activation levels. It would have been interesting to observe whether or not levels of activation reached clinical significance in a larger proportion of participants after a longer-term follow-up period of putting therapy skills into practice, and whether or not they continued to mirror idiographic measures of avoidance. However, further research is needed to answer these queries, as well as proposed explanations of the findings.

Reliable and clinically significant change in standardised dysfunctional attitude scores. The smallest proportion of reliable and/or clinically significant change on any standardised/process measures was found for levels of dysfunctional attitudes (DAS-SF). This is contrary to the finding that encapsulated belief strengths demonstrated the highest proportion of change of all idiographic measures, and indicates that time-intensive BA was not associated with improving more general negative self-cognition. Therefore, the hypothesis that DAS-SF scores would show

improvement associated with the intervention is rejected. As four participants were considered treatment responders, despite not making reliable and clinically significant change on the DAS-SF, the findings were still aligned with one of Longmore and Worrell's (2007) arguments that cognitive change is not a necessary *mediator* of symptomatic improvements.

Idiographic vs. standardised and process measures

Clearly, the patterns of change in participants' idiographic measures were not always reflected in their standardised measures of depression and anxiety and vice-versa. For example, seven out of eight participants showed significant decline in their idiographic measures of depression following the intervention, yet at this same point, only four were considered treatment responders on standardised measures of depression. One explanation for this could be that the adaptations made to the PHQ-9's measurement period could have reduced the reliability and sensitivity of the measure. In addition, as standardised measures are more global symptom measures than idiographic measures, they are less able to capture subtle changes that occurred following the intervention and on a daily basis (McCormack et al., 1988). This would support the discrepancies between levels of change on idiographic VASs of encapsulated belief strength and DAS-SF scores. Conversely, discrepancies between measures in the opposite direction, such as PC responding on the MADRS but not showing significant decline on her idiographic measure of depression, and PA and PE not making significant declines in their idiographic ratings of anxiety, yet showing reliable and clinically significant change in their GAD-7 scores, imply that some participants did not define their idiographic experience of depression or anxiety by the nomenclature being rated on standardised measures of symptomatology. This

suggestion is supported by the finding that some of the participants' *main* (chosen) symptoms of depression that they rated on VASs were not captured by standardised symptom measures, such as “crying” and “despair”. However, this difference could also be explained by ingrained negative thinking biases reducing individuals' abilities to recognise their own progress (Rush, Hiser, & Giles, 1987). Furthermore, one-item VASs are less reliable and valid than multi-item standardised measures (Diamantopoulos, Sarstedt, Fuchs, Wilczynski, & Kaiser, 2012), and the current study did not measure psychometric properties of its VASs. It is possible that similarities between measures may become more apparent over longer periods of time, and again further research is needed to determine the validity of the assumptions described. Overall though, clearly idiographic and standardised measures of depression also provide unique indicators of progress.

Responders vs. non-responders

When comparing responders to non-responders, the observation that non-responders at follow-up had experienced more than three previous episodes of depression and had higher baseline PHQ-9 scores is consistent with the general finding that over time and subsequent episodes, the severity of depression increases (Kendler et al., 2000) and the rate of recovery slows (Richards, 2011). It is possible that clients with these characteristics were less suited to time-intensive BA. The observation that all non-responders at follow-up had been treated at Site 2, whereas responders had been treated at Site 1, could be explained by therapists at Site 2 being less experienced; however, this would contradict more rigorous evidence that shows that BA is as effective when delivered by less highly trained professionals (Ekers et al., 2011; Richards et al., 2016).

Additional differences that were observed between PB's (the only consistent treatment responder), and PC's (who consistently did not improve on the majority of her measures) idiographic and standardised measures suggest that concentration, depression severity, comorbidity and treatment credibility/expectancy could mediate treatment response. In fact, in hindsight, PC was thought to meet criteria for persistent depressive disorder (APA, 2003), which is associated with poorer clinical outcomes in comparison to MDD (Russell et al., 2004), and, indeed, following the intervention her referral to IPT reflected clinical judgement that she was not suitable for BA. However, until more rigorous investigation and inferential statistics are used to draw comparisons between responders and non-responders, these observations are only hypotheses.

Do participants' and therapists' evaluations of the intervention indicate that it is considered an acceptable treatment?

Due to the exploratory nature of this research, it was not hypothesised whether or not the intervention would be deemed acceptable by participants or therapists. However, multiple sources of data have provided encouraging support to show that time-intensive BA is considered an acceptable treatment provision within primary care. Firstly, *mean* client satisfaction ratings were high. This extends previous findings that time-intensive BA/TD was considered highly satisfying by inpatient samples, (Folke et al., 2015a; 2015b), to Martell's (2013) BA intervention, delivered at a more spaced rate, and within outpatient populations. Secondly, both participant and therapists' *mean* ratings of the treatment acceptability were high, with therapists also indicating that, if permitted, they would be highly likely to deliver time-intensive BA again.

Clinical and research implications

As the current study is exploratory, the majority of its implications are for future research (see Future research). However, the findings that time-intensive BA can be feasible, acceptable, and effective for some adult outpatients with depression has added to the evidence base and should be widely disseminated, as some clinicians and researchers working in this area will offer and continue evaluating the treatment.

As BA cannot be assumed to uniformly reduce depression and anxiety levels for everyone, until more rigorous research is conducted, the Principal Investigator recommends that clinicians should continue to follow the NICE guidelines (2009) for depression, and as a minimum, when implementing BA they should more consistently adhere to Dimidjian et al.'s (2006) empirically supported intention for BA to be delivered bi-weekly for the first few weeks, and address any preventative barriers. As all non-responders in the current study reported experiencing three or more previous depressive episodes, yet none had received previous MBCT, services should ensure that they are routinely following the NICE guidelines (2009) and offering MBCT when recommended. For clients with comorbid anxiety, clinicians should remember to make use of other therapeutic strategies (e.g., mindfulness and anxiety management), that can be incorporated into BA (Martell et al., 2013), and to consult the NICE guidelines for treating comorbid GAD (NICE, 2011).

In-view of the scientist-practitioner role of clinical psychologists, and low recruitment of therapists within the current study, services should encourage therapists to evaluate new treatments. However, as the findings show that reasons for not taking part in the study were working part-time, having a full case-load and not yet being fully qualified, IAPT services should carefully consider whether or not they

can support time-intensive interventions, or research into their efficacy. Services who do not feel able to facilitate time-intensive BA should generate creative ways of enhancing how ‘user-friendly’ the treatment is, that they would be able to manage within their resource confines (e.g., sending automatic text prompts). Such planning will require discussion of costs and funding with service managers and clinical commissioning boards.

The current findings show that some elements of the existing treatment design, such as having a break during longer sessions, and the use of prompting should be retained. The high treatment retention also shows that the pacing and spacing of the intervention could be retained for some. The Principal Investigator also recommends that practical issues considered herein should continue to be considered when conducting further evaluations of time-intensive BA within similar settings. For example, to avoid staff burn-out, clinicians within IAPT services should be made exempt from other responsibilities of equal weighting, caseloads, session times, session preparation time and boundaries regarding missing sessions should be organised and agreed in advance of treatment commencing (e.g., offering a telephone session instead), and clinicians and clients should ensure that they set realistic activation assignments for the amount of time that clients have in-between sessions.

Due to some potential participants opting for CBT as opposed to BA, in order to target treatment doubts and promote participation in research, service triages should include detailed descriptions of different treatment options, highlighting the evidence to demonstrate BA’s non-inferiority (Dimidjian et al., 2006; Ekers et al., 2014), as well as the advantages of time-intensive BA. In addition, given that all participants in the current study had experienced multiple previous episodes of depression, and the

majority had received previous psychological treatment, clinicians should assess reasons why clients would like TT, and remain vigilant of those who could be seeking a ‘quick fix’ with less intention to fully engage in therapy. Nevertheless, the finding that no participants dropped-out suggests that time-intensive BA or an increasing intensity of some sessions could be offered to promote treatment retention for those who struggle to engage. Screening of participants for bi-weekly sessions could include a motivational interviewing component to ensure suitability. In addition, as observational comparisons of responders versus non-responders suggested that those with more severe and chronic depressive episodes were least responsive to time-intensive BA, clinicians intending to continue investigating the effects of time-intensive BA should begin with individuals who express preference for a condensed treatment or urgency to recover, but less severe, recurrent or chronic MDD. Also, given the findings that the majority of participants had ongoing life-stressors, clinicians should carefully consider when more than one session a week would be deemed ‘too much’ for clients, and re-formulate as new stressors arise.

As two participants found outcome monitoring distressing, outcome measure collection appears poorly tolerated by a subset of clients with depression, which should be considered when planning future symptom monitoring. However, as differences in outcomes were observed across idiographic, self-report and clinician-rated measures, where possible, services should continue to collect examples of each to enhance treatment guidance. Finally, considering the discrepancies between measures reported here, idiographic measures should be operationalised to represent more proximal measures of depression (e.g., hopelessness as opposed to general depression), in order to provide more specific understanding of progress.

Study strengths

The present study is the first to define a novel application of time-intensive BA treatment, and explore its efficacy within adult primary care settings. Therefore, it makes an important contribution to the research field.

Design. The study was carefully designed to consider service user feedback and meet SCED standards (Kratochwill et al., 2010). Including a baseline phase enabled participants to act as their own controls, and replication of the intervention across settings, therapists and participants, including randomisation to multiple baselines, reduced the effects of history and maturation on the internal validity of the study outcomes. Statistical analysis of idiographic measures controlled for instability in baseline trends, enhancing confidence in outcome change being attributed to the intervention, and the inclusion of follow-up symptom monitoring, where possible, enabled some tentative conclusions to be drawn about the short-term durability of the treatment. The intervention itself did not interfere with referral routes or waiting list durations, and appeared to be reliably adhered to by sufficiently competent therapists, enhancing the study's external validity.

Sample. The sample recruited all met diagnostic criteria for MDD (APA, 2013), enhancing the validity of the study outcomes. What is more, the sample recruited was heterogeneous in some ways, which implies that the intervention effects apply to varying groups. The sample size was larger than previous studies with similar designs (e.g., Folke et al., 2015), demonstrating its enhanced power. Also, participation in the study was not biased by ulterior motives such as monetary compensation, potentially reducing selection bias.

Measures. Collecting a variety of repeated idiographic outcome measures increased the study's power. Furthermore, the completion of idiographic measures as primary outcomes enabled the findings to be more closely attributed to the intervention itself. Also, allowing participants to choose two of their VASs promoted clients' motivation to complete measures. Completion of standardised self-report measures reduced the threat of instrumentation on outcomes, and the inclusion of a clinician-rated measure (the MADRS) further promoted the reliability of responses (Cuijpers et al., 2010).

Study limitations

Design. The study was a non-concurrent multiple baseline SCED, meaning the BA was not manipulated to all participants simultaneously. Therefore the design had less control over confounding variables (history effects in particular) than if the intervention had been replicated to participants simultaneously, reducing the study's external validity (Carr, 2005). Still, greater flexibility in the recruitment of participants and therapists than a concurrent design would have enabled was considered essential by all recruitment services.

Due to practical issues, participants did not all receive the same number of sessions, or types and amounts of prompting. In fact, though not as 'brief' as some other time-intensive behavioural activation (e.g., Hopko et al., 2003a), no participants received the recommended duration of treatment (NICE, 2009). Evidence to show that TT leads to faster recovery irrespective of the number of sessions (e.g., Reese et al., 2011) deems this less problematic; however, differing sequences of treatment might have predicted some variation in outcome measures. Moreover, only five participants completed follow-up measures, and follow-up only lasted three weeks,

which is a shorter period of time than has been monitored for existing studies of BA's efficacy (Ekers et al., 2014), severely limiting conclusions about the treatment durability.

Sample. The final sample size was fewer than the intended 11 participants, preventing the study power from exceeding the desirable 0.8 power level (Shadish, et al., 2014), and limiting the generalizability of the findings. Furthermore, the strict inclusion criteria, as well as the fact that participants needed to be seeking treatment, meant that recruitment was limited by selection bias, with all participants being unemployed, and findings cannot be generalised to the wider population with depression. In addition, severe mental illness was not formally assessed, and if present could have influenced individual outcomes. Furthermore, for participants with English as a second language, language may have been a confounding variable influencing the comprehension, and, in turn, reliability, of some outcome measure completion. Indeed, having treatment in their mother-tongue would have enabled them to communicate more effectively (Costa, 2010).

Therapist sample size was also small and their selection was subject to bias too. IAPT recruitment sites were asked to permit high-intensity therapists to see participants first, contradicting the stepped-care model. Therapists needed to be willing to take on time-intensive participants, which required their availability over a fixed 22-day period. As with participants, this limits the study power and generalisability of the findings. Of importance, views on acceptability of the intervention are not generalizable to all therapists and clinical settings.

Measures. Participants were expected to complete a significant number of repetitive outcome measures. This was time-consuming and two participants reported

that outcome measure completion was aversive. Furthermore, the majority of measures were self-reported and were often completed in front of therapists or handed to them upon completion. Therefore, the reliability of the findings is likely to have been negatively influenced by fatigue, demand characteristics, desirability bias, acquiescence and extreme reporting. The reliability of the QOBAS and all VASs were also limited as they are not standardised measures.

Experimenter bias could also have limited the reliability of the study measurements. The Principal Investigator conducted all screening measures, and although participant suitability was checked with service leads, screening measures were not inter-rated for reliability, which could have biased participant recruitment. Furthermore, clinician-rated measures were also not inter-rated for reliability or rated by blind-assessors. However, as idiographic measures were the primary outcome measures for the current study, they were considered of prime importance for deriving efficacy of the intervention.

The measurement of treatment fidelity was also limited, as it was based on just five audio recordings of sessions, one from each participant who consented to having their sessions recorded. Therefore, the reported fidelity outcome cannot account for the remaining 63 sessions that were implemented. In addition, the Assistant Psychologists who completed the treatment fidelity ratings, though trained in BA, were not qualified or practicing clinically using BA, which may have biased their fidelity ratings.

Other confounding variables. The study was subject to numerous confounding variables, which limit the external validity of the findings. Participants were told that they could receive treatment as usual if their time-intensive BA was

ineffective, which could have biased the results of those who wanted further treatment. However, participants were also aware that they would need to go back onto service waiting lists to receive further treatment.

Furthermore, due to high variability in the data and all participants experiencing on-going life-stressors (e.g., bereavements and relationship breakdowns), outcomes were subject to high history effects. It is a limitation of the study that specific dates of aversive incidents were not always known, and the influence of life-stressors on outcomes were not analysed statistically. Though not considered empirically, life-stressors may have influenced participants' abilities to benefit from the intervention. For example, as postulated by Ehlers et al., (2010), discussion of daily difficulties and life events might have dominated therapy discussions. Likewise, life-changes such as returning to work (a form of increasing activation) or even natural fluctuations in mood (Cuijpers et al., 2012) could have predicted positive symptom change in some. Indeed, PE confirmed that his experience of bereavement led him to feel more normal and in turn, less depressed. In addition, the majority of participants were taking prescribed antidepressant medication. Despite requesting that GPs keep participants' medication levels stable, one participant halved his dosage without consulting his GP. These issues imply that the study effects are less attributable to the intervention alone and require tentative interpretation. Of note, the fact that the majority of responders had previously received psychological treatment was not considered a confounding variable given that most previous depression treatment had taken place six months or more prior to the current study beginning, and all participants met criteria for MDD at baseline.

Finally, though experienced in delivering BA, none of the therapists had delivered it time-intensively before. In turn, it is possible that they may have relied more heavily on the treatment guides that they were provided with, increasing the likelihood of the intervention being protocolised, which is not its intended efficacious mode of delivery (Dimidjian et al., 2008).

Future research

As this study was a proof-of-concept study, it provides a starting point for research that is intended to be developed into larger experiments. Future research should aim to rectify the limitations of the current study whilst adding to existing knowledge to the area. The current study is already intended to collect follow-up data at six, 12 and 18-months post-treatment at which point recovery rates (Bockting, Hollon, Jarrett, Kuyken & Dobson, 2015), and longer-term durability of outcomes can be evaluated.

The study should now be replicated across different samples, therapists, settings and time-periods, while relaxing the exclusion criteria, in order to generalise the findings to a wider population. To begin with, more SCEDs should be conducted, delivering concurrent treatments across individuals where possible, in order to reduce the influence of extraneous variables on the outcomes. Within larger samples, more standardised population based outcome measures, or even objective measures (e.g., heart rate), should be collected, less frequently, in order to increase the reliability of outcomes while reducing the burden of their completion. Parallel self-report and clinician-rated measures of depression with matching content should be collected to enhance the concurrent validity of findings. Future studies should also inter-rate measures and ensure that self-report measures are not given directly to clinicians but

instead processed anonymously by independent raters, in order to increase the reliability of the study findings. Furthermore, future research should employ more rigorous measurement of the treatment fidelity, rating all available audio recordings of sessions, and recruiting qualified clinicians to do so.

Recruiting larger samples would also yield more powerful results, and the ability to conduct more comparative and predictive analyses. Regression analyses should be conducted to determine whether or not treatment characteristics (e.g., duration, session number, session spacing, and prompting), service characteristics (e.g., private or NHS), therapist characteristics (e.g., experience and number), and participant characteristics (e.g., history, comorbidity, life-stressors and social support) predict or moderate treatment response, and perceived feasibility and acceptability of the treatment. Coding frameworks should also be used to determine and track specific (e.g., homework levels) and non-specific (e.g., therapeutic relationship strength) mechanisms of change that occur in each session, their temporal relationships to outcomes, and whether or not they are crucial to recovery following time-intensive BA. In addition, it will be important for future research to conduct a carefully designed qualitative study investigating client and therapists' subjective experiences of the intervention, such as what they might have found helpful or problematic about it and their suggestions for its future development. Such findings could then be used to guide the development of an optimized time-intensive BA for both individuals with depression and therapists. Perhaps, TT will be considered best for unemployed individuals, as a preventative 'top-up' intervention for relapsing/treatment-resistant individuals, or even as part of a transdiagnostic intervention where depression requires treatment before an existing comorbidity. Alternatively, Dimidjian et al.,

(2008) may have had it right all along with their recommendation that only initial sessions should be time-intensive. Importantly, future research should adopt our same definition of ‘time-intensive’, and treatment ‘responder’ in a bid to move towards standardisation of terminology and outcomes.

Finally, in the longer-term future, RCTs should be conducted to determine the efficacy and cost-effectiveness of different time-intensive BA designs in comparison to control and/or recommended active control conditions (e.g., weekly BA or time-intensive CBT for depression). Only then will it be possible to conclude whether or not time-intensive BA is an adequate first-line treatment of depression.

