

**An Evaluation of
Behavioural Activation Treatment for Anxiety (BATA)
when Delivered In-person and via Videoconferencing**

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EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Declaration

I declare that this thesis is my own account of my research and contains, as its main content, work that has not previously been submitted for a degree at any tertiary education institution and, to the best of my knowledge or belief, contains no material previously published or written by another person, except when due reference is made in the text.

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Abstract

Cognitive Behavioural Therapy (CBT), a form of psychotherapy, is the most empirically supported treatment for anxiety, but new research into psychological treatments for anxiety is warranted because clinical improvement is not achieved by between 20% and 80% of the clinical population receiving CBT or other empirically supported psychological treatments. One recently developed approach is Behavioural Activation Therapy for Anxiety (BATA), first reported in 2009 by Turner and Leach who identified that Behavioural Activation (BA), though recognised as an effective treatment for depression, had rarely been applied to anxiety despite functional similarities. BATA has been written as a structured protocol, based on setting goals and scheduling activities, that brings clients into contact with naturally occurring sources of positive reinforcement for “clinically healthier”, socially-valid behaviours. This study included nine single case recipients of BATA ranging in age from 19 to 52 years old who met DSM-IV criteria for a non-trauma anxiety condition, assigned to one of three groups according to residence and type of delivery: Metropolitan In-Person, Metropolitan Videoconferencing, and Regional/Remote Videoconferencing. In each case, following a baseline period, BATA was applied in 12 weekly, 60-minute individual therapy sessions. Treatment outcomes were evaluated using A-B-C phase change analysis with repeated measures. Eight out of nine participants showed significant reduction in self-reported anxiety symptoms. A corresponding significant decrease in anxiety symptoms overall across all the participant groups was shown by an omnibus/global analysis, replicating the original Turner and Leach findings that featured an older group of participants. No differences were found between the Metropolitan and Regional/Remote groups or between the Metropolitan and Videoconferencing groups which provided evidence that BATA can be delivered as effectively by videoconferencing as when delivered face-to-face in-person.

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Chapter 1: Introduction

Anxiety disorders affect 14% of Australians aged 16-85 years (Australian Bureau of Statistics, 2008; Healey, 2014), a significant proportion of the Australian population. Anxiety disorders have been correlated with loss of educational and employment opportunities for individuals, and negative impacts on family and social relationships, and many other daily activities (Anxiety and Depression Association of America [ADAA], 2014).

In terms of economic impact, the New South Wales Mental Health Commission quantified direct outlays by Australian governments and health insurers on mental illness at AUD5.32b in 2008, being 7.5% of all government health spending (Doran, 2013). An additional AUD4.63b accompanied this on support services for mental health sufferers, including income support, housing assistance, community care, and employment and training opportunities (Doran, 2013). The Australian Bureau of Statistics (2009) estimated in their report on Australian Social Trends that the overall cost of psychological disorders in Australia in 2009, including lost productivity, was AUD20b. In a study commissioned by ADAA (Greenberg et al., 1999), anxiety disorders cost the USA more than USD42 billion a year in 1999, almost one-third of the country's USD148b total mental health costs at that time. These statistics provide a strong economic case for continued research into treatments for anxiety conditions.

The Australian Bureau of Statistics (2008), based on its 2007 National Survey of Mental Health and Wellbeing, reported approximately 18% of women and 11% of men had suffered from an anxiety disorder in the previous 12-month period, and that lifetime prevalence of an anxiety disorder was as high as 25%. Similar statistics have been published in the USA where anxiety disorders are also the most common psychological disorders, affecting 40 million adults aged 18 and older, which is 18% of the population (ADAA, 2014).

Anxiety has been defined as the apprehensive anticipation of future danger or misfortune, accompanied by a feeling of dysphoria or somatic symptoms of tension (American Psychiatric Association [APA], 2000, p820). In DSM-5 (APA, 2013), anxiety disorders are defined as disorders that have common features of excessive fear and anxiety, with related behavioural disturbances, in which fear is defined as the emotional response to real or perceived imminent threat, and anxiety is defined as the anticipation of a future threat. The DSM-5 lists the following anxiety disorders: (a)

Separation Anxiety Disorder, (b) Selective Mutism, (c) Specific Phobia, (d) Social Anxiety Disorder (Social Phobia), (e) Panic Disorder, (f) Panic Attack, (g) Agoraphobia, (h) Generalized Anxiety Disorder (GAD), (i) Substance/Medication-Induced Anxiety Disorder, (j) Anxiety Disorder Due to Another Medical Condition, (k) Other Specified Anxiety Disorder, and (l) Unspecified Anxiety Disorder (APA, 2013, page xviii). The present study commenced before the release of DSM-5, and used DSM-IV-TR (APA, 2000) criteria that included Post-Traumatic Stress Disorder (PTSD) and Obsessive-Compulsive Disorder (OCD) under the category of anxiety disorders.

According to the ADAA (2014), people with an anxiety disorder are three to five times more likely to seek medical attention and six times more likely to be hospitalised for psychiatric disorders than those who did not suffer from anxiety disorders. Further, anxiety is associated with higher rates of medically unexplained symptoms and increased utilisation of healthcare resources (Katon & Walker, 1998; Marciniak et al., 2005). Anxiety disorders are strongly correlated with chronic medical illness (Harter, Conway, & Merikangas, 2003; Sareen et al., 2006), low levels of physical health and quality of life, and physical disability (Kroenke, Spitzer, Williams, Monhan, & Lowe, 2007; Ludman et al., 2006). Many people suffering from anxiety disorders do not seek professional help and may live with distressing effects for years (Healey, 2014).

To further advance treatments for anxiety, this study examined the wider applicability of Behavioural Activation Treatment for Anxiety (BATA), first described in a research study by Turner and Leach (2009). The following sections provide an overview of relevant concepts for behavioural approaches to the treatment of anxiety, and an introduction to the use of videoconferencing for the delivery of psychotherapies, which will be covered in more detail in Chapters 2 and 3 respectively.

1.1 Treatment of Anxiety

Currently, the empirically “frontline” supported interventions for anxiety conditions include medication, psychotherapy, or a combination of both (Reavley, Allen, Jorm, Morgan, & Purcell, 2010). Under the biochemical approach, anxiety disorders are treated using medication, especially for short term management (Reavley et al., 2010). This includes prescribing Monoamine oxidase inhibitors (MAOIs), Tricyclic antidepressants (TCAs), Selective Serotonin Reuptake Inhibitors (SSRIs), Benzodiazepines and Beta-Blockers, within a biochemical model of anxiety that asserts

that imbalance in the levels of neurotransmitter chemicals in the brain can cause normal anxiety-producing pathways to overreact (Reavely et al., 2010).

Whilst medications are often prescribed, psychotherapy in the form of Cognitive Behavioural Therapy (CBT) is considered the most empirically supported frontline treatment for anxiety disorders (Barlow, 2004). CBT for anxiety typically involves psycho-education, cognitive restructuring, imaginal exposure, and in vivo exposure (with and without response prevention). Exposure therapies, which are behavioural components of CBT, involve the anxiety sufferer being placed in deliberate, repeated contact with fear-evoking stimuli (with and without response prevention, for example, in the case of OCD). Exposure is asserted to be the most scientifically valid and reliable component of CBT for anxiety disorders (Barlow, 2004).