Conclusions

In summary, the current study provides new and tentative evidence highlighting the potential of time-intensive BA as a feasible, acceptable, and effective intervention for some adult outpatients with depression. This supports previous findings that point to the promise of time-intensive treatments and constitutes an essential step in attempting to increase patient choice and access to depression treatments. While this study found that the majority of participants showed improvements in their idiographic symptoms of depression, and four out of eight participants were considered treatment responders on standardised depression measures, it is not possible to generalize the findings to wider populations, and recommend the use of time-intensive BA for everyone with depression. The findings also do not provide conclusive evidence for justifying limiting of resources. Instead, where possible, clinicians within primary care may wish to offer time-intensive BA to suitable referrals and evaluate their progress. Moreover, the promising findings of this exploratory study now warrant further evaluations in RCTs to substantiate its results,

identify the long-term durability of the treatment effects, clarify hypotheses made in this discussion, and the conditions under which the intervention will be optimally effective. Overall, it is not surprising that such a heterogeneous affliction appears to show heterogeneous responses to different treatment approaches, however it is hoped that this treatment approach can go on to reduce depression's ubiquitous burden and promote the well-being of the population.

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Appendices

Appendix 1. Summary Table of Abbreviations

Abbreviation	Meaning
ADM	Antidepressant Medication
APA	American Psychological Association
BABCP	British Association of Behavioural and Cognitive Psychotherapies
BA/TD	Behavioural activation protocol that was a blend of BA and BATD (Kanter et al., 2009)
BATD	Behavioural Activation Treatment for Depression (Lejuez et al., 2001)
BA	Behavioural Activation (Martell et al., 2001)
BADS-SF	The Behavioural Activation for Depression Scale - Short Form
BAI	Beck Anxiety Inventory
BDI	Beck Depression Inventory
BMED	Broadened Median
BT	Behavioural Therapy
CBT	Cognitive Behavioural Therapy
CT	Cognitive Therapy
CEQ	The Client Expectancy/Credibility Questionnaire
CSQ	The Client Satisfaction Questionnaire
CSC	Clinically Significant Change
CT	Cognitive Therapy
DAS-SF	The Dysfunctional Attitudes Scale - Short Form
DOH	Department of Health
ERP	Exposure and Response Prevention
HRA	Health Research Authority
GAD-7	The Generalized Anxiety Disorder Scale
IAPT	Improving Access to Psychological Therapies
ICC	Intra-Class Correlation
IPT	Interpersonal Therapy

MADRS	Montgomery-Åsberg Depression Rating Scale
MBCT	Mindfulness-Based Cognitive Therapy
MDD	Major Depressive Disorder
NCCMH	National Collaborating Centre for Mental Health
NICE	National Institute for Health and Clinical Excellence
NHS	National Health Service
OCD	Obsessive-Compulsive Disorder
PA	Participant A
PB	Participant B
PC	Participant C
PD	Participant D
PDSQ	Patient Diagnostic Screening Questionnaire
PE	Participant E
PF	Participant F
PG	Participant G
PHQ-9	The Patient Health Questionnaire
PH	Participant H
PTSD	Post-Traumatic Stress Disorder
QoBAS	The Quality of Behavioural Activation Scale
RC	Reliable Change
RCI	Reliable Change Index
RCT	Randomised-Controlled Trial
RM2/3/5	Running Median of 2/3/5
SCED	Single-Case Experimental Design
SEM	Standard Error of the Mean
TR	Trended Range
TT	Time-Intensive Treatment
VAS	Visual Analogue Scale
WHO	World Health Organisation

Appendix 2. Participant Information Sheet



Can intensive behavioural activation treat depression in only 3 weeks?

We would like to invite you to take part in a study investigating the effectiveness of a condensed behavioural activation treatment for depression that takes place over three weeks

For further information, please read the following participant information sheet.

INFORMATION SHEET

To help you decide whether you would like to take part please take time to read the following information carefully. Talk to others about the study if you wish.

Please do not hesitate to ask us if there is anything that is not clear or if you would like more information. Contact details can be found at the end of the document. Take time to decide whether or not you wish to take part.

Thank you for taking the time to read this information.

1. What is the purpose of the study?

The aim of the study is to test whether or not depression can be treated in a shorter, more condensed time period than usual. Usually depression is treated with one therapy session a week, across 12 to 16 weeks. We would like to see whether or not the same results can be achieved from delivering a recommended depression treatment, called behavioural activation, intensively, on just 7 extended sessions over 22 days.

We already know that behavioural activation delivered once a week over 12 to 16 weeks is considered to be no less effective at treating depression as other interventions such as medication and a different psychological therapy called cognitive behavioural therapy. Existing research has also found that other mental health difficulties such as obsessive compulsive disorder and phobias can be treated in this condensed way. We hope this study will show that depression can be treated faster, which would hopefully make treatment more accessible and cheaper to treat as well as reducing client waiting list times.

Once completed, we will look at how strong the treatment effects are and whether or not treatment outcomes last over time. We will also ask participants to give feedback on how they have found the condensed treatment.

The study is taking place as part of a Doctorate of Clinical Psychology research project but is intended to be published and disseminated.

2. Why have I been chosen?

You have been chosen because you are seeking treatment for depression on an outpatient basis.

3. Do I have to take part?

No, it is up to you to decide whether or not to take part. We will give you an opportunity to ask any questions you may have after reading this information. Then we will ask you some questions to ensure that the treatment is the most suitable approach to meeting your needs. If we would recommend the treatment for you, and you agree to take part, we will then ask you to sign a consent form to show you have agreed to take part. However, even after giving consent to take part, you are free to withdraw at any time, without giving a reason.

4. What will happen to me if I decide to take part?

The flow diagram below summarises what will happen to you if you decide to take part, and is followed by a more detailed description:



The treatment that you will be given is called behavioural activation and it is a recommended treatment for persons with depression, like yourself. The treatment consists of developing an understanding of what is causing and maintaining your depression, and then engaging in more activities that keep you feeling better and driven to stay busier. The treatment content will be the same as standard recommended behavioural activation for depression. The only differences are a) that you are being offered the treatment over a shorter period of time, with shorter gaps in-between treatment sessions, and b) that you will be asked to complete 6 more questionnaires than the usual 5 required in standard IAPT care. These additional questionnaires will measure your expectations of the treatment, your depression symptoms and your satisfaction with the treatment.

When you begin the treatment, you will have one therapist assigned to you for your face-to-face treatment sessions and either the same or a different therapist assigned to you to contact you via telephone on days where you don't have a face-to-face session.

Treatment day start times will be determined by whether or not you would prefer to be seen in the morning or afternoons, and the therapist's availability. The first two treatment days will be three days apart and will include discussions with your therapist about understanding your problem, goal setting and treatment planning. On these days you will need to have a break at some point, because the initial sessions are likely to be 2 hours long, but you will be able to decide break times with your therapist. The days in-between the first two treatment sessions will consist of monitoring your activity levels, or in other words, monitoring what you're doing with your day. The rest of the treatment will consist of goal-focused activation in the community that will be prompted and reinforced by short yet frequent telephone calls or texts from either the same therapist that you see face-to-face, or a different one. Frequency of telephone prompts will be flexible.

Following activation periods you will return for 1 hour face-to-face review sessions with your therapist where barriers to activities will be problem solved and the next 2 to 3 days of activities will be planned. This pattern will repeat across 22 days. Therefore, after your initial two days of therapy sessions you will have 5 more face-to-face sessions (making a total of 7). It is expected that your minimum treatment duration, including face-to-face sessions and telephone prompts will sum to 12 hours.

After completing your treatment you will be offered 3 optional booster sessions to review your progress with your therapist, problem solve any barriers getting in the way of you completing your goals and to plan for the future. These booster sessions will be offered 1, 2 and 4 weeks after your core treatment.

During your treatment you will be asked to complete homework after each face-to-face session, but this will consist of completing activities planned in sessions.

Across the research study you will be asked to complete a number of different questionnaires, measuring your beliefs and your symptoms of depression. Some measures will need to be completed every day, others will need completing once a week. One measure that you will be asked to complete once at the beginning of the study, is a new questionnaire that is being trialed as part of the study. Daily measures should not take more than 5 minutes to complete, but the measures we ask you to complete once a week could take 30 minutes to complete. You will be asked to complete these so that your progress can be monitored over time, which is useful to therapists and researchers for considering how therapy can be made most effective for individuals. You will be given paper copies of questions to complete, which you can return at your next therapy sessions. You will also have the option to complete questions over the phone, online or to send your responses via email.

Following your 3 week treatment you will be asked to continue completing measures of your symptoms and beliefs during what is called a follow-up period. Follow-up measurement collection allows researchers to see if the therapy's effects are maintained over longer periods of time, and not just until the end of treatment. We hope that you will continue to complete measures for a few months after the treatment ends. When it is time to complete follow-up measures we will contact you. Follow-up information can be collected over the phone, online, face-to-face, via email or mail. You will also be asked to provide feedback comments on how you found the treatment. Feedback you provide will then be considered by professionals so that they can fine-tune the treatment to be more relevant and user friendly where necessary.

During treatment we will ask to audio record sessions. A random sample of the recordings will be listened to, to assess the quality of the delivery of the therapy, and not to assess you or the content of the therapy. Audio recording sessions requires your consent and you do not have to agree to it. Your therapist may recommend that you record your therapy sessions on your own recording device too, as it can be useful to have the option to listen back over your sessions.

5. What do I have to do?

You will be expected to attend your face-to-face treatment sessions 7 times over a 3-week period. Therefore you will need to be available for up to 3 hours on each of the first two treatment sessions and 1 hour for each of the remaining 5. You will also be required to be contactable over the telephone every day in-between your face-to-face sessions so that you can receive a call or text message to see how you are doing with your activities. This means that you will need to take time out of work or other commitments. We will ask that you organize your commitments (e.g. child care) in advance of the 3-week treatment so that you can fully focus on the treatment.

You will need to complete the questionnaire measures a) before starting the treatment, b) each day while completing the program, and c) after finishing the program.

6. What are the side effects of taking part?

You may find answering some of the questions or completing some aspects of the treatment distressing due to their sensitive nature. Should you feel any distress during or after you have filled out the questionnaires, spoken with a therapist, or had a treatment session, then the project team will be there to support you at the contact details below. In addition we will share details of support services with you, should you need to speak to someone from a particular service.

You are also free to withdraw from the study at any time without giving a reason or can always miss out any questions from questionnaires or programme activities that you do not feel comfortable with answering.

7. What are the possible benefits of taking part?

One benefit of taking part in the study is that your wait time for treatment will be shorter than that your wait on the waiting list would be for standard weekly treatment.

We cannot promise the study will help you, but behavioural activation, which is the treatment you will receive, is a recommended treatment for persons with depression. It is hoped that you will develop an increased understanding of your depression and that you will experience reduced symptoms of depression as a result of receiving this treatment. If successful, it is hoped that you will experience a more rapid reduction in symptoms.

Information we get from this study will help us better understand whether or not depression can be treated over a shorter time-period and whether or not more intensive treatment is acceptable at providing positive outcomes to clients like yourself. Conducting research of this nature has benefits to the wider society because it has the potential to guide future service delivery.

8. What are the possible disadvantages or risks of taking part?

The study is testing a new way of delivering a treatment (behavioural activation) that is already recommended. You will be asked to complete a number of assessments and questionnaires. Initial assessments may take up to 30 minutes. Daily measures will take 5 minutes to complete and weekly measures may take up to 30 minutes to complete.

You are free to withdraw from the study at any time without giving a reason or can always miss out any questions from questionnaires or programme activities that you do not feel comfortable with answering.

9. What if new information becomes available?

Over the course of the research if any new information becomes available that is relevant to your participation we will be sure to contact you as soon as possible to let you know.

10. What if something goes wrong?

If you have a concern about any aspect of this study, you should ask to speak to Sarah Miles (the Principal Investigator) who will do her best to answer your questions (see contact details below). If you remain unsatisfied and wish to complain formally, you can do this through the NHS Complaints mechanism. The telephone number to call in order to make a complaint is 0345 015 4033.

For further details, you can visit the NHS complaints procedure website at <http://www.nhs.uk/choiceintheNHS/Rightsandpledges/complaints/Pages/NHScomplaints.aspx>

Additional information can also be obtained by the service that you are seen at.

In the event that something does go wrong and you are harmed during the research and this is due to someone's negligence, then you may have grounds for a legal action for compensation against Royal Holloway University of London, but you may have to pay your legal costs.

11. Will my partner / carer / friend be able to come with me?

You will be allowed to attend your assessment session with one significant other. It can also be helpful to have someone acting as your "cheerleader" who can check in on how you are doing, or even escort you to and from your therapy sessions, or accompany you when you complete your homework activities.

12. What happens when the research study stops?

After receiving the three week behavioural activation, you will have a clinical review to see if you require further psychological or medical treatment. If you do require further treatment this will be provided and at the usual weekly frequency.

You will be provided with a summary of the main research findings and if the findings are published you will be given a copy of the publication article.

Your data will be kept for a maximum of 5 years while publication and further research procedures, and auditing for research governance monitoring might take place.

13. What will happen if I don't want to carry on with the study?

You can withdraw from the study at any time without giving a reason and without your current care being affected. Any identifiable data collected will be destroyed. Data that is not identifiable may still be used.

If you decide not to take part you will remain on the waiting list to be seen for standard weekly treatment for depression. This will not affect the care you receive. If you withdraw from the study after starting your treatment you will be offered a clinical review to see if you require a higher intensity psychological treatment (such

as cognitive behavioural therapy), and if you do, you will be offered a place on the waiting list for it.

14. What will happen to the results of the research study?

The results of the research will be submitted for publication in a scientific journal. Findings will also be publicised at psychological conferences and in the media. You will be given a summary of the results and may request a copy of any successful publications. You will not be identified in any report or publication arising from the research.

The results may also have implications for further psychological research. If the intervention is found to be successful it could go on to be compared to treatment as usual for depression. Future research could also be conducted to “fine-tune” the intervention, to identify its most effective form of delivery (e.g. ideal session number / duration) and for whom it is most effective. The long-term aim will be for the results to guide whether or not a more effective and more rapid form of depression treatment can be rolled out in services.

15. Will my taking part in this study be kept confidential?

All information which is collected about you during the course of the research will be kept strictly confidential. You will be assigned a participation code at the beginning of the study, which will be associated with all of your data. Any identifiable data such as your name and address will not be associated with the data that we collect from you during the research. A list linking the names of participants to their participation codes will be kept separate from the data, in a locked filing cabinet.

Electronic copies of data will be stored on computers with username and password security required to gain access. Any data transferred to portable data devices will still be anonymous and will also be password protected. Hard paper copies of any information you share with us will be kept in folders in a locked filing cabinet. Computers and filing cabinets to be used will be stored at your treatment service or Royal Holloway University of London. All filing cabinets will be locked and housed within buildings that are also locked with a security code and alarm system.

You will be asked if you would like your GP to be informed of your participation in the research. This is because it can be useful for your medical records to note any form of intervention you have received. However, this decision will be yours, and if you do decide that it is OK for us to inform your GP, this information will still remain confidential in line with client information legislation.

Your personal contact information will be available to your therapist, as is standard procedure. It will also be available to the Principal Investigator of the research study so that you can be contacted with important information (e.g. your session times and the study findings). Your anonymised data will be accessible to therapists at your psychology service and members of the research team. Numerical anonymised data

based on audio recordings of your sessions (if you consent to audio recording) will be shared with a research team we are collaborating with at University of Colorado Boulder. As mentioned above, no identifiable data will be stored with your anonymised data.

16. Who has reviewed the study?

The study has been reviewed by the Royal Holloway research committee, leading clinicians at each research site, experts in the field of depression research, and the Central London Research Ethics Committee.

17. Who is organising and funding this study?

This study is being organised by clinical and research teams at Royal Holloway University, Southwark IAPT, and Hackney IAPT. No external funding has been provided for the conduction of this research.

18. How have clients and the public been involved in designing this study?

Service users with depression, like yourself, have been involved in designing the treatment layout, study materials, the content of sessions and the outcome measure administration. They will also be involved in helping to share the study findings.

.Contact for Further Information

For further information, please do not hesitate to discuss the study with Sarah Miles, the Principal Investigator.

By email: sarah.miles.2014@live.rhul.ac.uk

By post: Royal Holloway University of London
Clinical Psychology Department
Egham
Surrey
TW20 0EX

By telephone: 07512508390

You will be given a copy of the information sheet and a signed consent form to keep.

Thank you for considering taking part in the study.

Appendix 3. Adapted version of The Quality of Behavioural Activation Scale

Removed for Copyright purposes.

Appendix 4. Royal Holloway University of London Research Committee Approval Document

Memorandum

To: Sarah Miles

From: Gary Brown (on behalf of the Research Sub-Committee and Course Executive)

Date: 9th February 2016

Copy To:

Re: Main Research Project Proposal

The Research Sub-Committee has considered your Main Research Project Proposal response and has decided to give you **Approval**. Your research costs have also been approved. Please note that if these costs change and you do not re-submit an amended form for approval prior to incurring any additional costs, these additional costs will not be reimbursed.

Now that you have received approval it is time to apply for ethics. Please provide Annette with copies of all applications, letters and approvals. Also, please ensure that if RHUL is your sponsor, Annette is sent all participant signed consent forms.

Appendix 5. National Research Ethics Service Ethical Approval Documents

Approved documents


Health Research Authority
London - Central Research Ethics Committee
3rd Floor, Barlow House
4 Minshull Street
Manchester
M1 3DZ
Telephone: 0207 1048 007

13 April 2016

Miss Sarah Miles, Trainee Clinical Psychologist
Camden and Islington NHS Foundation Trust
Royal Holloway University of London
Egham
Surrey
TW20 0EX

Dear Miss Miles

Study title: Is time-intensive behavioural activation effective at reducing depression symptomatology: a multiple-baseline design.
REC reference: 16/LO/0485
Protocol number: n/a
IRAS project ID: 196839

Thank you for your letter of 07 April 2016, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact the REC Manager, Elaine Hutchings, NRESCommittee.London-Central@nhs.net.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study:

Appendix 6. National HRA Approval Documents



Health Research Authority

Miss Sarah Miles
Trainee Clinical Psychologist
Camden and Islington NHS Foundation Trust
Royal Holloway University of London
Egham
Surrey
TW20 0EX

Email: hra.approval@nhs.net

13 July 2016

Dear Miss Miles

**Letter of HRA Approval
for a study processed
through pre-HRA
Approval systems**

Study title:	Is time-intensive behavioural activation effective at reducing depression symptomatology: a multiple-baseline design.
IRAS project ID:	196839
Protocol number:	n/a
REC reference:	16/LO/0485
Sponsor	Royal Holloway University of London

Thank you for your request for HRA Approval to be issued for the above referenced study.

I am pleased to confirm that the study has been given **HRA Approval**. This has been issued on the basis that the study is compliant with the UK wide standards for research in the NHS.

The extension of HRA Approval to this study on this basis allows the sponsor and participating NHS organisations in England to set-up the study in accordance with HRA Approval processes, with decisions on study set-up being taken on the basis of capacity and capability alone.

If you have submitted an amendment to the HRA between 23 March 2016 and the date of this letter, this letter incorporates the HRA Approval for that amendment, which may be implemented in accordance with the amendment categorisation email (e.g. not prior to REC Favourable Opinion, MHRA Clinical Trial Authorisation etc., as applicable). If the submitted amendment included the addition of a new NHS organisation in England, the addition of the new NHS organisation is also approved and should be set up in accordance with HRA Approval processes (e.g. the organisation should be invited to assess and arrange its capacity and capability to deliver the study and confirm once it is ready to do so).

Appendix 7. Homerton University Hospital NHS Foundation Trust Research and Development Approval

Homerton University Hospital 
NHS Foundation Trust

*Research & Development
Chair: Dr Claire Gorman*

Christine Mitchell-Inwang
Research & Development Manager
Christine.Inwang@homerton.nhs.uk

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28th April 2016

Dr Jon Wheatley
Homerton University Hospital NHS Foundation Trust
Homerton Row
Hackney
London
E9 6SR

Dear Dr Wheatley,

Re: Is time-intensive behavioural activation effective at reducing depression symptomatology: a multiple-baseline design

R&D No: 1638

Thank you for sending all the relevant documents for Homerton University Hospital Trust Research and Development Approval of the above research study. As part of the Research and Development approval process we have conducted a site specific assessment for this study. I am happy to inform you that the Trust has approved the conduct of the study and that the Trust will indemnify against negligent harm that might occur during the course of this project.

The following main document/s has been received by R&D department as part of the approval process;

Research Protocol V1	07/02/2016
Participant Information Sheet V2	07/04/2015
Consent Form V2	07/04/2015

All other document/s you have sent in as part of the process has also been received.

I would like to draw your attention to the following conditions of the approval of this research project with which you must comply. **Failure to do so may result in the Trust withdrawing R&D approval which allows you to conduct this research project at Homerton University Hospital NHS Foundation Trust.**

Untoward events - Should any untoward event occur it is **essential** that you complete a clinical incident form and write on the form 'R&D'. Contact the R&D Office immediately and if patients or staff are involved in an incident you must also contact the Risk Manager on 020 8510 7649.

Incorporating hospital and community health services, teaching and research

Appendix 8. South London and Maudsley NHS Foundation Trust Research and Development Approval

**Institute of
Psychiatry,
Psychology &
Neuroscience**

Research and
Development
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Miss Sarah Miles
Trainee Clinical Psychologist
Royal Holloway University of London
Clinical Psychology Building
Egham, Surrey TW10

27th July 2016

Dear Miss Miles

Letter of access for research

In accepting this letter, each participating organisation confirms your right of access to conduct research through their organisation for the purpose and on the terms and conditions set out below. This right of access commences on 27 July 2016 and ends on 21 September 2017 unless terminated earlier in accordance with the clauses below.

As an existing NHS employee you do not require an additional honorary research contract with the participating organisation. South London and Maudsley NHS Foundation Trust is satisfied that the research activities that you will undertake in the organisation are commensurate with the activities you undertake for your employer. Your employer is fully responsible for ensuring such checks as are necessary have been carried out. Your employer has confirmed in writing to this organisation that the necessary pre-engagement checks are in place in accordance with the role you plan to carry out in this organisation. Evidence of checks should be available on request to South London and Maudsley NHS Foundation Trust.

You have a right of access to conduct such research as confirmed in writing in the letter of permission for research from South London and Maudsley NHS Foundation Trust. Please note that you cannot start the research until the Principal Investigator for the research project has received a letter from us giving the organisation permission to conduct the project.

You are considered to be a legal visitor to South London and Maudsley NHS Foundation Trust premises. You are not entitled to any form of payment or access to other benefits provided by South London and Maudsley NHS Foundation Trust or this organisation to employees and this letter does not give rise to any other relationship between you and South London and Maudsley NHS Foundation Trust, in particular that of an employee.

While undertaking research through South London and Maudsley NHS Foundation Trust, you will remain accountable to your employer Camden and Islington NHS Foundation Trust but you are required to follow the reasonable instructions of your nominated manager Dr Janet Wingrove in this organisation or those given on her/his behalf in relation to the terms of this right of access.

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L003 - NHS to NHS letter of access for NH researchers who have a substantive NHS contract of employment with the organisation or clinical academics with an honorary clinical contract with an NHS organisation
Version 2.3, August 2013
Research in the NHS: HR Good Practice Resource Pack

Appendix 9. The Demographic Variable Questionnaire
Demographic Questions at Screening

Number of Previous Depressive Episodes

Please provide details of any previous depressive episodes and when these were:

Previous Hospital Admissions

Please provide details of any previous hospital admissions, when these were, and what they were for:

Current Comorbidity

Besides depression, have you been given any other mental health diagnoses? If so, when?

Medication (name, duration and dosage)

Please provide information such as the name, dosage and duration that you have been taking any medication for. This should include medication that you are taking currently, and medication you have taken previously. It would be helpful to provide information on both prescribed medication (such as antidepressants or contraception) and medication that you purchase over-the-counter (such as St. John's Wort or paracetamol).

Health

Do you have a disability? (*Please tick one*) Yes No

If yes, please specify

Do you have any physical health diagnoses, long-term conditions (such as diabetes, heart disease, cancer) or medically unexplained symptoms (such as chronic pain)? If yes, please describe.

Do you drink Alcohol? Yes No

If yes, how much do you consume each week?

Do you take any recreational drugs? Yes No

If yes, what do you take, and how often?

Psychological Treatment

Are you receiving any current psychological treatment (such as cognitive behavioural, psychodynamic or family therapy?) Please tick one.

Yes No

If yes, which type, how often and how long for?

Have you had any form of psychological treatment previously?

Yes No

If yes, which type, how often and how long for?

Previous Life Events

Please describe any previous life events (such as being involved in an accident, moving house, going through a relationship breakdown, or bereavement) that you have experienced:

Are you experiencing any “life events” or going through any significant life changes currently? If yes, please describe.

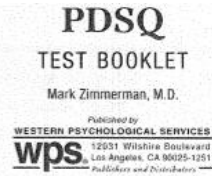
Appendix 10. The Patient Diagnostic Screening Questionnaire (PDSQ; Zimmerman & Mattia, 2001)

Name: _____ Age: _____ ID #: _____

Date: _____ Gender: Male Female Education (Years Completed): _____

Ethnicity: Asian Black/African American Hispanic/Latino Native American Native Hawaiian/Other Pacific Islander White Other

This form asks you about emotions, moods, thoughts, and behaviors. For each question, check the box in the Yes column if it describes how you have been acting, feeling, or thinking. If the item does not apply to you, check the box in the No column. Please answer every question.



- | Yes | No | DURING THE PAST 2 WEEKS... |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 1. ...did you feel sad or depressed? |
| <input type="checkbox"/> | <input type="checkbox"/> | 2. ...did you feel sad or depressed for most of the day, nearly every day? |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. ...did you get less joy or pleasure from almost all of the things you normally enjoy? |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. ...were you less interested in almost all of the activities you are usually interested in? |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. ...was your appetite significantly <i>smaller</i> than usual nearly every day? |
| <input type="checkbox"/> | <input type="checkbox"/> | 6. ...was your appetite significantly <i>greater</i> than usual nearly every day? |
| <input type="checkbox"/> | <input type="checkbox"/> | 7. ...did you sleep at least 1 to 2 hours <i>less</i> than usual nearly every day? |
| <input type="checkbox"/> | <input type="checkbox"/> | 8. ...did you sleep at least 1 to 2 hours <i>more</i> than usual nearly every day? |
| <input type="checkbox"/> | <input type="checkbox"/> | 9. ...did you feel very jumpy and physically restless, and have a lot of trouble sitting calmly in a chair, nearly every day? |
| <input type="checkbox"/> | <input type="checkbox"/> | 10. ...did you feel tired out nearly every day? |
| <input type="checkbox"/> | <input type="checkbox"/> | 11. ...did you frequently feel guilty about things you have done? |
| <input type="checkbox"/> | <input type="checkbox"/> | 12. ...did you put yourself down and have negative thoughts about yourself nearly every day? |
| <input type="checkbox"/> | <input type="checkbox"/> | 13. ...did you feel like a failure nearly every day? |
| <input type="checkbox"/> | <input type="checkbox"/> | 14. ...did you have problems concentrating nearly every day? |
| <input type="checkbox"/> | <input type="checkbox"/> | 15. ...was decision making more difficult than normal nearly every day? |
| <input type="checkbox"/> | <input type="checkbox"/> | 16. ...did you frequently think of dying in passive ways like going to sleep and not waking up? |
| <input type="checkbox"/> | <input type="checkbox"/> | 17. ...did you wish you were dead? |
| <input type="checkbox"/> | <input type="checkbox"/> | 18. ...did you think you'd be better off dead? |
| <input type="checkbox"/> | <input type="checkbox"/> | 19. ...did you have thoughts of suicide, even though you would not really do it? |
| <input type="checkbox"/> | <input type="checkbox"/> | 20. ...did you seriously consider taking your life? |
| <input type="checkbox"/> | <input type="checkbox"/> | 21. ...did you think about a specific way to take your life? |

22. Have you *ever experienced* a traumatic event such as combat, rape, assault, sexual abuse, or any other extremely upsetting event?
23. Have you *ever witnessed* a traumatic event such as rape, assault, someone dying in an accident, or any other extremely upsetting incident?

- DURING THE PAST 2 WEEKS...**
24. ...did thoughts about a traumatic event frequently pop into your mind?
25. ...did you frequently get upset because you were thinking about a traumatic event?
26. ...were you frequently bothered by memories or dreams of a traumatic event?
27. ...did reminders of a traumatic event cause you to feel intense distress?
28. ...did you try to block out thoughts or feelings related to a traumatic event?
29. ...did you try to avoid activities, places, or people that reminded you of a traumatic event?
30. ...did you have flashbacks, where it felt like you were reliving a traumatic event?
31. ...did reminders of a traumatic event make you shake, break out into a sweat, or have a racing heart?
32. ...did you feel distant and cutoff from other people because of having experienced a traumatic event?
33. ...did you feel emotionally numb because of having experienced a traumatic event?
34. ...did you give up on goals for the future because of having experienced a traumatic event?
35. ...did you keep your guard up because of having experienced a traumatic event?
36. ...were you jumpy and easily startled because of having experienced a traumatic event?

Additional copies of this form (W-385A) may be purchased from WPS. Please contact us at 800-648-8857, Fax 310-478-7838, or www.wpspublish.com.

W-385A

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- | Yes | No | DURING THE PAST 2 WEEKS... | |
|--------------------------|--------------------------|----------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 37. | ...did you often go on eating binges (eating a <i>very large</i> amount of food very quickly over a short period of time)? |
| <input type="checkbox"/> | <input type="checkbox"/> | 38. | ...did you often feel you could not control how much you were eating during an eating binge? |
| <input type="checkbox"/> | <input type="checkbox"/> | 39. | ...did you go on eating binges during which you ate so much that you felt uncomfortably full? |
| <input type="checkbox"/> | <input type="checkbox"/> | 40. | ...did you go on eating binges during which you ate a large amount of food even when you didn't feel hungry? |
| <input type="checkbox"/> | <input type="checkbox"/> | 41. | ...did you eat alone during an eating binge because you were embarrassed by how much you were eating? |
| <input type="checkbox"/> | <input type="checkbox"/> | 42. | ...did you go on eating binges and then feel disgusted with yourself afterward? |
| <input type="checkbox"/> | <input type="checkbox"/> | 43. | ...were you very upset with yourself because you were going on eating binges? |
| <input type="checkbox"/> | <input type="checkbox"/> | 44. | ...to prevent gaining weight from an eating binge did you go on strict diets or exercise excessively? |
| <input type="checkbox"/> | <input type="checkbox"/> | 45. | ...to prevent weight gain from an eating binge did you force yourself to vomit or use laxatives or water pills? |
| <input type="checkbox"/> | <input type="checkbox"/> | 46. | ...was your weight, or the shape of your body, one of the most important things that affected your opinion of yourself? |

- | DURING THE PAST 2 WEEKS... | | | |
|----------------------------|--------------------------|-----|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 47. | ...did you worry obsessively about dirt, germs, or chemicals? |
| <input type="checkbox"/> | <input type="checkbox"/> | 48. | ...did you worry obsessively that something bad would happen because you forgot to do something important—like locking the door, turning off the stove, or pulling out the electrical cords of appliances? |
| <input type="checkbox"/> | <input type="checkbox"/> | 49. | ...were there things you felt compelled to do over and over (for at least 1/2 hour per day) that you could not stop doing when you tried? |
| <input type="checkbox"/> | <input type="checkbox"/> | 50. | ...were there things you felt compelled to do over and over even though they interfered with getting other things done? |
| <input type="checkbox"/> | <input type="checkbox"/> | 51. | ...did you wash and clean yourself or things around you obsessively and excessively? |
| <input type="checkbox"/> | <input type="checkbox"/> | 52. | ...did you obsessively and excessively check things or repeat actions over and over again? |
| <input type="checkbox"/> | <input type="checkbox"/> | 53. | ...did you count things obsessively and excessively? |

- | DURING THE PAST 2 WEEKS... | | | |
|-------------------------------------|--------------------------|-----|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 54. | ...did you get very scared because your heart was beating fast? |
| <input type="checkbox"/> | <input type="checkbox"/> | 55. | ...did you get very scared because you were short of breath? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 56. | ...did you get very scared because you were feeling shaky or faint? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 57. | ...did you get sudden attacks of intense anxiety or fear that came on from out of the blue, for no reason at all? |
| <input type="checkbox"/> | <input type="checkbox"/> | 58. | ...did you get sudden attacks of very intense anxiety or fear during which you thought something terrible might happen, such as your dying, going crazy, or losing control? |
| <input type="checkbox"/> | <input type="checkbox"/> | 59. | ...did you have sudden, unexpected attacks of anxiety during which you had three or more of the following symptoms: heart racing or pounding, sweating, shakiness, shortness of breath, nausea, dizziness, or feeling faint? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 60. | ...did you worry a lot about having unexpected anxiety attacks? |
| <input type="checkbox"/> | <input type="checkbox"/> | 61. | ...did you have anxiety attacks that caused you to avoid certain situations or to change your behavior or normal routine? |

- | DURING THE PAST 2 WEEKS... | | | |
|----------------------------|--------------------------|-----|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 62. | ...did things happen that you knew were true, but that other people told you were your imagination? |
| <input type="checkbox"/> | <input type="checkbox"/> | 63. | ...were you convinced that other people were watching you, talking about you, or spying on you? |
| <input type="checkbox"/> | <input type="checkbox"/> | 64. | ...did you think that you were in danger because someone was plotting to hurt you? |
| <input type="checkbox"/> | <input type="checkbox"/> | 65. | ...did you think that you had special powers other people didn't have? |
| <input type="checkbox"/> | <input type="checkbox"/> | 66. | ...did you think that some outside force or power was controlling your body or mind? |
| <input type="checkbox"/> | <input type="checkbox"/> | 67. | ...did you hear voices that other people didn't hear, or see things that other people didn't see? |

NOTE: MOST OF THE FOLLOWING QUESTIONS REFER TO THE PAST 6 MONTHS.

-
- | Yes | No | DURING THE PAST 6 MONTHS... |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 68. ...did you regularly avoid any situations because you were afraid they'd cause you to have an anxiety attack? |
| <input type="checkbox"/> | <input type="checkbox"/> | 69. ...did any of the following make you feel fearful, anxious, or nervous because you were afraid you'd have an anxiety attack in the situation? |
| <input type="checkbox"/> | <input type="checkbox"/> | a. going outside far away from home |
| <input type="checkbox"/> | <input type="checkbox"/> | b. being in crowded places |
| <input type="checkbox"/> | <input type="checkbox"/> | c. standing in long lines |
| <input type="checkbox"/> | <input type="checkbox"/> | d. being on a bridge or in a tunnel |
| <input type="checkbox"/> | <input type="checkbox"/> | e. traveling in a bus, train, or plane |
| <input type="checkbox"/> | <input type="checkbox"/> | f. driving or riding in a car |
| <input type="checkbox"/> | <input type="checkbox"/> | g. being home alone |
| <input type="checkbox"/> | <input type="checkbox"/> | h. being in wide-open spaces (like a park) |
| <input type="checkbox"/> | <input type="checkbox"/> | 70. ...did you almost always get very anxious as soon as you were in any of the above situations? |
| <input type="checkbox"/> | <input type="checkbox"/> | 71. ...did you avoid any of the above situations because they made you feel anxious or fearful? |
-

- DURING THE PAST 6 MONTHS...
- | | | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 72. ...did you worry a lot about embarrassing yourself in front of others? |
| <input type="checkbox"/> | <input type="checkbox"/> | 73. ...did you worry a lot that you might do something to make people think that you were stupid or foolish? |
| <input type="checkbox"/> | <input type="checkbox"/> | 74. ...did you feel very nervous in situations where people might pay attention to you? |
| <input type="checkbox"/> | <input type="checkbox"/> | 75. ...were you extremely nervous in social situations? |
| <input type="checkbox"/> | <input type="checkbox"/> | 76. ...did you regularly avoid any situations because you were afraid you'd do or say something to embarrass yourself? |
| <input type="checkbox"/> | <input type="checkbox"/> | 77. ...did you worry a lot about doing or saying something to embarrass yourself in any of the following situations? |
| <input type="checkbox"/> | <input type="checkbox"/> | a. public speaking |
| <input type="checkbox"/> | <input type="checkbox"/> | b. eating in front of other people |
| <input type="checkbox"/> | <input type="checkbox"/> | c. using public restrooms |
| <input type="checkbox"/> | <input type="checkbox"/> | d. writing in front of others |
| <input type="checkbox"/> | <input type="checkbox"/> | e. saying something stupid when you were with a group of people |
| <input type="checkbox"/> | <input type="checkbox"/> | f. asking a question when in a group of people |
| <input type="checkbox"/> | <input type="checkbox"/> | g. business meetings |
| <input type="checkbox"/> | <input type="checkbox"/> | h. parties or other social gatherings |
| <input type="checkbox"/> | <input type="checkbox"/> | 78. ...did you almost always get very anxious as soon as you were in any of the above situations? |
| <input type="checkbox"/> | <input type="checkbox"/> | 79. ...did you avoid any of the above situations because they made you feel anxious or fearful? |
-

- DURING THE PAST 6 MONTHS...
- | | | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 80. ...did you think that you were drinking too much? |
| <input type="checkbox"/> | <input type="checkbox"/> | 81. ...did anyone in your family think or say that you were drinking too much, or that you had an alcohol problem? |
| <input type="checkbox"/> | <input type="checkbox"/> | 82. ...did friends, a doctor, or anyone else think or say that you were drinking too much? |
| <input type="checkbox"/> | <input type="checkbox"/> | 83. ...did you think about cutting down or limiting your drinking? |
| <input type="checkbox"/> | <input type="checkbox"/> | 84. ...did you think that you had an alcohol problem? |
| <input type="checkbox"/> | <input type="checkbox"/> | 85. ...because of your drinking did you have problems in your marriage; at your job; with your friends or family; doing household chores; or in any other important area of your life? |
-

- | Yes | No | DURING THE PAST 6 MONTHS... |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | 86. ...did you think that you were using drugs too much? |
| <input type="checkbox"/> | <input type="checkbox"/> | 87. ...did anyone in your family think or say that you were using drugs too much, or that you had a drug problem? |
| <input type="checkbox"/> | <input type="checkbox"/> | 88. ...did friends, a doctor, or anyone else think or say that you were using drugs too much? |
| <input type="checkbox"/> | <input type="checkbox"/> | 89. ...did you think about cutting down or limiting your drug use? |
| <input type="checkbox"/> | <input type="checkbox"/> | 90. ...did you think you had a drug problem? |
| <input type="checkbox"/> | <input type="checkbox"/> | 91. ...because of your drug use did you have problems in your marriage; at your job; with your friends or family; doing household chores; or in any other important area of your life? |

DURING THE PAST 6 MONTHS...