Butler, Chapman, Forman and Beck (2006) concluded that CBT is the most effective psychological treatment for anxiety, and is at least as effective as medication alone. A meta-analysis by Roshanaei-Moghaddam et al. (2011) of the relative efficacy of pharmacotherapy versus Cognitive-Behavioural Therapy confirmed that CBT is at least as effective as pharmacotherapy for anxiety disorders. They found that both CBT and pharmacotherapy were statistically and clinically significantly better than placebo, with slightly higher effect sizes shown for CBT compared to pharmacotherapy, though the difference in effect size between CBT and pharmacotherapy was statistically insignificant.

Despite these effects, research into contemporary psychological treatments for anxiety disorders is warranted because clinically significant improvements are often not achieved by a proportion of the clinical population who receive CBT and other empirically supported psychological treatments. For example, Whittal, Thordarson and McClean (2005) found, that subsequent to psychological treatment, OCD sufferers showed recovery rates ranging from 58% to 76%, while Ost, Thulin and Ramnero (2004) showed recovery rates of approximately 75% for sufferers of panic disorder with agoraphobia (PDA), and Ladouceur et al. (2000) found recovery rates of 58% for sufferers of generalised anxiety. Barlow, Allen and Choate (2004) concluded that, more generally, between 20% and 80% of the clinical population will not benefit from contemporary treatments and, although 20% to 80% may achieve desired outcomes, the limitations of present day treatments suggest that efforts should be continued to identify effective new alternate treatments for anxiety, in addition to ways to improve the

effectiveness of existing treatments. One such alternative approach is Behavioural Activation Therapy for Anxiety (BATA), a recently developed treatment protocol created by Turner (2010).

1.2 Behavioural Activation Therapy for Anxiety (BATA)

BATA was first described by Turner and Leach (2009) who applied principles of Behavioural Activation (BA) therapy as described by Lejuez, Hopko, and Hopko (2001) and Martell, Addis and Jacobson (2001) to anxiety disorders. They called this treatment “Behavioural Activation Therapy for Anxiety” (BATA). Behavioural Activation Therapy in general is based on operant behavioural principles and involves efforts to increase “meaningful” activities in the client’s everyday life, so that he or she increases contact with positive reinforcement for healthy behaviours while simultaneously decreasing contact with negative reinforcement for “depressed” or “anxious” behaviours.

Behavioural Activation Therapy (BAT) has been reported as an effective treatment for depression (Dimidjian, Martell, Addis, & Herman-Dunn, 2008; Mazzucchelli, Kane, & Rees, 2009; Polenick & Flora, 2013). It was the success of BA treatment for depression that led Turner and Leach (2009, 2010) to posit that, because of functional similarities in depression and anxiety disorders, including the habitual avoidance that is a feature of both disorders, BAT could be just as applicable for anxiety disorders. In their work (Turner, 2010; Turner & Leach, 2009, 2010), for six of seven single cases, significant changes in daily activity levels and clinically meaningful decreases in anxiety were measured during the treatment phase. Reductions in anxiety were maintained up to a 3-month follow-up. Turner and Leach (2009, 2010) demonstrated the effectiveness of BATA in adults older than 51 years of age who had chronic GAD and/or social anxiety/phobia.

One objective of the current study was to extend Turner and Leach’s (2009, 2010) investigations by examining if the BATA treatment protocol could be successfully replicated with participants from a younger age range. The second objective was to investigate the application of the BATA protocol across two different delivery modes, in-person (face-to-face) and via videoconferencing to anxiety sufferers living in regional and remote communities. The following section introduces the challenges of providing effective service delivery of psychotherapy to residents in regional and remote communities in Australia and gives context as to why videoconferencing delivery of BATA was evaluated in this study.

1.3 Service Delivery to Regional and Rural Communities and Videoconferencing as a Delivery Mode for the Treatment of Anxiety Disorders

Regional and remote areas in Australia often suffer from the lack of local services with appropriate specialist resources and staff being geographically distant (Australian Institute of Health and Welfare, 2004). Simpson (2009) concluded that geographical distance between major cities and remote and rural communities and a lack of adequate or affordable psychological services outside cities prevent equitable access to psychotherapy. The National Rural Health Alliance report (2009) confirmed that people in rural and remote areas of Australia have lower levels of access to mental health services with Mental Health Council of Australia statistics for 2008 showing the usage of mental health services in regional areas was 40-90% of that in major cities, and in remote areas it was only 10-30% of the rate in major cities. In the USA, Thomas, Ellis, Konrad, Holzen, and Morrissey (2009) similarly reported that most trained specialists operate in metropolitan areas, which greatly limits access to care for individuals living in non-metropolitan areas.

Statistics published by the Australian Bureau of Statistics (2011) showed that prevalence of long term mental and behavioural health problems in 18-85 year old adults outside major Australian cities was 12.2% in 2007-2008 (16% higher than in major cities) and that 47.8% of adults aged 18-85 years living outside major cities would experience a mental health disorder in their lifetime (8% higher than their metropolitan counterparts). Further, suicide rates in the 18-85 year age range were 66% higher outside major cities. Note that for regional and remote areas in Australia, the population has a higher proportion of indigenous people (ABS, 2012). For example, in the Pilbara Mental Health Care region, the Aboriginal population is 16% (Western Australian Country Health Service, 2012). Aboriginal and Torres Strait Islanders are over-represented in the mental health care system in Western Australia, being 5% of all who received in-patient mental health services in WA, despite making up only 3% of the population (Mental Health Commission of Western Australia, 2012). Other statistics reported by Caldwell, Jorm and Dear (2004) showed higher levels of suicide in men, especially young men in rural and regional areas of Australia, compared to their metropolitan counterparts, and found that young men from non-metropolitan areas were significantly less likely than those from metropolitan areas to seek professional help for a mental health disorder (11.4% versus 25.2%).

In summary, the provision of services for mental health tend to be poorly distributed across geographical areas, with much poorer availability of services in regional and remote areas, where there are high prevalence rates of mental health problems. There has been a range of attempts to improve service provision in regional and remote areas, including improved access to information (National Rural Health Alliance, 2009), scholarships for residents from regional and remote areas (Standing Council on Health, 2012), financial incentives for specialists to relocate to regional and rural areas (Department of Health, 2011), visiting outreach services (National Rural Health Alliance, 2004), additional training for generalist providers (Department of Health, 2011), and new technologies to improve access and delivery of services (Centre for Rural and Remote Mental Health Queensland, 2011). With recent technological advances, one approach to improve access to psychological services in regional and remote areas has been telehealth and videoconferencing.

1.3.1 Psychotherapy Delivered via Videoconferencing

The term “telemedicine” originated in the 1950s when the first documented telemedicine consultation took place (Zundel, 1996). Telemedicine, often used interchangeably with the term “telehealth”, is the use of medical information exchange from one site to another via electronic communication (American Telemedicine Association, 2015). “Telehealth” describes the use of technology to provide health care when providers are geographically distant from clients (Backhaus et al., 2012; Field, 1996; Schopp, Demiris, & Glueckauf, 2006). The International Organisation for Standards ISO/TR 16056-1:2004 (International Standards Organisation, 2004) defines telehealth as the use of telecommunication techniques for the purposes of providing telemedicines, medication, and health education over a distance by transmitting voice, data, images and information, encompassing diagnosis, treatment, preventive and curative aspects of healthcare services, and involving care recipient(s), and care providers. Telehealth services are typically placed in two categories: (a) synchronous, that includes “live”, real-time interactive two-way communication (e.g. telephone, or videoconferencing), and (b) asynchronous, that includes transmission of information that is not real-time, for example, sending X-rays electronically to a distant site to be reviewed at a later time.

During the mid-1990s the use of online communication for therapeutic purposes progressed quickly when advances in Web design, software and hardware, and ubiquitous Internet communication technology combined to make distant interaction

efficient, affordable and relatively convenient (Barak, Klein, & Proudfoot, 2009). Many mental health professionals now use information and communications technologies to communicate with patients via email, smartphones, Websites and Web forums (Backhaus et al., 2012). There is, however, inconsistency in terminology (Eysenbach, 2001; Ritterband, Andersson, Christense, Carlbring, & Cujipers, 2006; Ritterband & Thorndike, 2006;). For example, Barak et al. (2009) found that Internet-supported interventions (ISIs) used a variety of related, but often interchangeable terms including: Web-based therapy, e-therapy (eTherapy), cybertherapy, e-health (eHealth), e-interventions (eInterventions), computer-mediated interventions, and online therapy. More recently, Stasiak and Merry (2013) described “eTherapy” and “digital therapy” as generic terms that include a broad range of psychological and behavioural therapies delivered with the assistance of computer technology, including personal computers (software and/or applications), Internet (for applications or communication, including videoconferencing), and telephone interactive voice response (IVR) systems. They found that these technologies, when used alone or in combination, result in various modes of delivery for psychological therapy. Many components called “eTherapy” did not require real-time involvement of a mental health professional.

The Stasiak and Merry (2013) review identified that early eTherapy programmes were mainly text-based, describing self-help strategies to be read on the screen by the client. Interactivity was limited to questionnaire-like multiple-choice questions. As technology has evolved over time, eTherapy software has incorporated and relied more heavily on multimedia capabilities (voice/audio, video, animation), and some treatment programmes have included the automated sending of emails and text messages to enhance adherence to treatment protocols. They also found other treatments called eTherapies that had quite different formats, including virtual reality counselling, simulation and games, including the application of biofeedback.

A similar review of Internet Supported Interventions (ISIs) by Barak et al. (2009) classified ISIs into a range of categories, including Web based education and interventions (including online treatment modules), which may be self-guided or human-supported, and online counselling such as human-to-human communication via email, text chat, audio and videoconferencing (as in the current study). In addition, more advanced computer capabilities such as artificial intelligence (AI) principles for simulation, rule-based or AI expert systems (e.g. “chat” robots), psychoeducational games and 3D virtual environments have also been used. Barak et al. (2009) concluded

that these different categories of activities may stand alone, together, or be used by therapists as supplements to the main treatment modality, whether it is a traditional face-to-face intervention or other online treatment.

While advances in Web based technology have extended the reach of computer delivered interventions, advances in video communication technology have extended the reach of therapist delivered interventions. Videoconferencing refers to communications technology that enables a discussion to occur between two or more groups of people who are in different places but who can see and hear each other. Pictures and sound are carried by a computer and/or telecommunications network. Microsoft's Skype™, Apple's Facetime and third generation (3G) mobile "video calls" are all examples of videoconferencing (Biron, 2012). Videoconferencing psychotherapy (VCP, or "videotherapy") is one type of telehealth service that can offer clients improved access to mental health professionals with specialised expertise, for example, for anxiety sufferers living in regional or remote communities where local specialist mental health providers are not conveniently accessible. Given the potential of this technology, the second main objective of the present study was to investigate whether BATA could be effectively delivered via videoconferencing to anxiety sufferers by comparing BATA outcomes across in-person and videoconferencing delivery modes in regional/remote and metropolitan areas.

1.4 Current Study

This study sought to a) replicate Turner and Leach's (2009, 2010) original Behavioural Activation Therapy for Anxiety (BATA) findings in a group of clients with a younger age range than in the original research, and b) examine whether or not BATA could be delivered effectively as an online counselling therapy via videoconferencing (VCP) for clients in regional and remote areas in Western Australia. A cohort of 14 participants aged 19 to 52 years of age, meeting the DSM-IV criteria for anxiety disorders including GAD, social anxiety, social phobia, agoraphobia, OCD and panic disorder was divided into three intervention groups to enable between-groups comparison across the two experimental variables (location and type of delivery): (a) a Metropolitan In-person group that received BATA via traditional face-to-face delivery in a standard psychology clinic setting, (b) a Metropolitan Videoconferencing group that received BATA via videoconferencing only, and (c) a Regional/Remote Videoconferencing group that received BATA via videoconferencing only.

Chapter 2: Behavioural Activation Treatment for Anxiety

Behavioural Activation Treatment was defined by Jacobson, Martell & Dimidjian (2001) as systematic and structured attempts to increase the level of meaningful activity in a person's life, thereby helping the person to come into contact with sources of positive reinforcement for behaviours that correspond with clinical improvement. While Behavioural Activation (BA) has been empirically demonstrated as an effective treatment for depression (Dimidjian et al., 2006; Gortner, Gollan, Dobson, & Jacobson, 1998; Jacobson et al., 1996; Mazzucchelli et al., 2009), Turner and Leach (2009) noted that BA had seldom been applied to anxiety disorders despite functional similarities, such as habitual avoidance, that are common to both anxiety and depression. Functional similarities between anxiety and depression were identified by Hayes, Wilson, Gifford, Follette, and Strosahl (1996) who observed that individuals reporting behaviours typically classed as anxious are found in contexts in which relatively high frequencies of negative reinforcement and avoidance behaviour are common.

Similarly, contemporary behavioural models of depression described by Kanter, Cautilli, Busch, and Baruch (2005) have emphasised the negatively reinforcing function of escape and avoidance behaviour. BA treatments focus directly on goal setting and activation of steps to achieve such goals, and on processes that inhibit activation, such as avoidance behaviour and covert (verbal) behaviour, including rumination, to increase experiences that are valued, pleasurable, productive, or improve life contexts (Kanter et al., 2010). Considering that BA interventions have mostly been used for treating depressive disorders and the consistent finding that approximately 50% of individuals suffering depression have a comorbid anxiety disorder (Kessler et al., 1996; Mineka, Watson, & Clark, 1998), Hopko, Lejuez and Hopko (2004) and Hopko, Robertson and Lejuez (2006) suggested that further research is warranted to explore the adequacy of behavioural activation in targeting anxiety-related behaviours.

As far as could be ascertained by Turner and Leach (2009, 2010), their 2009 study was the first to have applied BA to an older adult with anxiety using an experimental design that included a real time measure of everyday activity levels (activity monitoring). The premise of Turner and Leach's research (2009) was that techniques that function to reduce avoidance are key to BA approaches and may be as effective in the treatment of anxiety as in the treatment of depression. Through BA, the range of an anxiety sufferer's alternative approach responses could potentially widen proportionate to increased contact with potential positive reinforcers, resulting in

decreases in negatively reinforced behaviour, such as avoidance of pain, fear of task difficulty, or threat.

To establish the relevance of Behavioural Activation in this context, it is important to review Behavioural Activation and how established aspects of BA have been incorporated into Turner's (2010) treatment protocol, called Behavioural Activation Treatment for Anxiety (BATA). This chapter also reviews conceptual links to BA in the treatment of depression, and an identification and description of key conceptual and technical characteristics of various applications and aspects of BA, such as particular activation strategies, and why they may be applicable to anxiety disorders. Finally, the chapter concludes with a rationale of how BA has been applied in this study using the BATA protocol (Turner, 2010).