- 92. ...were you a nervous person on most days?
- 93. ...did you worry a lot that bad things might happen to you or someone close to you?
- 94. ...did you worry about things that other people said you shouldn't worry about?
- 95. ...were you worried or anxious about a number of things in your daily life on most days?
- 96. ...did you often feel restless or on edge because you were worrying?
- 97. ...did you often have problems falling asleep because you were worrying about things?
- 98. ...did you often feel tension in your muscles because of anxiety or stress?
- 99. ...did you often have difficulty concentrating because your mind was on your worries?
- 100. ...were you often snappy or irritable because you were worrying or feeling stressed out?
- 101. ...was it hard for you to control or stop your worrying on most days?

DURING THE PAST 6 MONTHS...

- 102. ...have you had a lot of stomach and intestinal problems such as nausea, vomiting, excessive gas, stomach bloating, or diarrhea?
- 103. ...have you been bothered by aches and pains in many different parts of your body?
- 104. Do you get sick more than most people?
- 105. Has your physical health been poor *most of your life*?
- 106. Are your doctors *usually* unable to find a physical cause for your physical symptoms?

DURING THE PAST 6 MONTHS...

- 102. ...have you had a lot of stomach and intestinal problems such as nausea, vomiting, excessive gas, stomach bloating, or diarrhea?
- 103. ...have you been bothered by aches and pains in many different parts of your body?
- 104. Do you get sick more than most people?
- 105. Has your physical health been poor *most of your life*?
- 106. Are your doctors *usually* unable to find a physical cause for your physical symptoms?

DURING THE PAST 6 MONTHS...

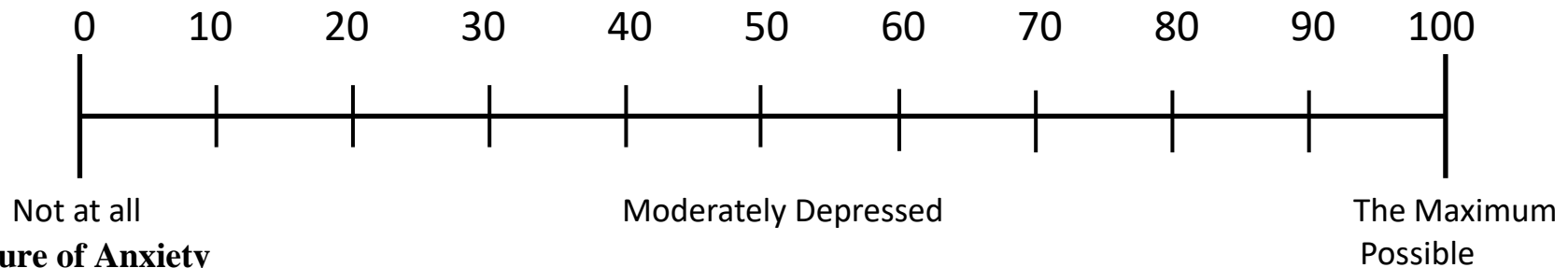
- 107. ...did you often worry that you might have a serious physical illness?
 - 108. ...was it hard to stop worrying that you have a serious physical illness?
 - 109. ...did your doctor say you didn't have a serious illness but it was still hard to stop thinking about it?
 - 110. ...did you worry so much about having a serious illness that it interfered with your activities or it caused you problems?
 - 111. ...did you visit the doctor a lot because you were worried that you had a serious physical illness?
-

Appendix 12. Idiographic Visual Analogue Scales

Daily Record Sheet

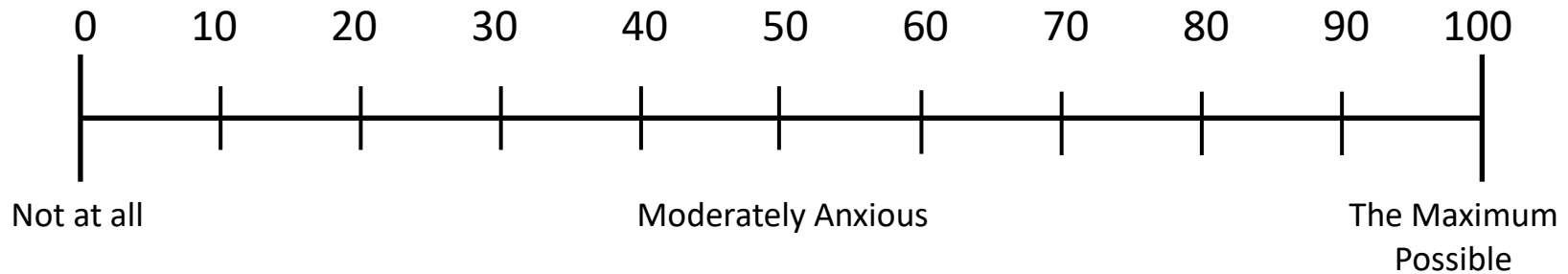
Measure of Mood

Over the last 24 hours, **how depressed have you felt?** Please rate the intensity of your depression on a scale of 0 to 100 where 0 is “*not at all depressed*”, 100 is “*the maximum possible*” and 50 is “*moderately depressed*”.



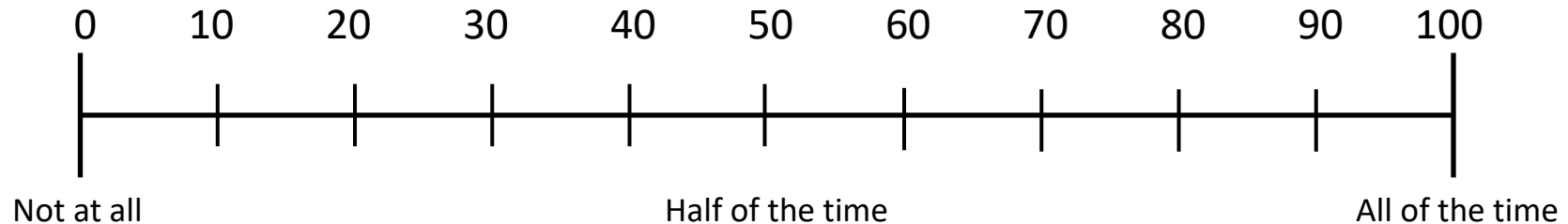
Measure of Anxiety

Over the last 24 hours, **how anxious have you felt?** Please rate the intensity of your anxiety on a scale of 0 to 100 where 0 is “*not at all anxious*”, 100 is “*the maximum possible*” and 50 is “*moderately anxious*”.



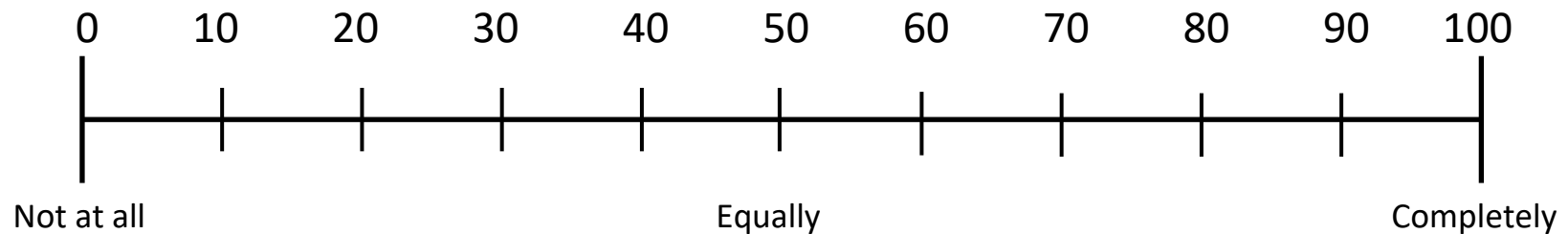
Measure of Rumination

Over the last 24 hours, how frequently have you ruminated? Ruminating is repetitively thinking about your emotional experience of depression, how it was caused and its consequences. You might refer to this as brooding or analysing. Please rate how frequently you have ruminated / brooded / analysed on a scale of 0 to 100 where 0 is “*not at all*”, 100 is “*all of the time*” and 50 is “*half of the time*”.



Measure of Avoidance Behaviour

Over the last 24 hours, how frequently have you avoided doing things that you needed to do? Please rate how much you have avoided doing things on a scale of 0 to 100 where 0 is “*not at all*”, 100 is “*completely avoided doing things*” and 50 is that you have “*equally avoided and did not avoid doing things*”.

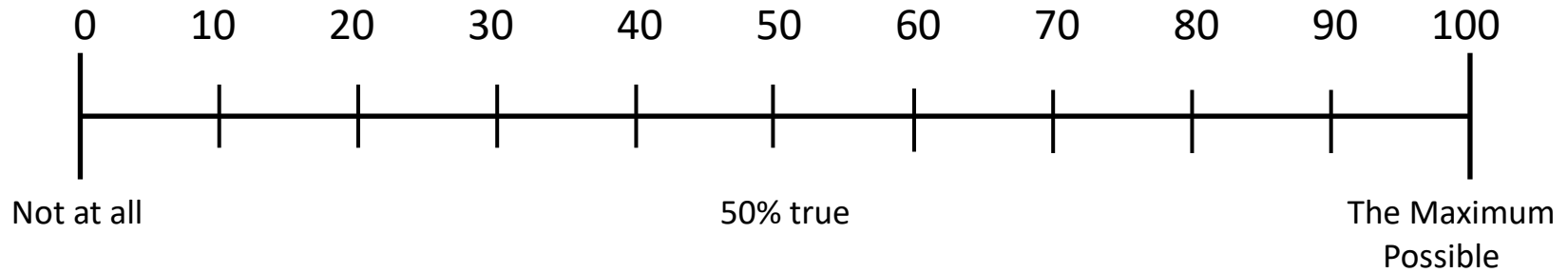


Measure of Belief

Over the last 24 hours, how true has your belief

“ _____ ”
felt?

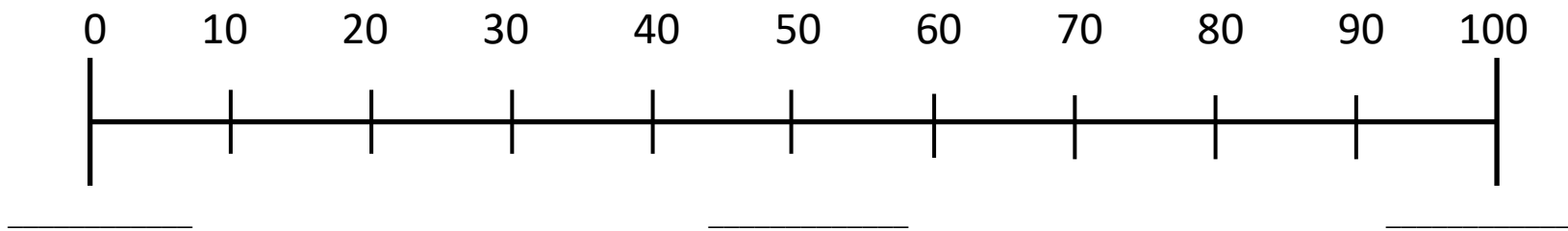
Please rate how true it has felt on a scale of 0 to 100 where 0 is “*not at all true*”, 100 is “*the maximum possible*”, and 50 is “*50% true*”.



Measure of Chosen Symptom

For this scale please rate your symptom of depression that you have chosen to monitor across the duration of your treatment and the research study. Your therapist should have helped you to decide on this. Please write in what you are measuring and how it is rated on the scale (“*not at all*”, “*completely*”).

I am measuring _____



Appendix 13. The Montgomery-Åsberg Depression Rating Scale (MADRS; Montgomery & Åsberg, 1979)

Montgomery and Asberg Depression Rating Scale (MADRS)

The rating should be based on a clinical interview moving from broadly phrased questions about symptoms to more detailed ones which allow a precise rating of severity. The rater must decide whether the rating lies on the defined scale steps (0, 2, 4, 6) or between them (1,3,5).

It is important to remember that it is only on rare occasions that a depressed patient is encountered who cannot be rated on the items in the scale. If definite answers cannot be elicited from the patient all relevant clues as well as information from other sources should be used as a basis for the rating in line with customary clinical practice.

The scale may be used for any time interval between ratings, be it weekly or otherwise but this must be recorded.

1. Apparent Sadness

Representing despondency, gloom and despair, (more than just ordinary transient low spirits) reflected in speech, facial expression, and posture.

Rate by depth and inability to brighten up.

- 0 No sadness.
- 1
- 2 Looks dispirited but does brighten up without difficulty.
- 3
- 4 Appears sad and unhappy most of the time.
- 5
- 6 Looks miserable all the time. Extremely despondent.

2. Reported sadness

Representing reports of depressed mood, regardless of whether it is reflected in appearance or not. Includes low spirits, despondency or the feeling of being beyond help and without hope.

Rate according to intensity, duration and the extent to which the mood is reported to be influenced by events.

- 0 Occasional sadness in keeping with the circumstances.
- 1
- 2 Sad or low but brightens up without difficulty.
- 3
- 4 Pervasive feelings of sadness or gloominess. The mood is still influenced by external circumstances.
- 5
- 6 Continuous or unvarying sadness, misery or despondency.

3. Inner tension

Representing feelings of ill-defined discomfort, edginess, inner turmoil, mental tension mounting to either panic, dread or anguish.

Rate according to intensity, frequency, duration and the extent of reassurance called for.

0 Placid. Only fleeting inner tension.

1

2 Occasional feelings of edginess and ill defined discomfort.

3

4 Continuous feelings of inner tension or intermittent panic which the patient can only master with some difficulty.

5

6 Unrelenting dread or anguish. Overwhelming panic

4. Reduced sleep

Representing the experience of reduced duration or depth of sleep compared to the subject's own normal pattern when well.

0 Sleeps as usual.

1

2 Slight difficulty dropping off to sleep or slightly reduced, light or fitful sleep.

3

4 Sleep reduced or broken by at least two hours.

5

6 Less than two or three hours sleep

5. Reduced appetite

Representing the feeling of a loss of appetite compared with when well.

Rate by loss of desire for food or the need to force oneself to eat.

0 Normal or increased appetite.

1

2 Slightly reduced appetite.

3

4 No appetite. Food is tasteless.

5

6 Needs persuasion to eat at all.

6. Concentration Difficulties

Representing difficulties in collecting one's thoughts amounting to incapacitating lack of concentration. Rate according to intensity, frequency, and degree of incapacity produced.

0 No difficulties in concentrating.

1

2 Occasional difficulties in collecting one's thoughts.

3

4 Difficulties in concentrating and sustaining thought which reduces ability to read or hold a conversation.

5

6 Unable to read or converse without great difficulty.

7. Lassitude

Representing a difficulty getting started or slowness initiating and performing everyday activities.

0 Hardly any difficulty in getting started. No sluggishness.

1

2 Difficulties in starting activities.

3

4 Difficulties in starting simple routine activities which are carried out with effort.

5

6 Complete lassitude. Unable to do anything without help.

8. Inability to feel

Representing the subjective experience of reduced interest in the surroundings, or activities that normally give pleasure. The ability to react with adequate emotion to circumstances or people is reduced.

0 Normal interest in the surroundings and in other people.

1

2 Reduced ability to enjoy usual interests.

3

4 Loss of interest in the surroundings. Loss of feelings or friends and acquaintances.

5

6 The experience of being emotionally paralysed, inability to feel anger, grief or pleasure and a complete or even painful failure to feel for close relatives and friends.

9. Pessimistic thoughts

Representing thoughts of guilt, inferiority, self-reproach, sinfulness, remorse and ruin.

0 No pessimistic thoughts.

1

2 Fluctuating ideas of failure, self-reproach or self depreciation.

3

4 Persistent self-accusations, or definite but still rational ideas of guilt or sin. Increasingly pessimistic about the future.

5

6 Delusions of ruin, remorse or unredeemable sin. Self-accusations which are absurd and unshakable.

10. Suicidal thoughts

Representing the feeling that life is not worth living, that a natural death would be welcome, suicidal thoughts, and preparations for suicide.

Suicidal attempts should not in themselves influence the rating.

0 Enjoys life or takes it as it comes.

1

2 Weary of life. Only fleeting suicidal thoughts.

3

4 Probably better off dead. Suicidal thoughts are common, and suicide is considered as a possible solution, but without specific plans or intention.

5

6 Explicit plans for suicide when there is an opportunity. Active preparation for suicide.

Appendix 14. The Patient Health Questionnaire (PHQ-9; Kroenke & Spitzer, 2002)

Over the <u>last week</u>, how often have you been bothered by any of the following problems?		Not at all	Several days	More than half the days	Nearly every day	
1	Little interest or pleasure in doing things	0	1	2	3	
2	Feeling down, depressed, or hopeless	0	1	2	3	
3	Trouble falling or staying asleep, or sleeping too much	0	1	2	3	
4	Feeling tired or having little energy	0	1	2	3	
5	Poor appetite or overeating	0	1	2	3	
6	Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3	
7	Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3	
8	Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3	
9	Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3	
		A11 – PHQ9 total score				<input type="text"/>

Appendix 15. The Generalized Anxiety Disorder Scale (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006)

Over the <u>last week</u>, how often have you been bothered by any of the following problems?		Not at all	Several days	More than half the days	Nearly every day
1	Feeling nervous, anxious or on edge	0	1	2	3
2	Not being able to stop or control worrying	0	1	2	3
3	Worrying too much about different things	0	1	2	3
4	Trouble relaxing	0	1	2	3
5	Being so restless that it is hard to sit still	0	1	2	3
6	Becoming easily annoyed or irritable	0	1	2	3
7	Feeling afraid as if something awful might happen	0	1	2	3
		A12 – GAD7 total score			

Appendix 16. The Behavioural Activation for Depression Scale - Short Form (BADs-SF; Manos, Kanter, & Luo, 2011)

Behavioral Activation for Depression Scale – Short Form (BADs-SF)

Please read each statement carefully and then circle the number which best describes how much the statement was true for you DURING THE PAST WEEK, INCLUDING TODAY.