2.1 A Brief Early History of Behavioural Activation Therapy

Behavioural Activation is rooted in a behavioural conceptualisation of depression, including its causes, correlates, consequences, and maintaining processes (Dimidjian, Barrera, Martell, Munoz, & Lewinsohn, 2011). BA has a long history spanning 30 years (Kanter, Busch, & Rusch, 2009), with at least four empirically tested versions, including a) Lewinsohn's version (Zeiss, Lewinsohn, & Monoz, 1979), b) the version incorporated into Cognitive (Behavioural) Therapy (Beck, Rush, Shaw, & Emery, 1979) which was empirically tested by Jacobson et al. (1996) in their component analysis of C(B)T, and more recently by c) Martell and colleagues (Martell et al., 2001) and d) Lejuez and colleagues (Lejuez et al., 2001). All four versions share the common strategy of activity scheduling that focuses on activating individuals to contact positive reinforcers in their environment.

Although some behaviour analysts have objected to the study of private events on methodological grounds, for example, Lamal (1998), Skinnerian radical behavioural approaches never denied the existence of private events. Skinner stated, "We need not suppose that events which take place within an organism's skin have special properties for that reason. A private event may be distinguished by its limited accessibility but not, so far as we know, by any special structure or nature" (Skinner, 1953, p. 257). Any behaviour, private or public, can be a legitimate goal of analysis (Hayes, 1993). Radical behavioural analysts simply reject the view that behaviour of one kind is best explained as the manifestation of some other internal process occurring within the individual. A description of private events is considered as exactly that – a description of psychological phenomena that requires explanation, and a satisfactory (i.e., workable)

explanation is unachievable without taking into account events external to the overt and covert behaviour of the individual (Hayes & Brownstein, 1986).

According to Dimidjian et al. (2008), Ferster's (1973, 1981) primary premise was that depression is the result of a learning history in which the actions of the individual do not result in positive reinforcing consequences from the environment, or in which the actions are negatively reinforced because the individual escapes from an aversive condition. Over time, the extent of behaviour that would typically produce positive consequences recedes and ceases to do so. He suggested that this decrease in response-contingent positive reinforcement produced two further consequences that facilitate depression. Firstly, as more of the individual's efforts do not result in reward, the individual becomes more focused on responding to his or her own deprivation than to potential sources of positive reinforcement in the environment. The second consequence of decreased rates of positive reinforcement that Ferster (1973) observed was a narrowing of the individual's repertoire of adaptive behaviour, as fewer and fewer behaviours are maintained by positive reinforcement, and the individual may engage in avoidant repertoires because the individual has learned that active attempts to be engaged in life do not produce positive consequences. Ferster (1981) goes on to conclude that increases in aversive consequences following behaviour typically lead individual to become preoccupied with escape and avoidance.

Lewinsohn's (1974) early behavioural model of depression is compatible with many of Ferster's (1973, 1981) ideas. Lewinsohn (1974) stressed the importance of response-contingent reinforcement and suggested that its rate was influenced by three factors: (a) the number of potentially reinforced events available to an individual, (b) the availability of reinforcement in the environment, and (c) the instrumental behaviour of the individual required to elicit the reinforcement. Lewinsohn (1974) identified social avoidance as a core part of his model and elaborated on Skinner's (1953, 1969) models, focusing on the basic behavioural principle that organisms are shaped by reinforcement. Lewinsohn (1974) suggested that treatment should focus on re-establishing contact with positive reinforcement (valued activity scheduling) and teaching skills to obtain and maintain contact with stable or more reliable sources of positive reinforcement. Lewinsohn and his colleagues produced a treatment manual (Lewinsohn, Biglan, & Zeiss, 1976) that focused on activity scheduling to increase positive reinforcement, and social skills training to address behavioural deficits in the ability to obtain and maintain reinforcement through social interactions with others. In

a subsequent dimensional analysis, Zeiss et al. (1979) developed separate treatment manuals for activity scheduling, social skills training and cognitive restructuring and compared the effectiveness of these three treatments to a waitlist control group. They found all three techniques performed better than the waitlist control and found no significant differences in outcomes for the three treatments, lending support to the premise that activity scheduling and skills training alone could be used to treat depression.

BA strategies were incorporated in the Beck, Rush, Shaw, and Emery (1979) Cognitive Therapy (CT) treatment method (a form of Cognitive-Behavioural Therapy [CBT]) for depression. Here, BA approaches were utilised within a larger framework that emphasised the importance of cognition in the etiology and treatment of depression. Dimijian et al. (2008) concluded that the formalisation and utilisation of BA techniques within CT by Beck et al. (1979) led to advances in behavioural activation strategies and the finding that BA on its own could be effective and advantageous compared to continuing patients on medication. This significant contribution of behavioural strategies in treatment protocols has been reported in other studies across multiple diagnostic categories (Gloaguen, Cottraux, Cucherat, & Blackburn, 1998), and across other activation-oriented approaches with depressed clients (Dimidjian et al., 2008; Hopko, Lejuez, LePage, Hopko, & McNeil, 2003).

2.2 Contemporary Behavioural Activation

The contemporary BA approach described by Jacobson and colleagues (Dimidjian et al., 2006, Jacobson et al., 2001; Martell et al., 2001; Martell et al., 2010) was initially applied as part of an effort to identify the “active ingredients” of C(B)T for depression (Dimidjian et al., 2011). Jacobson et al. (1996) examined different aspects of Beck et al. (1979) C(B)T techniques and tested three different combinations: (a) activity scheduling only, which they termed Behavioural Activation, (b) cognitive restructuring and core belief modification, and (c) the full C(B)T suite that included activity scheduling, cognitive restructuring, and core belief modification. They concluded that BA was as effective in treating depression as the other combinations. Thus, Jacobson et al. (1996) revitalised interest in a purely behavioural approach to the treatment of depression (Dimidjian et al., 2008). In the Jacobson et al. (1996) studies, the importance of individual needs and goals were stressed, as were components such as activity and mood monitoring, guided activity scheduling, value-based behavioural goal setting and procedures to counter engagement in avoidance behaviours (Martell et

al., 2001). Their findings suggested that overt behavioural change was sufficient to produce corresponding improvement in covert correlates of depression and that BA was comparable to the full C(B)T package in both acute efficiency and prevention of relapse over 2 year follow up period (Gortner et al., 1998). Later authors concluded that BA was articulated as an independent treatment, linked explicitly to the behavioural model of depression articulated by Lewinsohn et al. (1976) (Dimidjian et al., 2011). Two contemporary BA treatment approaches are further described below.

2.2.1 Martell, Addis and Jacobson (2001): Behavioural Activation Treatment

This version of BA (Martell et al., 2001) includes activity monitoring and scheduling, some suggestions for informal values assessment, social skills training, contingency management, and procedures targeting rumination and avoidance of experience in confronting worries and anxieties. It also teaches clients to conduct functional analyses of their own behaviour. BA of this type is relatively unstructured and the therapist is expected to apply techniques based on a functional conceptualisation, so while many techniques are available to the therapist within the protocol, not all are or need be applied with every client.

In this model of BA there is a specific emphasis on reducing avoidance of potentially aversive experiences, which differs from prior forms of BA but has some theoretical support from research in other behavioural treatments, particularly Acceptance-Commitment Therapy (ACT) (Kanter et al., 2006). Martell, et al. (2001) also focus on teaching clients to functionally assess their own avoidance behaviour using the acronym “TRAP” (“T” for trigger, “R” for response, and “AP” for avoidance pattern), drawn from the “ABC” (“Antecedent”, “Behaviour”, “Consequence”) analysis common to all procedures based on the principles of applied behaviour analysis (Cooper, Heron, & Heward, 2007). Self-management is encouraged so that clients can experiment with alternative coping behaviours.

In the Martell et al. (2001) form of BA, the psychopathology model is that losses of, or chronically low levels of, positive reinforcement produce depressive symptoms. To address this, the scheduling of valued activities to increase contact with positive reinforcement is the primary goal of treatment (Manos, Kanter, & Busch, 2010). In the Martell et al. (2001) model, the therapist works toward this goal using strategies such as daily activity monitoring, activity scheduling, and a variety of strategies designed to increase the likelihood of successful activation. It emphasises the idiographic, functional approach in which behavioural assignments are tailored to the

client, based on an individual functional analysis and client goals, and there is less emphasis on activities that are simply “pleasant”.

The model stresses that the environment of an individual suffering depression is characterised by excessive aversive stimuli (punishers and negative reinforcers) as well as decreased availability of, or contact with, positively reinforcing stimuli, resulting in repeated attempts to avoid and escape the aversive and negative effects, which in the short term, provides relief, thus strengthening the behaviour, but bringing the individual no closer to “solving” life problems (Manos et al., 2010). The Martell, et al. (2001) form of BA uses strategies that focus on assessing avoidance and tailoring techniques to activate positive behaviours in the presence of competing avoidance contingencies, increasing problem solving and tolerance of short term negative effects. BA in this instance attempts to extinguish avoidance behaviours and encourage alternative behaviours (against a backdrop of negative emotions) that are more likely to lead to positive reinforcement from the environment, through non-reinforcement of avoidance behaviours.

2.2.2 Lejuez, Hopko, and Hopko (2001): Behavioural Activation Treatment for Depression (BATD)

Behavioural Activation Treatment for Depression (BATD) is a shorter, structured protocol designed and described by Lejuez et al. (2001). It is based on Lewinsohn's (1974) original notions, but incorporates “matching theory” described by Herrnstein (1970) and again later by McDowell (2005) which emphasises positive and negative reinforcement for both depressed and non-depressed behaviours is proportional to the reinforcement value of depressed versus non depressed behaviour, similar to expectancy theory of motivation (Vroom, 1964). In addition to activity scheduling, BATD uses behavioural contracting with the individual's family and friends in an attempt to increase the availability and value of positive reinforcement of non-depressed behaviour, and reduce negative and positive reinforcement for depressed behaviours. In the Lejuez et al. (2001) BATD, activity scheduling combines monitoring daily activities and assessing client values on a weekly basis, which is a key distinction from the version of BA described by Martell et al. (2001). In a research paper examining the ten year history of the Brief Behavioural Activation Treatment for Depression, Lejuez, Hopko, Acierno, Daughters and Pagoto (2011) cited several large scale randomised clinical trials, such as Dimidjian et al., 2006, Dobson et al. (2008)

which provide empirical evidence that BATD is a cost effective and efficacious alternative to Cognitive Therapy and antidepressant medication.

2.3 Conceptual and Technical Components of Behavioural Activation

Kanter et al. (2010) cited three comprehensive meta-analyses of BA (Cujipers, van Straten, & Warmerdam, 2007; Ekers, Richards, & Gilbody, 2008; Mazzucchelli et al., 2009) to identify the range of effective BA techniques. These three studies identified a total of 44 trials. Kanter et al. (2010) excluded studies that did not describe techniques and did not use a manual, and those that were experimental investigations of the effects of scheduling of pleasant events on mood changes. Their review of 32 studies identified eight components of BA approaches including a) activity monitoring; b) activity scheduling; c) contingency management (including managing rewards from others as well as self-reinforcement procedures); d) values assessment; e) relaxation techniques; f) a variety of overlapping skills training techniques, including assertiveness and social skills training, and problem solving and non social skills training; (g) procedures targeting reductions in avoidance; and (h) techniques targeting (covert) verbal behaviour. Each of these components identified in Kanter's et al. (2010) review are described in the following sections so that the rationale for application or omission of such components of BA in treating in anxiety may be explained.

2.3.1 Activity Scheduling

Activity scheduling was included in all but one of the 32 studies reviewed by Kanter et al. (2010). Lewinsohn, Weinstein and Alper (1970) focused on social skills training approach. There were many variants of activity scheduling, but its function was consistent in usage and aimed at increasing contact with available sources of positive reinforcement in the environment. In many cases, homework assignments were agreed between the clinician and client where the client had to engage in specific behaviours to increase contact with positive reinforcers.

Early forms of BA (e.g. Lewinsohn et al., 1976; McLean, 1976; Zeiss et al., 1979) focused on scheduling of pleasant events, determined by daily activity monitoring (see below) and mood ratings (Kanter et al., 2010), however later variants of BA included other criteria for determining activation targets. For example, Martell et al. (2001) encouraged scheduling any specific behaviours as alternatives to avoidance and rumination, stressed the importance of scheduling activities based on functional analyses of avoidance behaviour, emphasised verbal or imaginary rehearsal of assigned tasks, and the building routines in which meaningful tasks were to be completed

regularly over time. Lejuez et al. (2001) took a slightly different approach and focused on scheduling activities in line with client's values. They encouraged clients to create a graded activity hierarchy that the client gradually progresses through by completing increasingly challenging tasks that they would previously have found too aversive and avoided.

2.3.2 Activity Monitoring

In the Kanter et al. (2010) review, almost every variant of BA contained a form of activity monitoring. Activity monitoring serves two functions: (a) providing information on baseline activity levels and related moods to inform specific activation assignments, and (b) demonstrating the link to the client that there is a meaningful relationship between activity and mood. Activity monitoring is incorporated both in Martell et al. (2001) BA and Lejuez et al. (2001) BATD (Kanter et al., 2010). Activity monitoring can increase a client's awareness of his or her current activity levels and provides important information that informs case conceptualisation and assists planning of specific activation assignments.

Early forms of BA (Fuchs & Rehm, 1977; Gallagher & Thompson, 1982; Lewinsohn et al., 1976; Zeiss et al., 1979) involved clients monitoring activities using a detailed Pleasant Events Schedule (PES) (MacPhillamy & Lewinsohn, 1982). Later forms of BA (Lejuez et al., 2001; Martell et al., 2001) use simpler weekly activity charts. The Martell et al. (2001) protocol describes several aspects of behaviour that can be included on an activity chart, including general activity level, avoidance behaviours, moods associated with different activities, experiences of mastery and pleasure associated with activities, the variety or restriction of activity, and consistency with values. Lejuez et al. (2001) stated that activity monitoring can provide a baseline measurement of activity to compare to as treatment progresses.

2.3.3 Values Assessment

Some early applications of Lewinsohn's approach (Lewinsohn et al., 1970; McLean & Hakstian, 1979) emphasised the importance of defining a client's specific behavioural goals for treatment in addition to broader generic discussions of treatment goals (Kanter et al., 2010). Such specific identification of goals and their consistency with client values can be seen as an additional assessment strategy to be employed early in treatment in conjunction with activity monitoring to shape activity scheduling (Kanter et al., 2010).