	0 = Not at all 1 2 = A little 3 4 = A lot 5 6 = Completely							AC	AV	T
	0	1	2	3	4	5	6			
1. There were certain things I needed to do that I didn't do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-		<u>R</u>
2. I am content with the amount and types of things I did.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-		-
3. I engaged in many different activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-		-
4. I made good decisions about what type of activities and/or situations I put myself in.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-		-
5. I was an active person and accomplished the goals I set out to do.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-		-
6. Most of what I did was to escape from or avoid something unpleasant.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-	<u>R</u>
7. I spent a long time thinking over and over about my problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-	<u>R</u>
8. I engaged in activities that would distract me from feeling bad.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		-	<u>R</u>
9. I did things that were enjoyable.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	-		-

— — —

Appendix 17. The Dysfunctional Attitudes Scale - Short Form (DAS-SF; Beevers et al., 2007)

DAS-SF1

The sentences below describe people's attitudes. Circle the number which best describes how much each sentence describes your attitude. Your answer should describe the way you think most of the time.

	Totally Agree	Agree	Disagree	Totally Disagree
1. If I don't set the highest standards for myself, I am likely to end up a second-rate person.	1	2	3	4
2. My value as a person depends greatly on what others think of me.	1	2	3	4
3. People will probably think less of me if I make a mistake.	1	2	3	4
4. I am nothing if a person I love doesn't love me.	1	2	3	4
5. If other people know what you are really like, they will think less of you.	1	2	3	4
6. If I fail at my work, then I am a failure as a person.	1	2	3	4
7. My happiness depends more on other people than it does me.	1	2	3	4
8. I cannot be happy unless most people I know admire me.	1	2	3	4
9. It is best to give up your own interests in order to please other people.	1	2	3	4

Appendix 18. The Client Satisfaction Questionnaire (Larsen et al., 1979)

Client Satisfaction Questionnaire-8 (CSQ-8)

(Larsen, Attkisson, Hargreaves, & Nguyen, 1979)

Please help us improve our program by answering some questions about the services you have received. We are interested in your honest opinion, whether they are positive or negative. *Please answer all of the questions.* We also welcome your comments and suggestions. Thank you very much, we really appreciate your help.

CIRCLE YOUR ANSWER

1. How would you rate the quality of service you have received?

4	3	2	1
Excellent	Good	Fair	Poor

2. Did you get the kind of service you wanted?

1	2	3	4
No, definitely not	No, not really	Yes, generally	Yes, definitely

3. To what extent has our program met your needs?

4	3	2	1
Almost all of my needs have been met	Most of my needs have been met	Only a few of my needs have been met	None of my needs have been met

4. If a friend were in need of similar help, would you recommend our program to him or her?

1	2	3	4
No, definitely not	No, I don't think so	Yes, I think so	Yes, definitely

5. How satisfied are you with the amount of help you have received?

1	2	3	4
Quite dissatisfied	Indifferent or mildly dissatisfied	Mostly satisfied	Very satisfied

6. Have the services you received helped you to deal more effectively with your problems?

4	3	2	1
Yes, they helped a great deal	Yes, they helped somewhat	No, they really didn't help	No, they seemed to make things worse

7. In an overall, general sense, how satisfied are you with the service you have received?

4	3	2	1
Very satisfied	Mostly satisfied	Indifferent or mildly dissatisfied	Quite dissatisfied

8. If you were to seek help again, would you come back to our program?

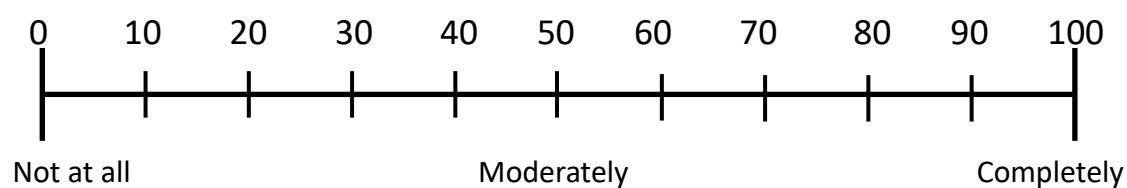
1	2	3	4
No, definitely not	No, I don't think so	Yes, I think so	Yes, definitely

Appendix 19. Client Feedback Form

Client Feedback Form

“I believe that time-intensive behavioural activation is an acceptable treatment for outpatients with depression”.

Please rate how much you agree with the statement above on the scale from 0 to 100 where 0 is “not at all”, 100 is “completely agree” and 50 is “moderately agree”.



Appendix 20. Therapist Feedback Form

Therapist Feedback Form

Please take the time to answer the following questions.

You may wish to look back at any comments you made in your therapy guides to aid your reflection.

1. How acceptable do you view time-intensive BA to be for clients? Please rate your answer on a scale from 0 to 100 where 0 is “*not at all*” and 100 is “*completely*”.
2. How useful do you view time-intensive BA to be for clients referred to your service? Please rate your answer on a scale from 0 to 100 where 0 is “*not at all*” and 100 is “*completely*”.
3. How confident would you feel using time-intensive BA as a first-line treatment for depression? Please rate your answer on a scale from 0 to 100 where 0 is “*not at all*” and 100 is “*completely*”.
4. If your service enabled you to work using an intensive approach, how likely do you think you would be to choose to deliver intensive BA again? Please rate your answer on a scale from 0 to 100 where 0 is “*not at all*” and 100 is “*completely*”.

Appendix 21. The Quality of Behavioural Activation Scale (Dimidjian et al., 2016)

Removed for Copyright purposes.

Appendix 22. Participant Consent Form



CONSENT FORM

Study Title: Can intensive behavioural activation effectively treat depression in only 3 weeks?

Principle Investigator: Sarah Miles

Participant ID number:

Study site:

Please initial the box

1. I confirm that I have read and understand the participant information sheet for the above study and have had the opportunity to ask any questions to the investigator(s) and have had these questions answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my medical care or legal rights being affected.

3. I understand that the information I provide will be collected fairly, will remain secure and confidential, and held no longer than necessary for the purposes of this research.

4. I understand that the information collected about me will be used to support other research in the future, and may be shared anonymously with other researchers.

Appendix 23. Participant Orientation Form

PARTICIPANT ORIENTATION SHEET

Session	Date	Duration of Session	Time of Session
Assessment		2 hours	
1		2 hours	
2		2 hours	
3		2 hours	
4		1 hour	
5		1 hour	
6		1 hour	
7		1 hour	
Optional Booster 1		1 hour	
Optional Booster 2		1 hour	
Optional Booster 3		1 hour	

Each day you will be asked to complete brief measures rating your symptoms of depression. Time required for you to complete these measures has been factored into the time that you have been asked to arrive at the service. The completion of these measures is very important so please be on time.

Most of your face-to-face treatment sessions will last for 1 hour. Your first 3 face-to-face treatment days will last for up to 2 hours. Your booster sessions are optional and will last for up to 1 hour.

You and your therapist might decide to have a short break in your 2 hour sessions. There will be no break in each 1 hour session. You will be able to break to go to the toilet whenever you need to. We might ask you to do an activity/task in your break. It would be good to bring something with you that you could do during your break.

We will ask you to try some activities/tasks between sessions, but we can agree how much you feel able to do.

You will also be given brief outcome measures to complete at home, in-between your sessions. It will be important to complete all of these. At the end of the course of treatment sessions you will be asked to complete some measures again.

We are available any time, Monday to Friday, 09.00-17.00 if you have any questions or concerns.

Things to remember:

Please check this sheet before each of your sessions

1. **Attend all of your sessions.** If you have an emergency and are unable to attend one of your sessions, please try to inform us by calling the reception desk.
2. Please bring your own **diary** / calendar to all of your sessions. If you do not have a diary at the moment then please purchase one.
3. Please bring your own **audio recording device** to your sessions so that you can record your sessions and listen back to them another time.
4. Please bring any **homework sheets** with you to your sessions. Going over your homework will be an important part of your treatment.
5. Please bring all of the **outcome measures** that you have completed in-between each session to your following session.
6. Please bring something with you that you can **do during the break**, if you have one.

Appendix 24. Extract from Therapist Folders

Session 1 - Face-to-face Treatment - Day 1

Date: _____ Patient's ID: _____ Therapist ID: _____

Overview: This session is advised to be up to 2 hours long (though durations will vary). This time would usually be recommended for orienting the participant to treatment, beginning their formulation and explaining activity monitoring. You may also need to ask some more assessment questions. However, BA is not protocol driven. Please use your clinical judgement when necessary.

Remember, treatment sessions should occur no longer than 2 or 3 days apart.

Materials needed: *(see worksheets section)*

1. Audio recording device
2. Scales
 1. Visual Analogue Scales
 2. Patient Health Questionnaire 9
 3. Generalized Anxiety Disorder Scale 7
 4. Behavioural Activation Scale - Short Form
 5. Dysfunctional Attitudes Scale - Short Form
 6. Montgomery-Åsberg Depression Rating Scale
3. Session Summary and Homework sheet
4. Client Expectancy Questionnaire
5. Outcome measures to complete between this session and the next session

Other BA worksheets available: *(see worksheets section)*

6. 10 principles of BA
7. The BA model
8. Activity Monitoring form

Agenda:

1. Collect outcome measures completed over the baseline period and tick when


completed

Visual Analogue Scales completed over the baseline period (7, 14 or 21 sets, depending on length of baseline)

Patient Health Questionnaires completed over the baseline period (1, 2, or 3 sets, depending on length of baseline)

Behavioural Activation Scale - Short Form completed over the baseline period (1, 2, or 3 sets, depending on length of baseline)

Dysfunctional Attitudes Scale - Short Form completed over the baseline period (1, 2, or 3 sets, depending on length of baseline)

Generalized Anxiety Disorder Scale 7 completed over the baseline period (1, 2, or 3 sets, depending on length of baseline)

2. Collect new outcome measures data (completed today) and tick when completed.



Visual Analogue Scales

Patient Health Questionnaire 9

Generalized Anxiety Disorder Scale 7

Behavioural Activation Scale - Short Form


Dysfunctional Attitudes Scale - Short Form



(Note - you will have completed the Montgomery-Åsberg Depression Rating Scale 1, 2 or 3 times over the phone during the baseline phase).

3. Complete Montgomery-Åsberg Depression Rating Scale and tick when completed



Completed measures can be added to the plastic wallet at the back of this session guide.

4.  Start audio-taping if consented (on therapist and participant devices).

5. Review mood, outcomes and homework. **Don't forget to assess risk.**
6. Collaboratively develop an agenda for the session including when the break will be.
7. Psychoeducation / orientation to treatment
8. Ask any remaining assessment questions including whether or not the participant wanted to include a 'cheerleader' in their treatment.
9. Formulate together (*refer to your functional analysis completed during the assessment session*).
10. Refine treatment goals (if necessary) to be in line with the formulation (e.g., so that avoidance becomes a target). Alternatively, goals could be set for homework.
11. Explain activity monitoring, how to use the activity monitoring sheet (*see worksheets section*) and the rationale for it.
12. Session summary (*see summary and homework sheet in worksheets section*)

13. Set homework task and solicit feedback - fill in the homework sheet (*see summary and homework sheet*).

Homework for this session should be activity monitoring.
14. Give Visual Analogue Scales to complete between today's session and the next session (*see worksheets section*). Remind participants of the rationale for completing these.
15. Orient to prompts.

16. Discuss the plan for the next session.

17. Ask clients to complete the Client Expectancy Questionnaire (*see worksheets section*) before leaving the service. They can either complete it in remaining time in the session, or hand it in at reception after completing it in the waiting room.

Tick when completed 

Photocopy any completed worksheets that participants are going to take home with them and store a copy in the wallet provided for this session. Tick when

completed 



Note down the session duration here _____



Note down how long the session break was, and what the client did during the break (if you had one) here:



Therapist's Observations:

Between Session Guidance for Therapists

1. You now have two/three days before seeing your participant again (all working days/the weekend). It will be important to set aside some time to add to your formulation if necessary.
2. Read the plan for the next session and any relevant pages from the BA clinician's guide.
3. Seek supervision.
4. An automated text message will be sent to your participant(s) to remind them about their next appointment time. You may want to check that this has been set up and is working.
5. You can send encouraging text messages/emails to your participant or telephone them at any point.

You can log your prompts using the following table:

<u>Date</u>	<u>Prompt Type Tally</u>			<u>Duration of Contact</u>
	<u>Telephone Call</u>	<u>Text</u>	<u>Voicemail</u>	<u>Email</u>
<hr/>				

Appendix 25. PA's Variability Analysis (Trended Range)

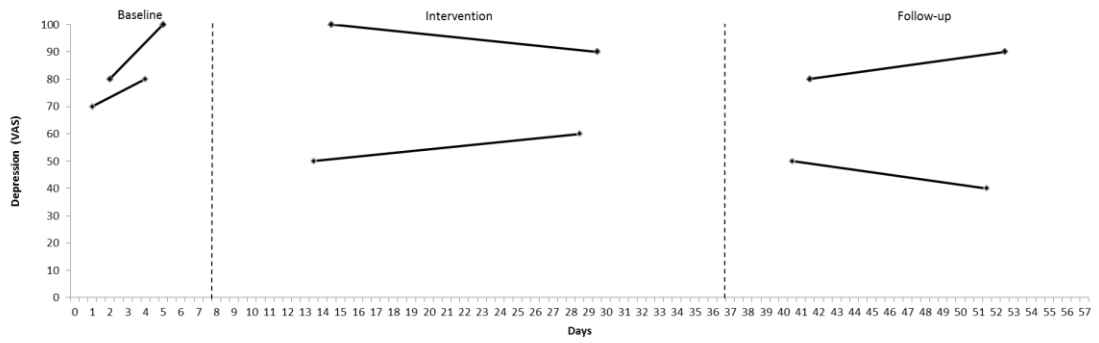


Figure PA7. Depression VAS: trended range

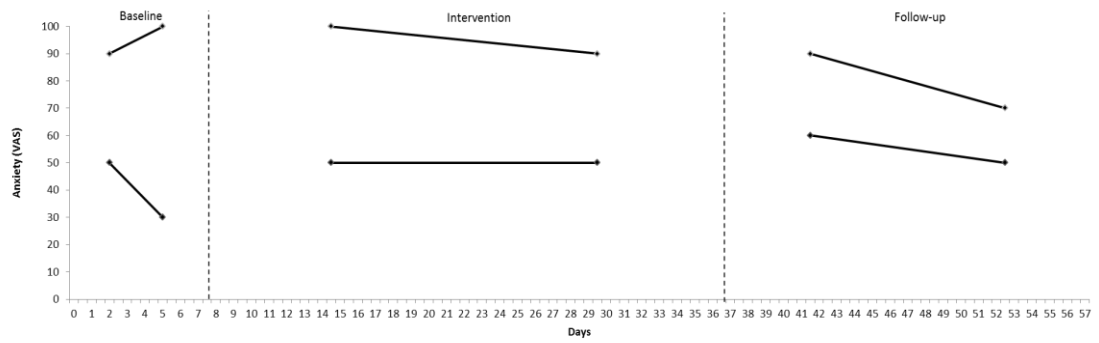


Figure PA8. Anxiety VAS: trended range

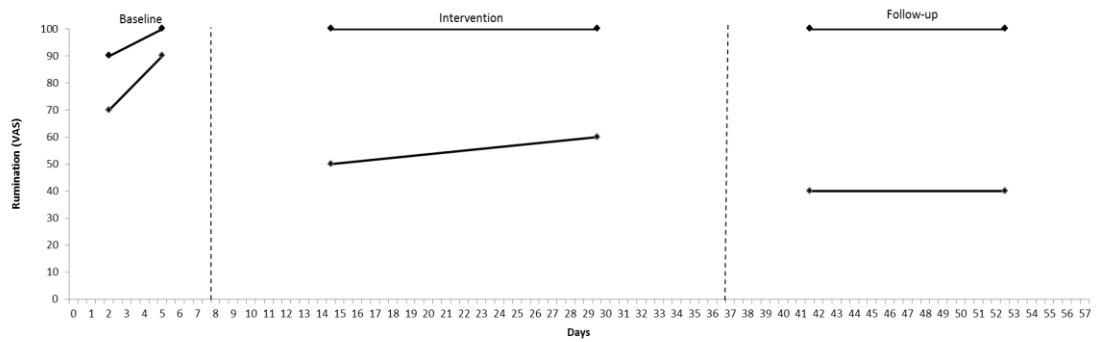


Figure PA9. Rumination VAS: trended range

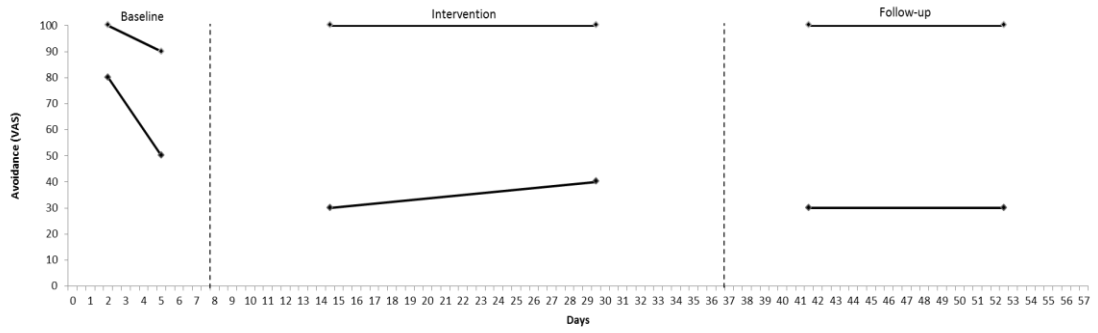


Figure PA10. Avoidance VAS: trended range

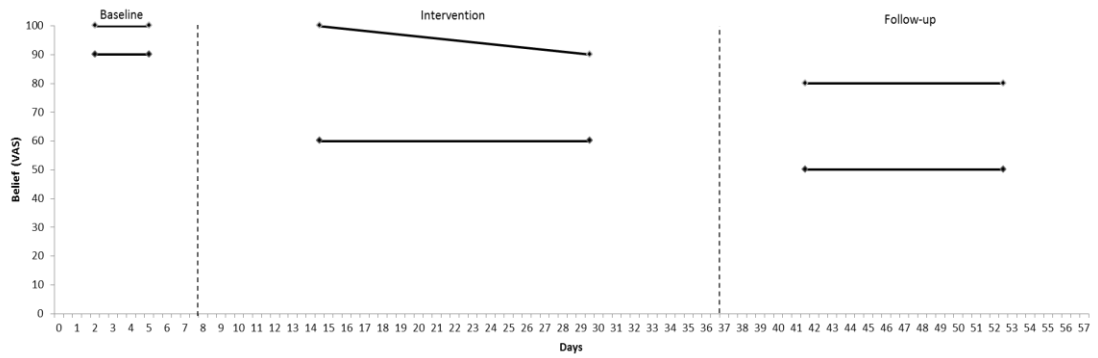


Figure PA11. Belief VAS: trended range

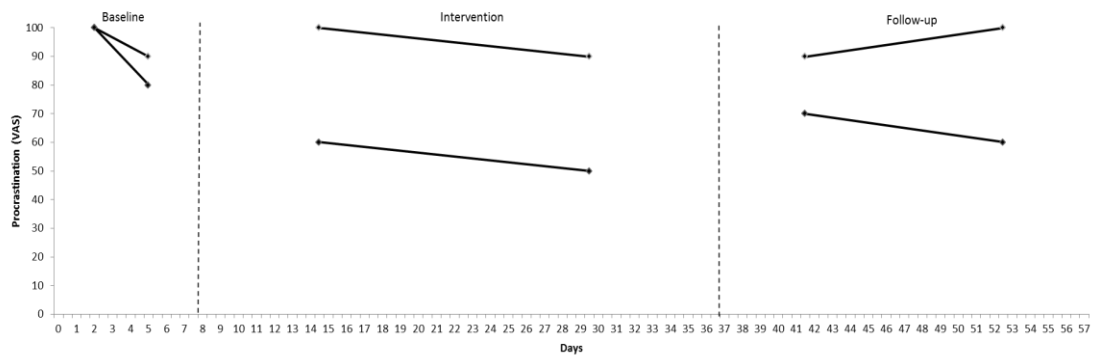


Figure PA12. Procrastination VAS: trended range

Appendix 26. PB's Variability Analysis (Trended Range)