Values assessment and specific goal setting are included in most BA treatments that Kanter et al. (2010) reviewed. BATD includes a values assessment procedure simplified from one found in ACT (Hayes, Strosahl, & Wilson, 1999) to generate alternative, value-guided behaviour instead of experiential avoidance and is consistent with BA's possible protocols according to Kanter et al. (2006) even though most of the theoretical writing on values has come from ACT approaches. In Kanter's et al. (2010) review, other forms of BA have incorporated a discussion of goals and values related to activation to a lesser extent. For example, in the Martell et al. (2001) BA, it was suggested that these discussions be included, but it was not prescribed as to how they were to be conducted.

2.3.4 Contingency Management

Contingency management was included in many of the reports reviewed by Kanter et al. (2010). This addresses situations where attempts to activate "desired" alternative behaviour are punished, ignored, or otherwise not reinforced by the environment. Environmental consequences may need to be rearranged to enable alternative behaviour to be maintained. For example, BATD (Lejuez et al., 2001) encourages clients to self-administer rewards if they have completed activation assignments, and to call on social contracts with family and friends to assist to restructure problematic environments. Martell et al. (2001) suggest that clients should reward themselves for completion of activation assignments that are not reinforcing in and of themselves. Behavioural contracts as a standalone intervention have some empirical support (Houmanfar, Maglieri, & Roman, 2003), as when applied to reducing the frequency of depressive behaviours (Brannon & Nelson, 1987). Such techniques, however, can require an increased control of the environment, including involvement of family and friends of the client that is often outside the influence of the therapist.

2.3.5 Procedures Targeting Verbal Behaviour

Dobson and Dozois (2001) suggested that behavioural approaches to treating depression lost favour because there was a limited focus on cognitive mediators. These are hypothetical cognitive processes that mediate subsequent response behaviours. Kanter et al. (2010) noted that Lewinsohn's (1974) early theory included ideas about negative cognitive content, and that other variants of BA have included methods for targeting covert verbal behaviour (Lewinsohn et al., 1976, Martell et al., 2001).

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Early behavioural methods (Lewinsohn et al., 1976, Martell et al., 2001) differed from later Cognitive (Behavioural) Therapy approaches in that no focus was placed on restructuring the content of cognition, but rather attention was directed to decreasing the frequency of negative covert verbal behaviours, and increasing the frequency of positive covert verbal behaviours. However, empirical support was not widely demonstrated in the 1970s for these early behavioural techniques targeting verbal behaviour, such as thought-stopping (Tryon, 1979), when such procedures were applied in the treatment of anxiety and worry. More recent evidence (Najmi & Wegner, 2008) supports the position that thought suppression/stopping is in fact counterproductive in treatment.

More recent applications of behavioural approaches have treated thoughts more contextually. For example, Martell et al. (2001) focused on rumination as a form of behaviour and encouraged clinicians to undertake functional analyses of rumination, rather than trying to change its content as might a cognitive clinician, by exploring the context in which rumination occurs for individual clients, and the specific consequences that maintain it. They suggest that rumination is a form of avoidance maintained by negative reinforcement, for example, a temporary reduction in anxiety or related (aversive) private events. Clinicians are encouraged to assist clients to identify specific triggers for rumination (as an avoidance behaviour) and the negative reinforcers that maintain it. Kanter et al. (2010) note that the focus on functional analysis in this case is not specific to verbal behaviours and is a significant contrast between BA as described by Martell et al. (2001) and earlier behavioural approaches. Martell et al. (2001) suggest that rumination results in a loss of contact with the immediate environment, thus alternate behaviour to activate is “attending to experience” (p. 124 of their protocol manual) where the client attends to the immediate experience of the surrounding environment (Martell & Kanter, 2010). The premise is that attention to the immediate environment enables the client to become a better observer of the precursors to and consequences of his or her problematic behaviour. It also exposes the client to possible worrying situations or events thereby setting up an in-built extinction process. Hayes, Luoma, Bond, Masuda and Lillis (2006) too found that such “attention-to-experience” or mindfulness techniques can be effective, as in ACT.

2.3.6 Skills Training

A variety of skills training components were noted in Kanter's et al. (2010) meta-analysis including social skills, assertiveness training, interpersonal skills, and communication skills. The premise for including skills training is that it addresses situations a client does not know how to engage in effective behaviour that is targeted for activation.

Empirical data in support of skills training components of BA varies. For example, social skills training alone has been demonstrated as effective in decreasing depressive symptoms (Bellack, Hersen, & Himmelhoch, 1981, 1983; Zeiss et al., 1979). It is included as a component in other empirically supported treatment approaches including CT and Dialectical Behaviour Therapy (Linehan, 1993). From the variety noted, there is no clear evidence that skills training is an essential component of BA, perhaps because in most instances clients were functioning normally in their environment prior to some precipitating event, and they could in most cases be assumed to have the skills to engage normally with their environment, even if those skills may not have been utilised for some time.

2.3.7 Relaxation Techniques

Relaxation techniques featured in only a small number of BA treatments reviewed by Kanter et al. (2010) (Gallagher et al., 1981; Lewinsohn et al., 1976; Lewinsohn, Antonuccio, Steinmetz, & Teri, 1984; Lewinsohn, Muñoz, Youngren, & Zeiss, 1978). They are usually a supplementary technique targeting sleep difficulties (Lewinsohn et al., 1976). Zeiss et al. (1979) included relaxation to increase the enjoyment gained from pleasant activities activated as part of behavioural activation. Morgan and Jorm (2008) cited nine randomised controlled trials that evaluated progressive muscle relaxation clients with depressive disorders and found that relaxation training alone could lead to greater symptom reduction compared to the wait-list or control group, but less symptom reduction compared to psychological interventions for depression such as CT. They suggested that relaxation training, incorporated in treatments for anxiety, could be useful in treating depression because of the overlap between symptoms in depression and anxiety. However, Kanter et al. (2010) report that there seems to be little empirical support for relaxation techniques being a key ingredient of successful BA approaches. In terms of applicability to anxiety conditions, even though relaxation training is drawn from treatments for anxiety, it is

usually incorporated as supplementary to other cognitive or behavioural techniques and empirical evidence of its standalone effectiveness is inconclusive.

2.3.8 Specifically Targeting Avoidance

Procedures aimed at explicitly targeting avoidance are unique to the BA protocol defined by Martell et al. (2001). Historically, behavioural theory of depression focused on deficits in positive reinforcement while behavioural theory of anxiety focused on excessive negative reinforcement (e.g., of avoidance). But as early as Ferster (1973), there has been recognition that the two are inter-related. Martell et al. (2001) emphasised several procedures to help clients identify avoidance and activate alternate behaviours. Martell et al. (2001) suggest that treatment should help clients learn to “act according to a goal rather than according to a feeling” (p. 116), concentrating on working from the “outside- in” (p. 63), and altering behaviour without waiting for or needing feelings to change first. As avoidance is included in all behavioural models of anxiety, specific targeting of avoidance behaviours is likely to be an effective component of BA applied to anxiety. A structured activation strategy can often inherently decrease avoidance behaviours simply by (gradually) replacing them with non-problematic behaviours that are progressively reinforced.

2.4 Efficacy of Contemporary Behavioural Activation Therapy

BATD has been applied in treating depression, addiction (Daughters et al., 2008), depression in cancer patients (Hopko, Bell, Armento, Hunt, & Lejuez, 2005), comorbid anxiety and depression (Hopko et al., 2004), a single case study of a suicidal depressed individual with Borderline Personality Disorder (Hopko, Sanchez, Hopko, Dvir, & Lejuez, 2003), and a single case study of an adolescent with depression and a history of child maltreatment (Ruggiero, Morris, Hopko, & Lejuez, 2007). Lejuez et al. (2001) focus on the relative rates of reinforcement for depressed and non-depressed behaviour. Settings in which BATD has been applied include university counselling centres (Gawrysiak, Nicholas, & Hopko, 2009), inpatient hospital settings (Daughters et al., 2008; Hopko et al., 2003) and in primary care facilities (Hopko et al., 2005; Uebelacker, Weisberg, Haggarty, & Miller, 2009). Several smaller evaluations of Martell et al.'s (2001) BA have yielded some empirical evidence for its effectiveness. They include BA compared to a wait-list control in a public mental health setting (Porter, Spates, & Smitham, 2004), comorbid depression and obesity (Pagoto, Bodenlos, Schneider, & Spates, 2008), post-traumatic stress disorder in a sample of

veterans (Jakupcak, et al., 2006) and comorbid depression and post-traumatic stress disorder (Mulick & Naugle, 2004; Wagner, Zatzick, Ghesquiere, & Jurkovich, 2007).

BA by Martell et al. (2001) has gained empirical support for its effectiveness in a large randomized trial in an outpatient mental health setting with a depressed sample (Coffman, Martell, Dimidkian Gallop, & Hollon, 2007; Dimidjian et al., 2006; Dobson et al., 2008). Data suggested that it is as effective, or more effective than, Cognitive (Behavioural) Therapy and anti-depressant medications. A meta-analysis of 20 randomised controlled studies with a total of 1353 participants by Mazzucchelli et al. (2009) examined the effect of BA treatments on clients' well being and their results suggested that BA interventions can increase the well being of recipients and are equally effective regardless of depression status. Importantly, recent work by Dimidjian et al. (2011) suggests that the relative parsimony of BA approaches compared to other evidence based psychotherapies may be particularly conducive to its application using novel delivery formats, including brief group formats, telephone delivery, bibliotherapy and Internet. This is of particular interest to the current study.

The structure of BA is also important to consider. Kanter et al. (2009) suggest that a logical sequence for BA approaches may be to start with standard assessment strategies that include activity monitoring and values assessment, leading to a treatment plan for activity scheduling. This sequence essentially duplicates that of BATD, and is the premise for Turner and Leach's (2009) Behavioural Activation Treatment for Anxiety, which is covered in more detail in the following sections.

2.5 Application of Behavioural Activation to Anxiety

Hopko et al. (2006) first noted that while accumulating evidence indicated that behavioural activation was effective in treating clinical depression, approximately 50% of individuals with depression have a comorbid anxiety disorder (Mineka et al., 1998). Given the functional similarity between anxiety and depression they asked whether behavioural activation treatments could be conceptually compatible with existing theories and models underlying effective interventions for anxiety disorders. Consequently, if behavioural activation treatments were conceptually acceptable for application to anxiety disorders, what changes could be incorporated into behavioural activation approaches to better accommodate for anxiety related symptoms?

Comorbidity of anxiety and mood disorders is substantial (Hopko et al., 2006) and there is a high degree of overlap of symptoms, even though there are symptom patterns specific to certain types of depressive or anxiety disorders. Generally shared

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symptoms include difficulties concentrating, psychomotor agitation or restlessness, fatigue, and difficulties with sleep (Barbee, 1998). Hopko et al. (2006) suggest that decreased control and predictability may be a common psychological vulnerability across clients with both types of disorders. From a neuropsychological perspective Barlow (2004) and Kendler (1996) suggest that anxiety and mood disorders may be a manifestation of similar neurobiological processes given that certain classes of medications, particularly serotonin and norepinephrine reuptake inhibitors are considered effective for both anxiety and mood conditions.

Barlow and his peers (Barlow, 2004; Barlow et al., 2004) go further to suggest that high rates of comorbidity and shared symptoms patterns, notwithstanding specific heterogeneity of anxiety and depressive symptoms, are an inconsequential variant of a more important broader neurotic or negative affect syndrome and that negative psychological vulnerabilities and proximal life stressors contribute to both anxious or depressive behaviour. Lejuez, Hopko, Levine, Gholkar and Collins (2006) noted that Barlow (2004) suggested an increased emphasis on identifying important, controllable, and causal environmental factors related to the etiology and maintenance of depressive and anxiety symptoms which often involve biological vulnerability and early life experiences that elicit a "sense of uncontrollability" which seems to be a core negative affect in anxiety and depression. On this basis, Lejuez et al. (2006) concluded that the defining common feature of anxiety and depressive disorders is avoidance behaviour associated with the client's problems. For example, social anxiety can be associated with avoidance in social contexts because of fear of embarrassment or judgement, and depression can be associated with general withdrawal from the environment due to aversive elements. Lejuez et al. (2006) suggest that in anxiety and depressive conditions, the negative affect syndrome (including cognitive symptoms) can best be reduced through interventions that incorporate strategies to modify approach behaviours and eliminate reinforcement in the environment that leads to avoidance. Using such an approach, a person suffering from depression can reduce withdrawal behaviours and work toward increasing response contingent positive reinforcement and an anxious person can approach anxiety-eliciting situations/objects and extinguish fear through behavioural exposure and subsequently increase response contingent positive reinforcement. Lejuez et al. (2006) remark that the end result is the same, and the same behavioural principles apply.

For depressed behaviour, functional analytic strategies are suggested by Lejuez et al. (2006) to identify positive and negative reinforcers that maintain depressive behaviours. These reinforcers are targeted for reduction using the principal of extinction (Lewinsohn, 1974). Escape and avoidance patterns are reduced by examining the consequences and function of depressed behaviours, with the individual gradually led to recognise depressed behaviour may be a function of avoiding aversive situations. Through reinforcement of incompatible (non-depressed) behaviour, depressed behaviour is extinguished by providing alternate sources of environmental reinforcement via the facilitation of approach behaviour (activation). Over time, this extinction process increases the value of reinforcers for approach behaviours relative to avoidance behaviour.

In contrast, Lejuez et al. (2006) point out that anxious avoidance patterns have a more direct extinction process, exposing individuals to aversive conditioned stimuli while preventing an avoidance response. Exposure is a common component of many therapies for anxiety conditions (Barlow, 2004). For example, Exposure with Response Prevention therapy is often applied to OCD conditions. Without experiencing the anticipated negative consequence, anxious responses over time in the presence of the conditioned stimuli is likely to reduce due to desensitisation, and then progressively extinguish through non-reinforcement. Behavioural activation involves exposure as part of its process. In both depressed and anxious behaviour, the behavioural avoidance has the effect of narrowing behavioural repertoires and limiting opportunities for environmental reinforcement (Lejuez et al., 2006). For example, in GAD, worry might function to avoid greater arousal and distress (Borkovec & Roemer, 1995). Given this similarity, BA approaches may therefore be conceptually compatible and acceptable for applications to anxiety conditions.

2.5.1 Turner and Leach (2009): Behavioural Activation Treatment of Anxiety

Turner and Leach (2009, 2010), reported findings from applying a new protocol, called Behavioural Activation Treatment of Anxiety (BATA), described in Turner's (2010) doctoral dissertation, in a series of single case replications involving seven older adults, each of whom met criteria for clinical anxiety (GAD and Social Anxiety) without co-morbid depression. In six of the seven cases, significant changes in daily activity levels and clinically meaningful decreases in anxiety were reported during the treatment phase. Turner and Leach's (2009, 2010) reports show that increased activation in functionally positive areas is associated with decreases in

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reported anxiety using standardised measures, BAI (Beck & Steer, 1990) and DASS-21 (Lovibond & Lovibond, 1995a). It was shown that there were associated increases in the activity levels in some key life areas in six of seven participants. Reductions in anxiety were maintained at a 3-month follow-up. In Turner's (2010) BATA protocol, treatment was delivered in twelve 60 minutes individual sessions using an ABC phase with repeated measurement design.