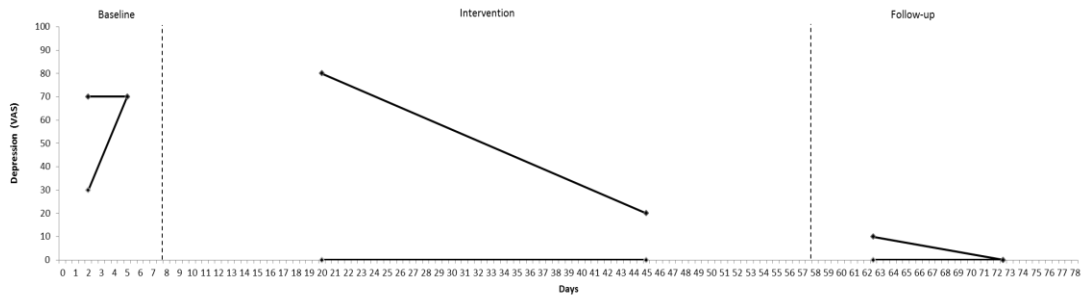


Figure PB7. Depression VAS: trended range

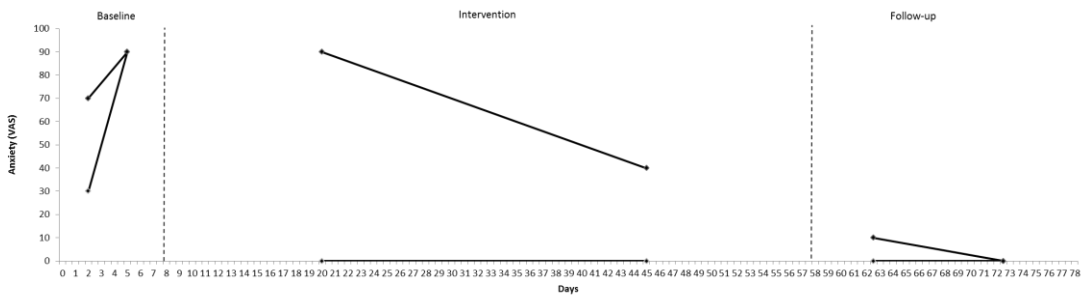


Figure PB8. Anxiety VAS: trended range

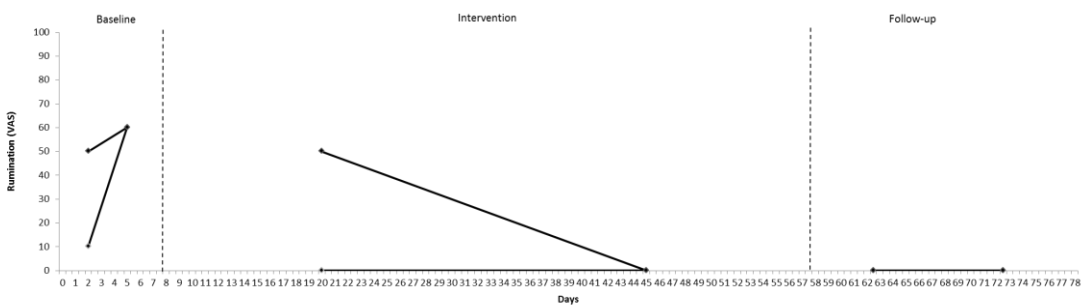


Figure PB9. Rumination VAS: trended range

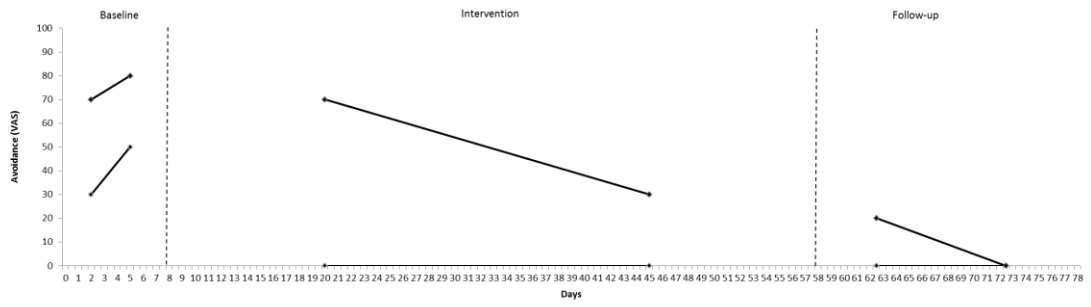


Figure PB10. Avoidance VAS: trended range

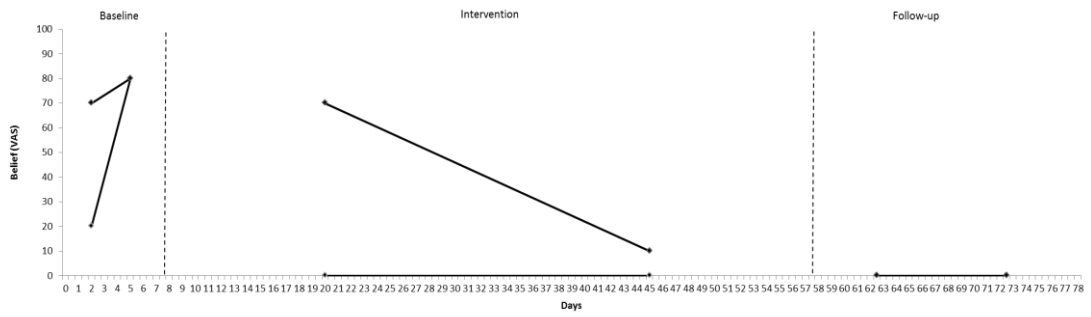


Figure PB11. Belief VAS: trended range

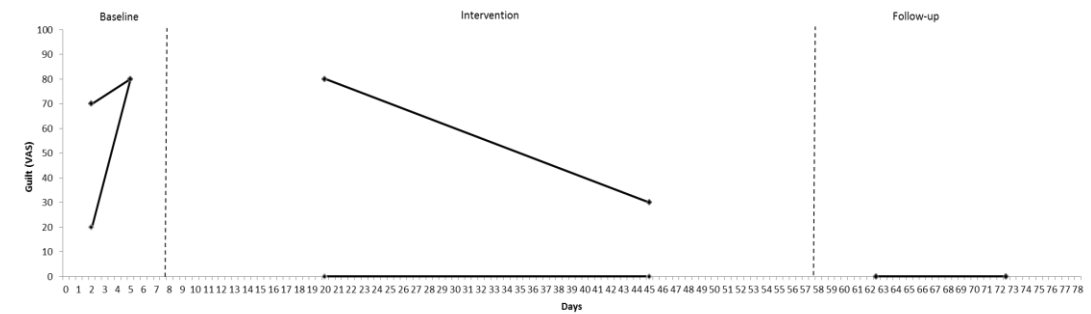


Figure PB12. Guilt VAS: trended range

Appendix 27. PC's Variability Analysis (Trended Range)

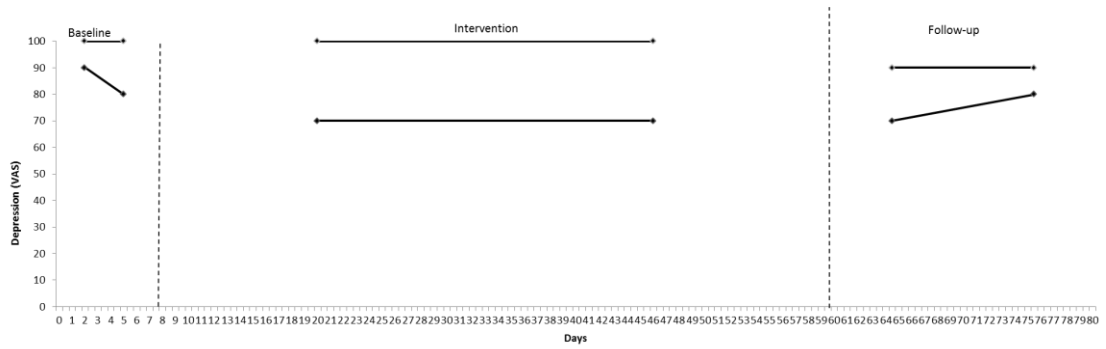


Figure PC7. Depression VAS: trended range

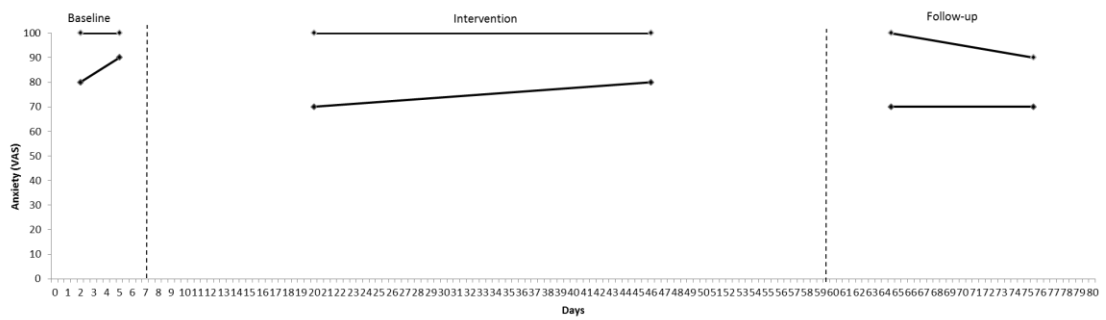


Figure PC8. Anxiety VAS: trended range

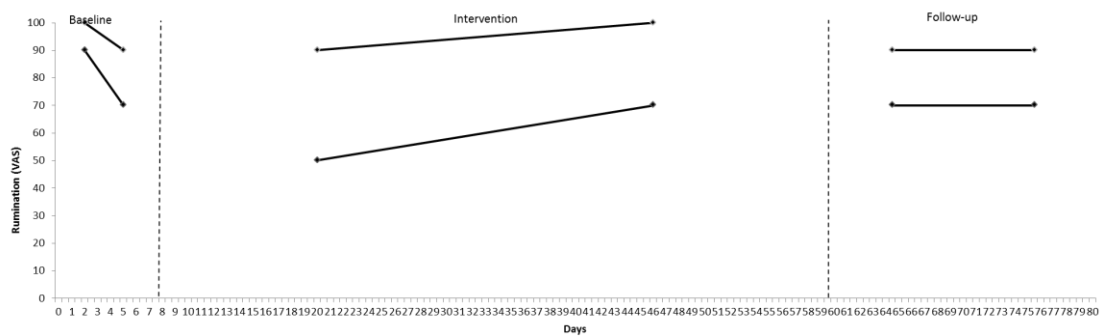


Figure PC9. Rumination VAS: trended range

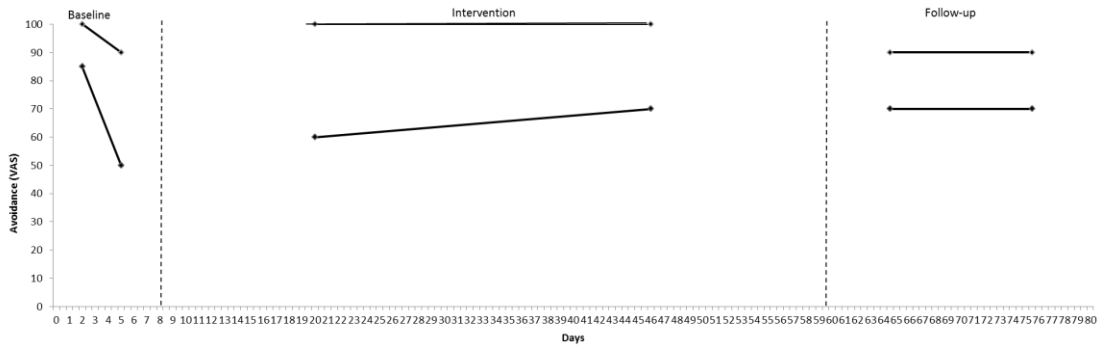


Figure PC10. Avoidance VAS: trended range

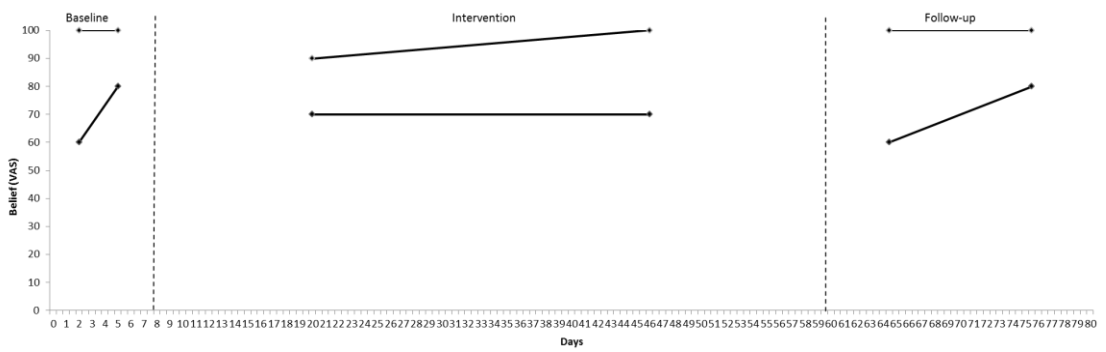


Figure PC11. Belief VAS: trended range

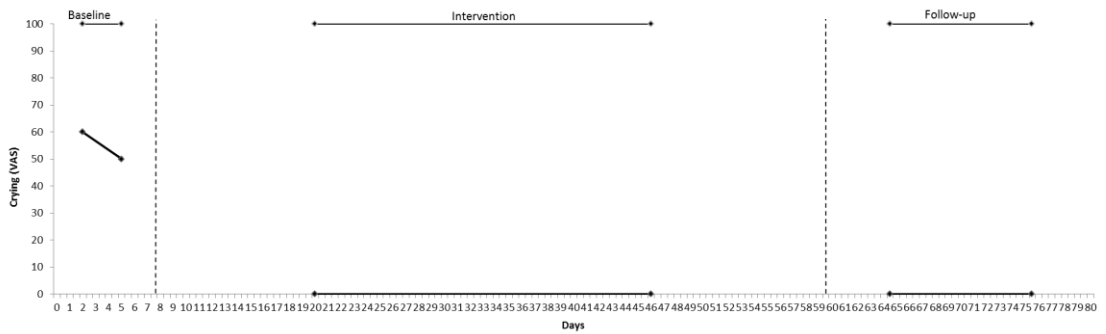


Figure PC12. Crying VAS: trended range

Appendix 28. PD's Variability Analysis (Trended Range)

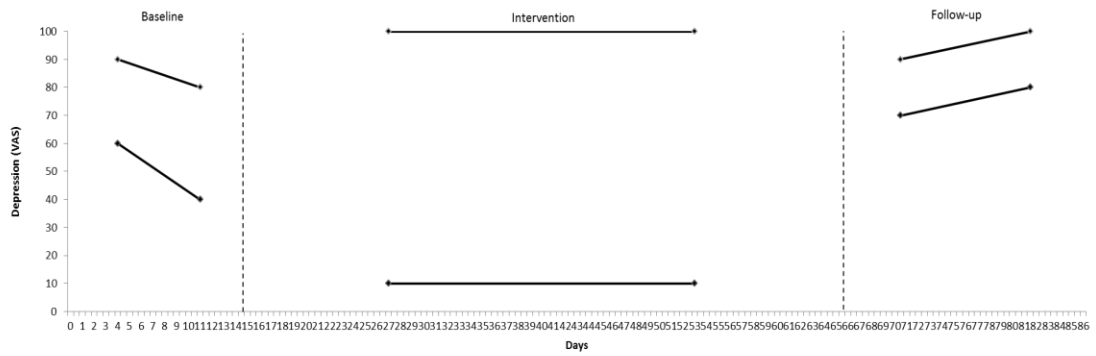


Figure PD7. Depression VAS: trended range

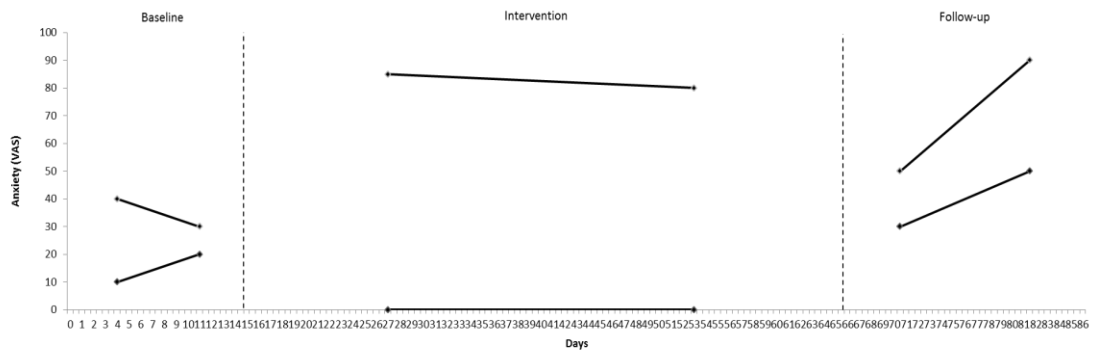


Figure PD8. Anxiety VAS: trended range

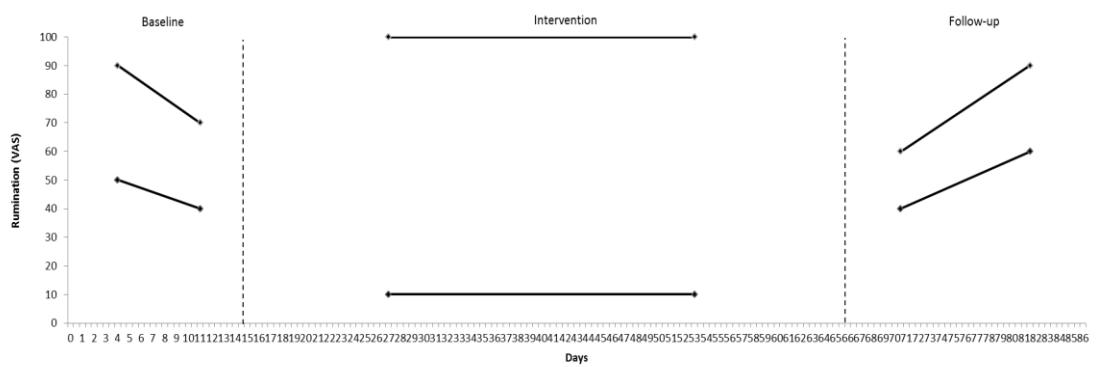


Figure PD9. Rumination VAS: trended range

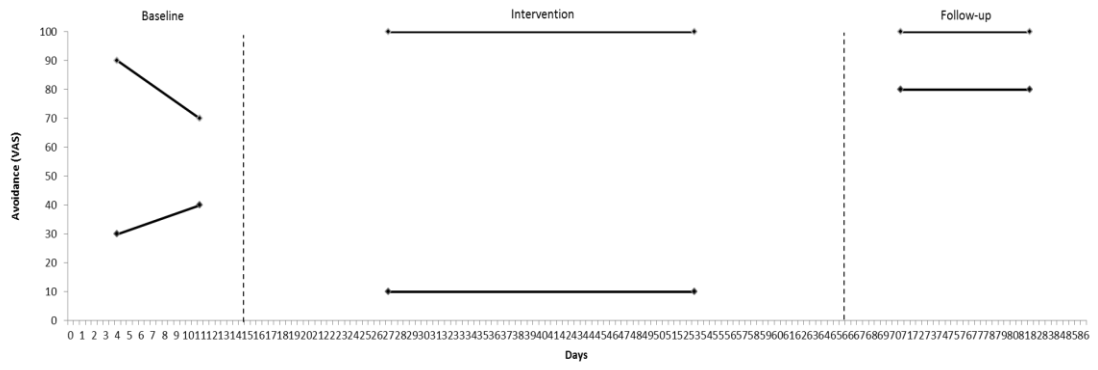


Figure PD10. Avoidance VAS: trended range

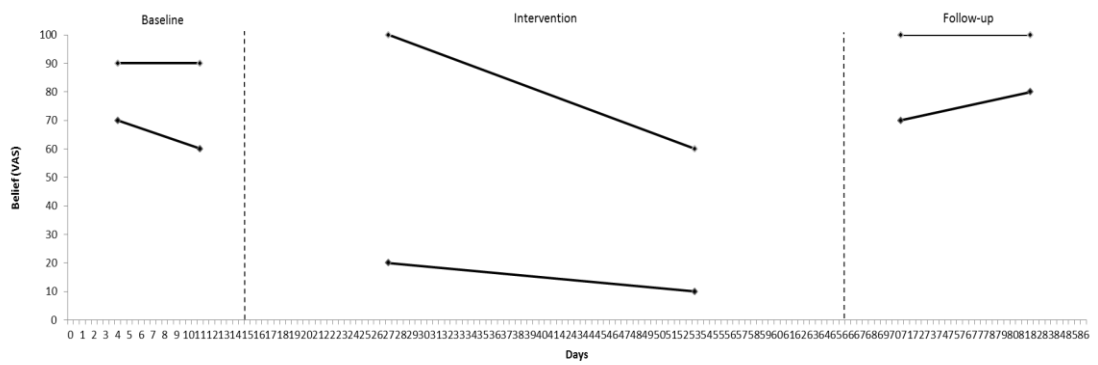


Figure PD11. Belief VAS: trended range

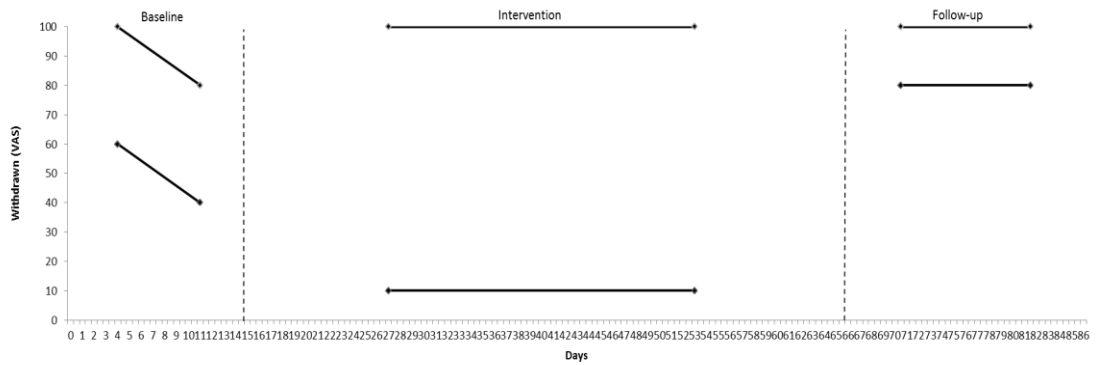


Figure PD12. Withdrawn VAS: trended range

Appendix 29. PE's Variability Analysis (Trended Range)

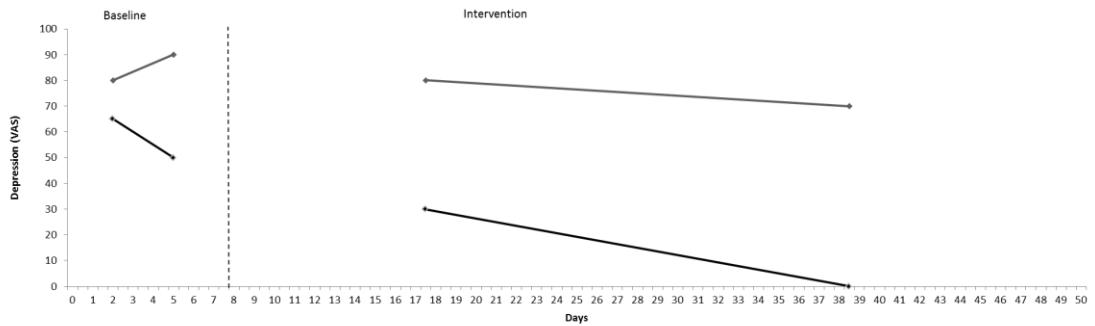


Figure PE7. Depression VAS: trended range

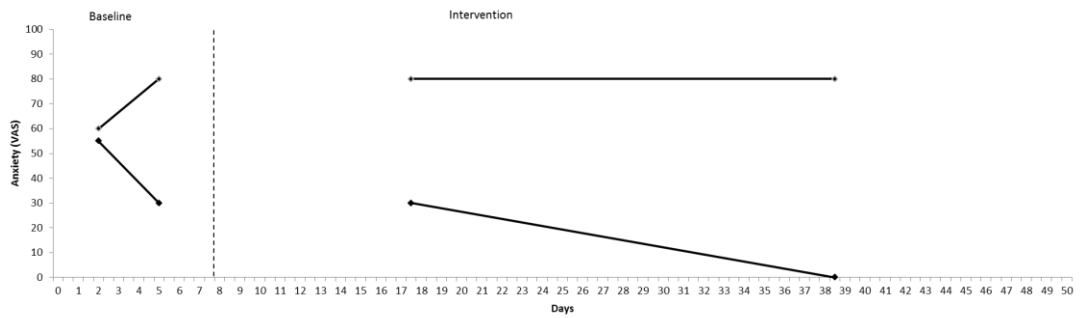


Figure PE8. Anxiety VAS: trended range

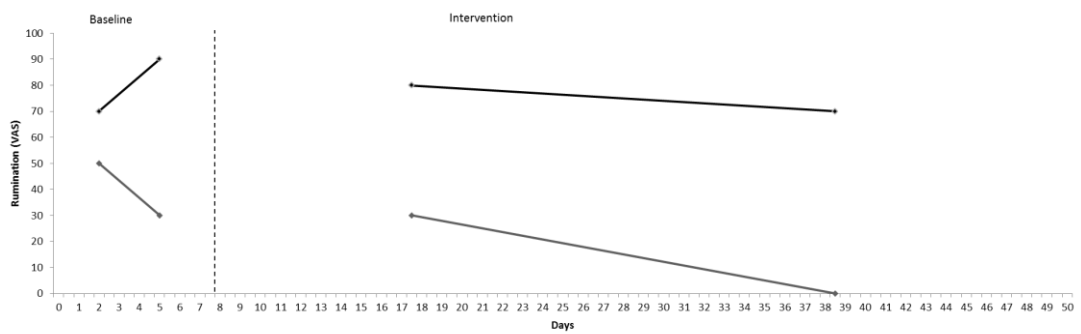


Figure PE9. Rumination VAS: trended range

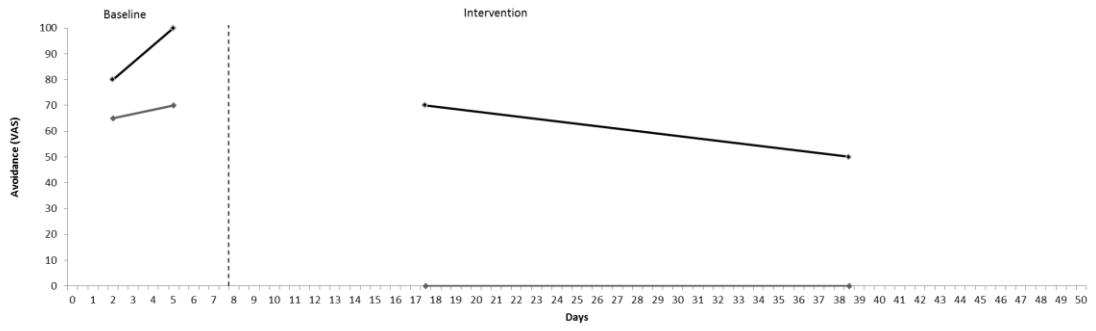


Figure PE10. Avoidance VAS: trended range

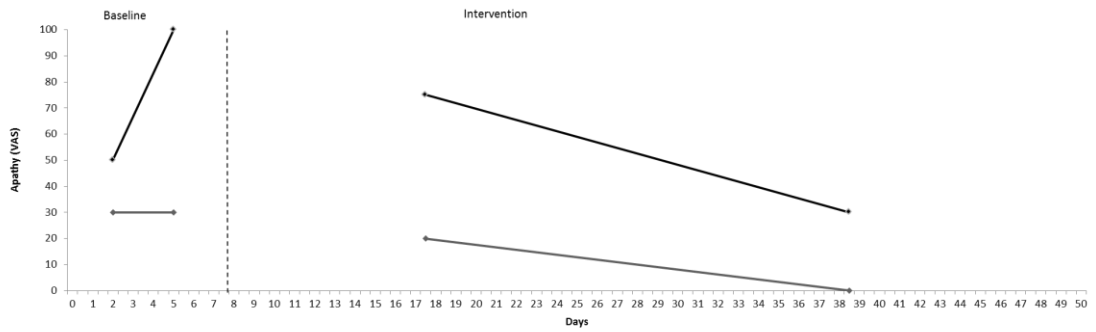


Figure PE11. Belief VAS: trended range

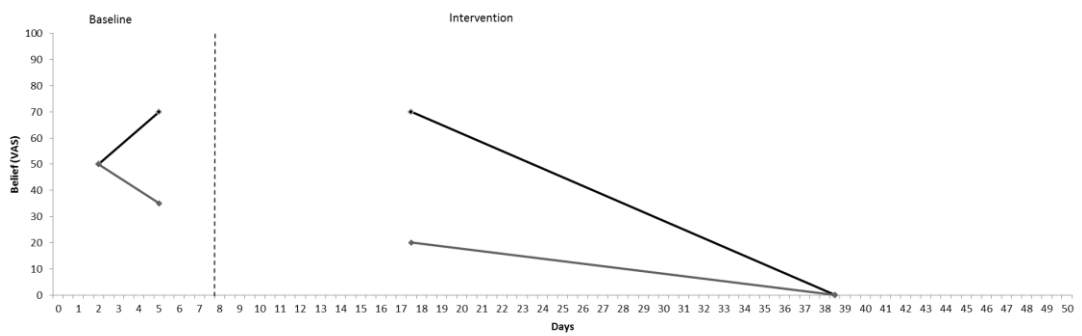


Figure PE12. Apathy VAS: trended range

Appendix 30. PF's Variability Analysis (Trended Range)

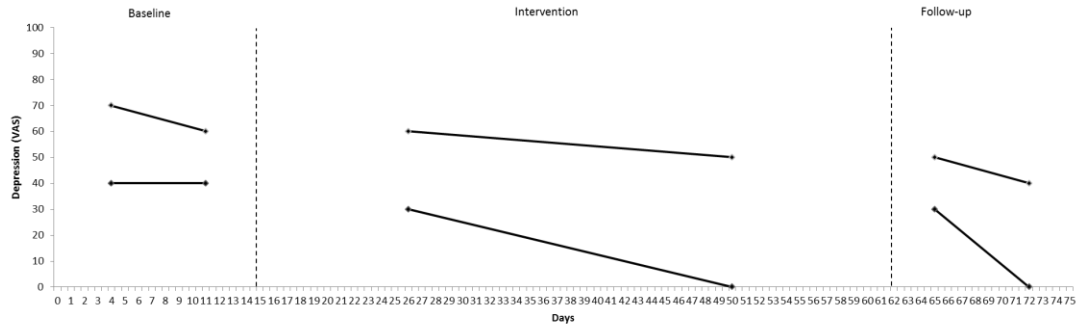


Figure PF7. Depression VAS: trended range

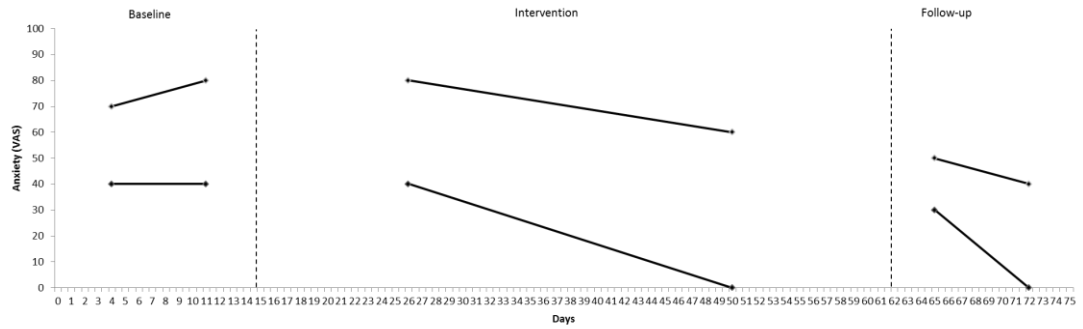


Figure PF8. Anxiety VAS: trended range

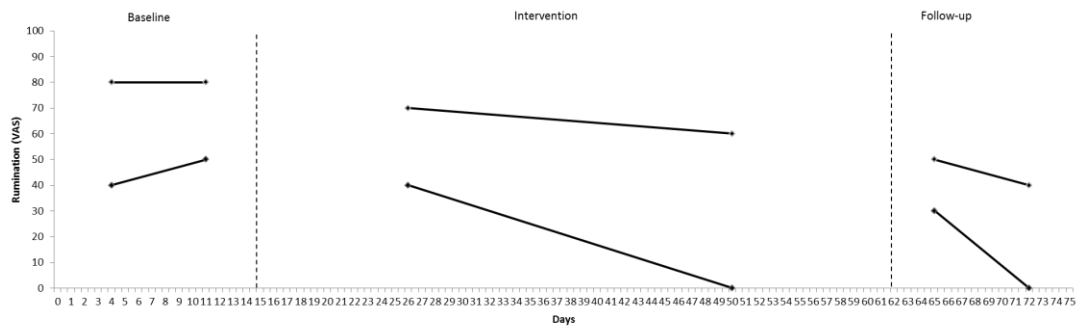


Figure PF9. Rumination VAS: trended range

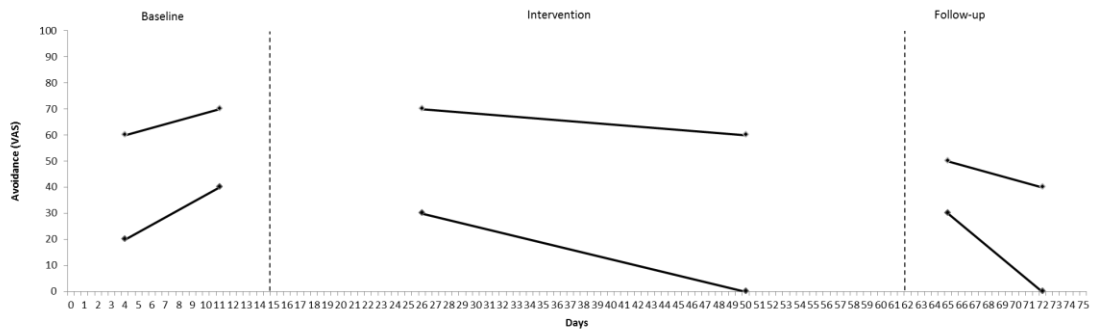


Figure PF10. Avoidance VAS: trended range

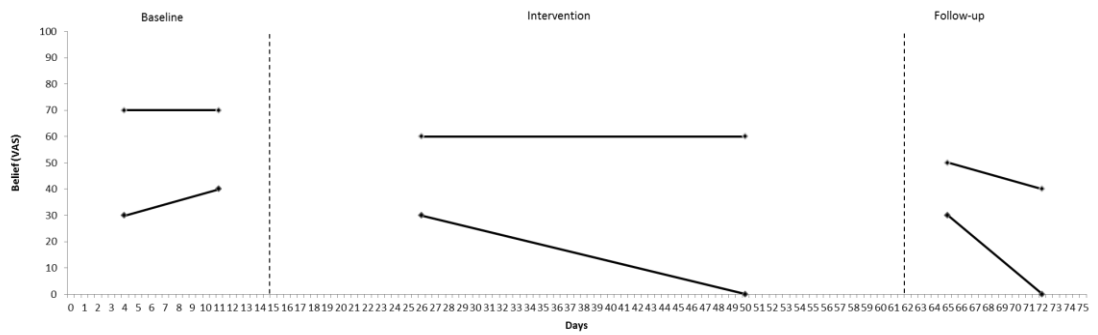


Figure PF11. Belief VAS: trended range

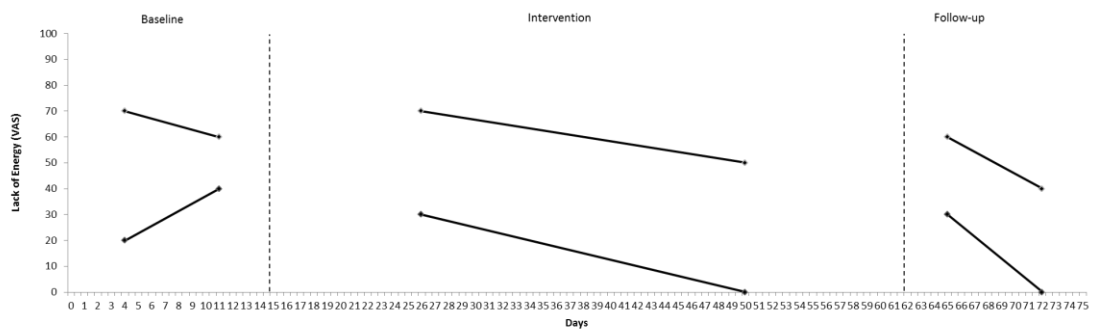


Figure PF12. Lack of Energy VAS: trended range

Appendix 31. PG's Variability Analysis (Trended Range)

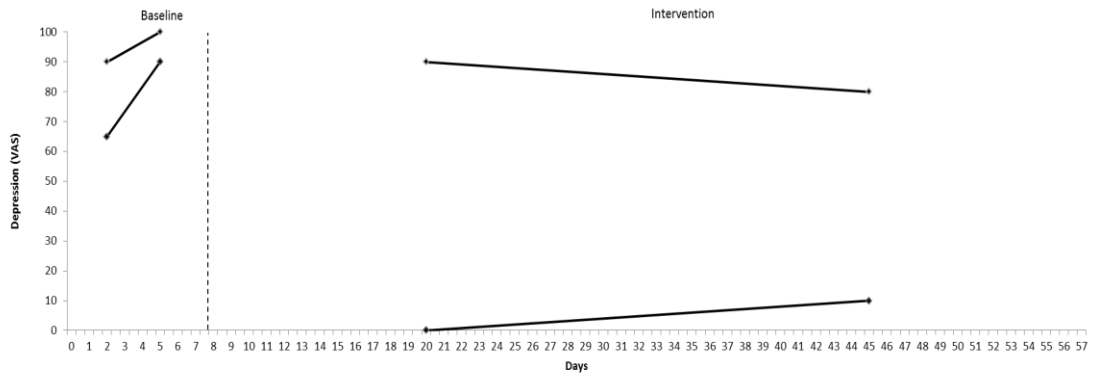


Figure PG7. Depression VAS: trended range

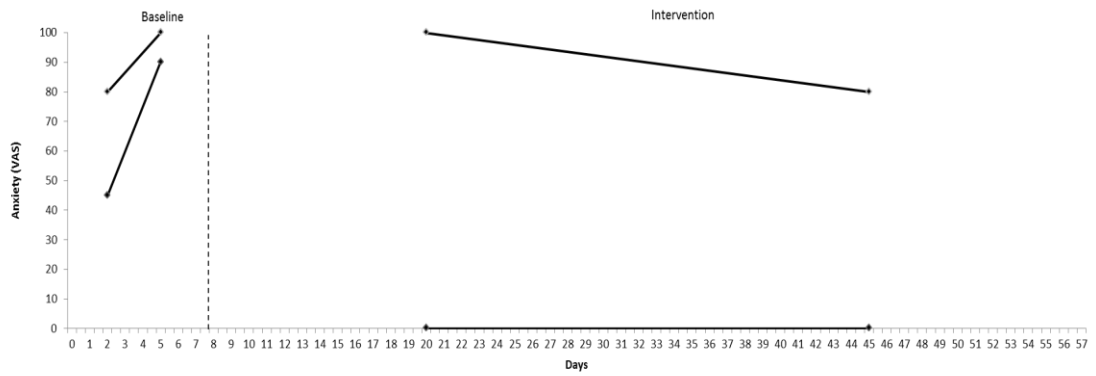


Figure PG8. Anxiety VAS: trended range

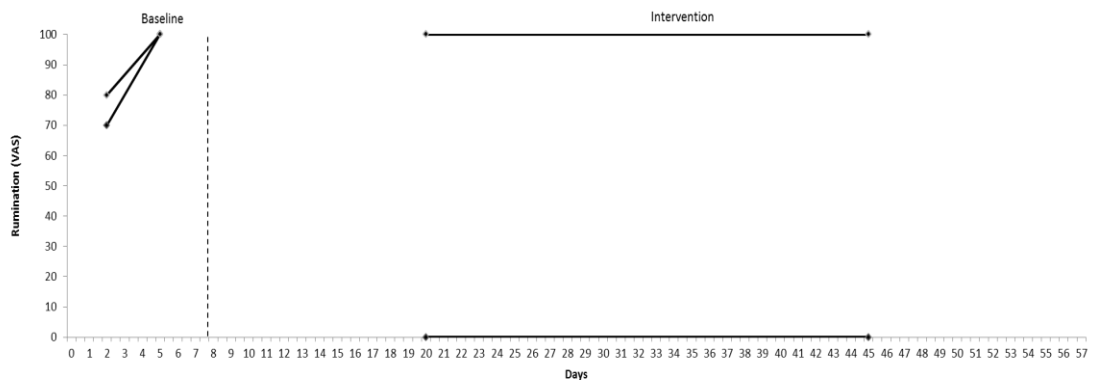


Figure PG9. Rumination VAS: trended range

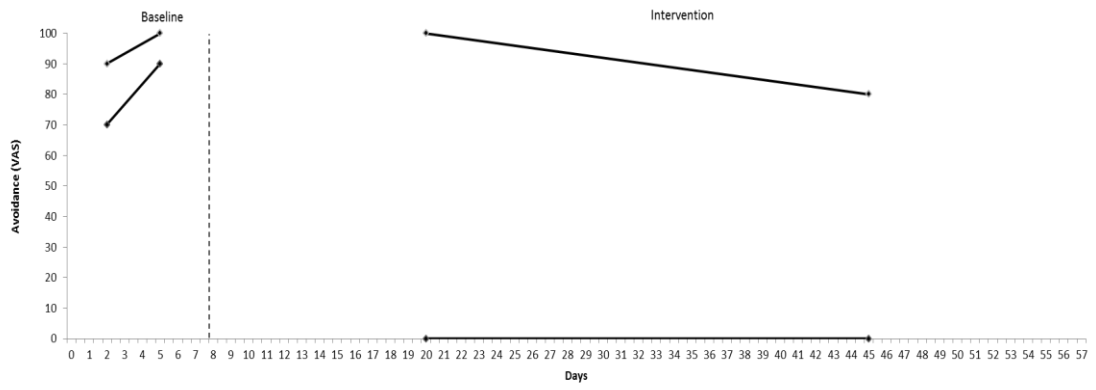


Figure PG10. Avoidance VAS: trended range

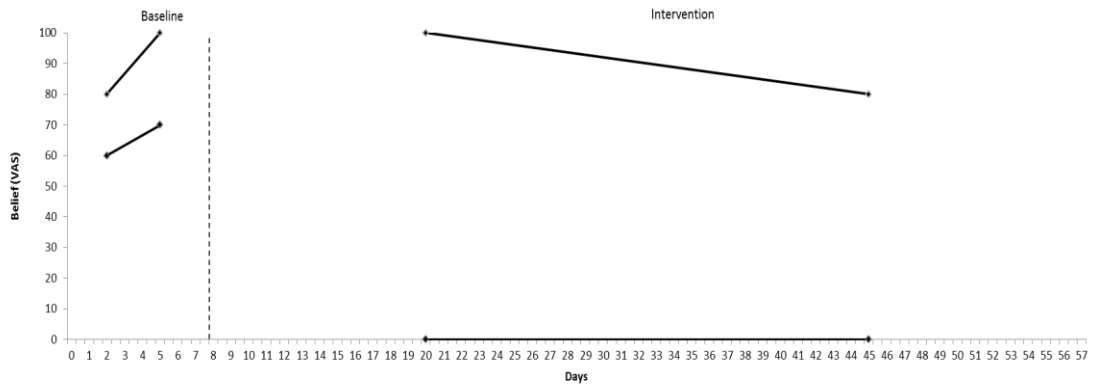


Figure PG11. Belief VAS: trended range

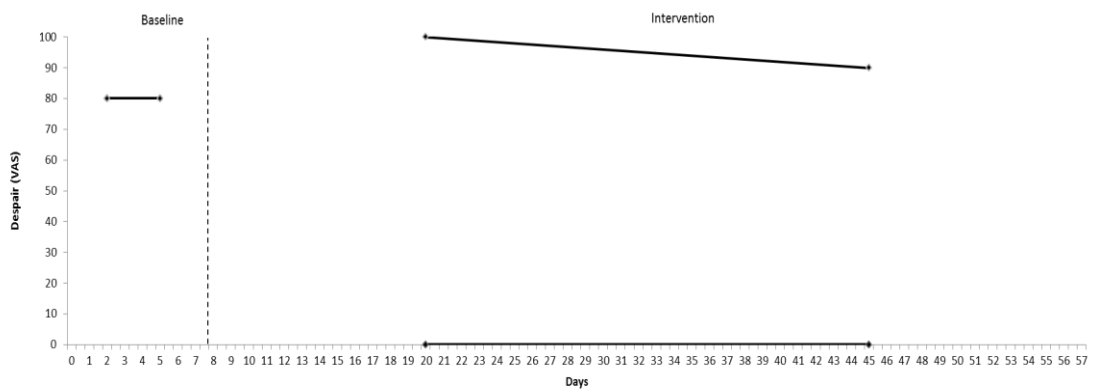


Figure PG12. Despair VAS: trended range

Appendix 32. PH's Variability Analysis (Trended Range)

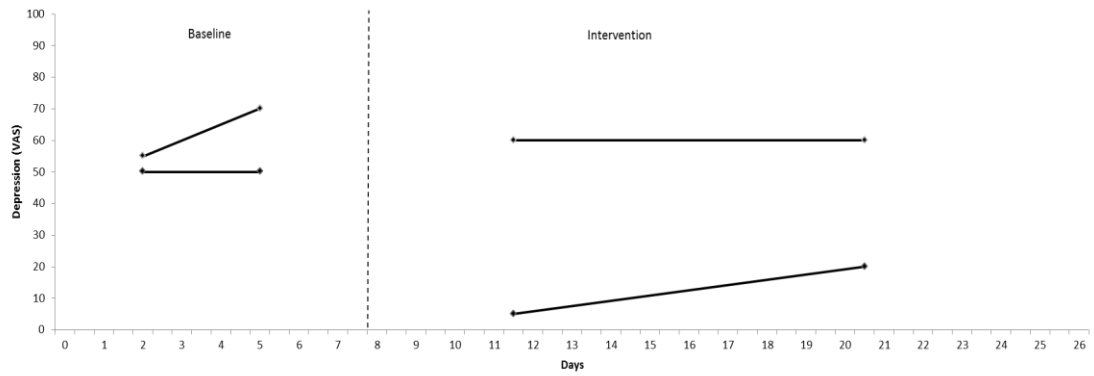


Figure PG7. Depression VAS: trended range

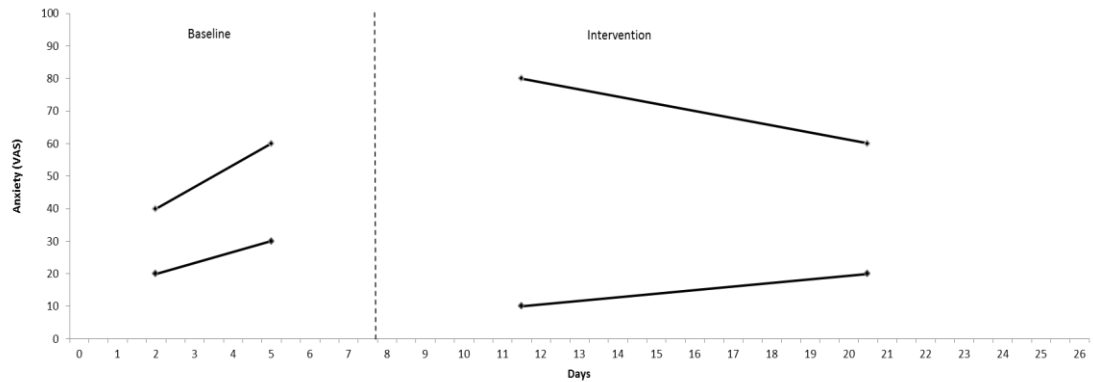


Figure PG8. Anxiety VAS: trended range

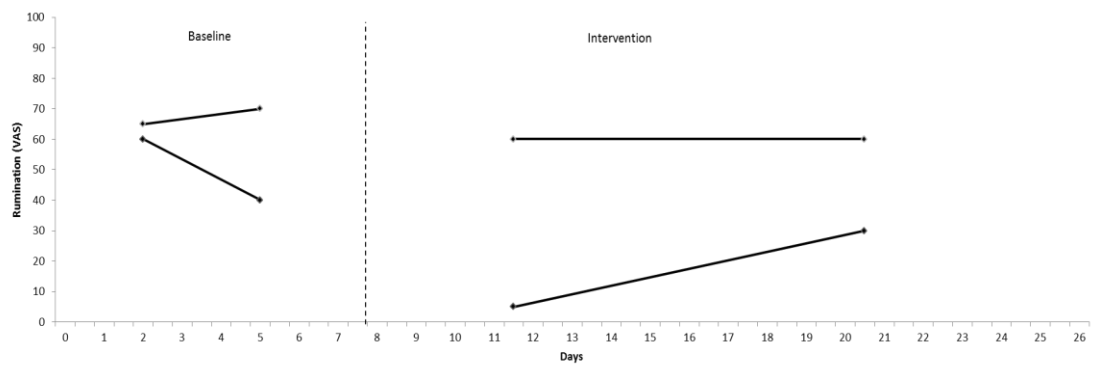


Figure PG9. Rumination VAS: trended range

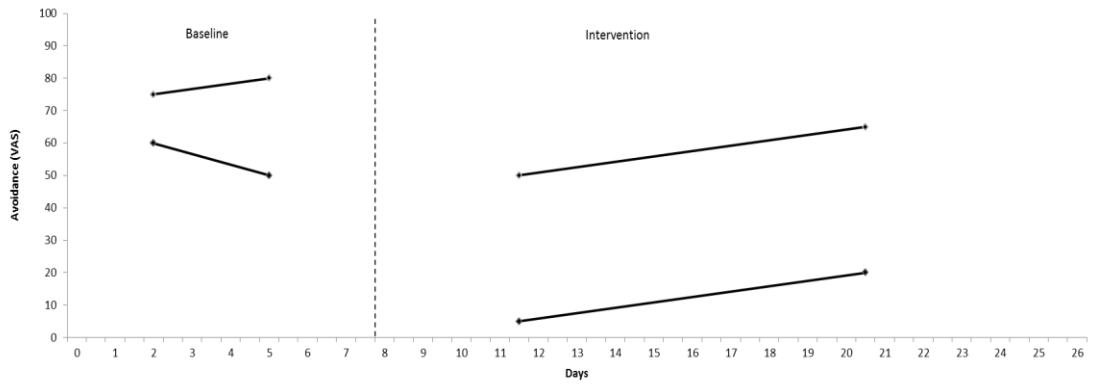


Figure PG10. Avoidance VAS: trended range

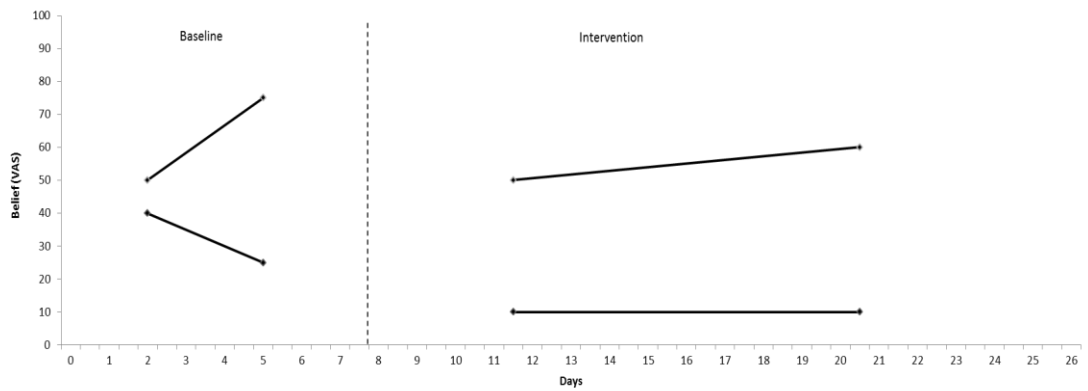


Figure PG11. Belief VAS: trended range

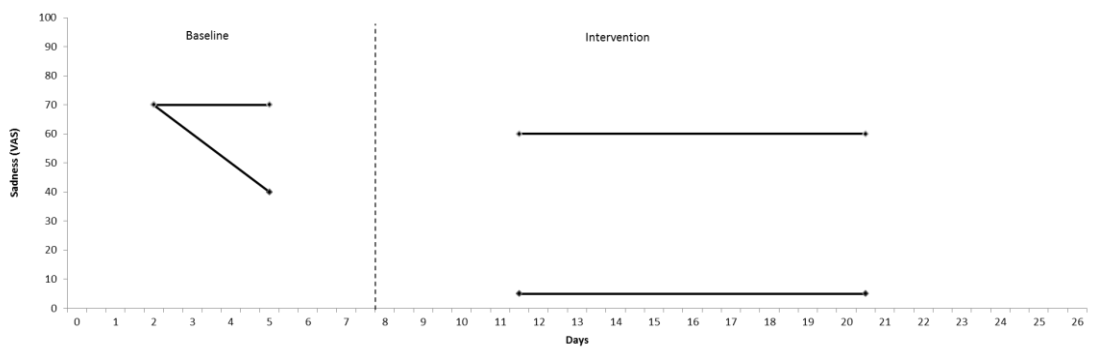


Figure PG12. Sadness VAS: trended range