The BATA protocol described by Turner (2010) included only what he concluded were "essential elements" of contemporary BA approaches, namely Activity Monitoring (and reviewing), Activity Scheduling, and Goal Setting (including Values Assessment) as part of an individual functional analysis. These were selected because they were common elements of the two main contemporary BA models (i.e., BA, BATD) and were supported by fundamental principles of behaviour. All supplementary treatment elements such as relaxation training and skills training were excluded. Turner's (2010) BATA protocol utilised real time self-monitoring sheets for both activity and self-reported anxiety levels to support the primary goal of increasing approach activity activation via activity scheduling.

Participants were included in Turner and Leach's (2009, 2010) research only if they met the DSM-IV criteria for an anxiety disorder without signs of co-morbidity (e.g., depression), aiming to address limitations noted in the extant BA literature at the time where co-morbidity of depression and other disorders was often not controlled for. Single-case experimental design was used, including the establishment of adequate baselines before beginning treatment. Turner also included measures of treatment integrity by first recording the audio of treatment sessions and then calculating inter-rater agreement for a random sample of 33.3% of all treatment sessions conducted for each participant. Treatment integrity is considered essential to the valid interpretation of results from psychological research (Waltz, Addis, Koerner, & Jacobson, 1993), yet is often poorly established.

The outcomes of Turner's research (Turner & Leach, 2009, 2010) suggest that the participants' increased approach behaviours reduced avoidance behaviours. Approach behaviours were maintained by naturally occurring contingencies of reinforcement in their home, work, and community contexts and showed long term maintenance after treatment sessions ceased. They concluded that contingent positive reinforcement for approach behaviours led to concurrent decreases in negative reinforcement for avoidance behaviours and a gradual extinction of anxiety responses.

There is therefore preliminary support that BATA is an effective and efficient model of treatment for anxiety, without adjunctive technologies or theories, and that BATA could be effective as a standalone treatment for GAD and Social Anxiety in adults. Turner and Leach (2009, 2010) suggest that their research could have positive implications for the clinical practitioner seeking to provide cost-effective treatment for anxiety in typical outpatient settings.

2.5.2 BATA in the Present Study

Given the potential relevance of BA for the treatment of anxiety, the current study seeks on one front to further test the applicability of Turner's (2010) BATA protocol as a Behavioural Activation approach to the treatment of anxiety conditions across a wider age range of (participants in Turner and Leach's [2009, 2010] research were predominantly older adults).

The second main objective of this study was to evaluate the use of Turner and Leach's (2009, 2010) BATA using videoconferencing for clients in more isolated regions of Western Australia, as suggested may be possible by Dimidjian et al. (2011). The following chapter provides the background and the rationale for applying videoconferencing as a delivery mode in this research.

Chapter 3: Psychotherapy Delivered by Videoconferencing (VCP)

There are significant barriers to accessing specialist psychological services in regional and remote areas (Australian Institute of Health and Welfare, 2004; National Rural Health Alliance, 2009; Simpson, 2009; Thomas et al., 2009). One of the avenues of focus for public mental health care planning specifies the innovative use of e-technology to overcome these barriers (Centre for Rural and Remote Mental Health Queensland, 2011), including psychotherapy delivered by videoconferencing (VCP).

As early as 2000, Frueh et al. (2000) and later in 2006, Schopp, Demiris and Gleckauf (2006) suggested that delivery of evidence-based psychotherapy (EBP) via videoconferencing could be a major component in the future of psychotherapy and clinical practice. More recently, Olasupo and Atiri (2013) concluded that VCP reconceptualises the delivery of contemporary psychological care, by increasing access to care especially in regional and remote areas not well serviced by specialist professionals, enabling service delivery to clients who cannot attend in person due to physical or psychological limitations, reducing travel costs and delays to care, improving continuity of care, and reducing stigma associated with seeking psychological care.

According to Backhaus et al. (2012), due to the nature of anxiety disorders, the target of BATA, sufferers who avoid anxiety provoking situations such as large groups of people at hospitals or clinics, or travelling (driving a motor vehicle or taking public transport), could benefit from VCP because they may prefer to seek treatment in familiar environments such as their own homes, if such options are available.

In Chapter 2, it was noted that anxiety disorders are the most common psychological conditions and that there is a continuing need to investigate new treatment options. This study posits that BATA by Turner and Leach (2009) potentially offers an easy-to-administer protocol that may be effectively delivered via VCP to anxiety sufferers residing in remote and regional areas. Since VCP is proposed as a delivery mode for BATA it is useful to provide background context for the current study by reviewing and summarising the body of literature on videoconferencing as a delivery mode for psychotherapy generally, and then to narrow the focus on VCP's applicability for delivering treatments for particular psychological disorders, in particular, anxiety conditions.

3.1 Videoconferencing Technology

Significant improvements in technology during the past 10 years, particularly the ability for audio and video communication to occur across vast geographical distances, has led to an increase in interest into VCP (Backhaus et al., 2012). Early online counselling was conducted using text as the communications medium and was subject to limitations and difficulties that required significant adjustments to enable adequate understanding between the communicating parties. In contrast videoconferencing provides a more natural means for two parties to communicate (Barak et al., 2009).

Easy-to-use services such as Microsoft's Skype™ (www.skype.com), Google Hangouts (hangouts.google.com), Cisco Webex (www.webex.com), Go-to-Meeting (gotomeeting.com) and others, provide videoconferencing capabilities with commodity hardware and residential grade Internet access. Skype for example, used during this study, at the time of writing, provided videoconferencing services free of charge, while Akamai's (2013) "State of the Internet" reported that average Internet access speed in Australia (ranked 44th in the world) was 5.8Mbps, well above the minimum of 400kbps required for "high quality" video calling using Skype (2014a).

In 2013, nearly all portable computers (notebooks) manufactured have built-in speakers, Webcams and microphones, and it is easy and inexpensive to add speakers, Webcam and microphone (or headset) to most desktop systems via Universal Serial Bus (USB) ports (Fleming, Brown & Houston, 2013). Further, mobile devices including commodity smartphones and tablets now provide videoconferencing capabilities. For example, there are "apps" for Apple "iDevices" such as iPhone and iPad and for Android (e.g. Google Nexus and Samsung Galaxy) for videoconferencing including Skype, Google Hangouts, and GoToMeeting.

Notwithstanding issues regarding privacy, security and confidentiality (see Section 3.3.2), the wide availability of videoconferencing technology highlights the potential for VCP to be an accessible and attractive service delivery mode. The following section provides a brief history of VCP's early development and highlights the increasing interest of VCP as an effective service delivery option.

3.2 A Brief History of Videoconferencing as a Service Delivery Mode for Psychotherapy

Delivering psychotherapy via videoconferencing technology was attempted as early as 1961 by Wittson, Affleck and Johnson (1961), who established a

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“telepsychiatry” service in the USA linking psychiatric providers in Nebraska with distant hospitals. Whitten and Kuwahara (2003) have commented that since then, the number of “telemedicine” projects and services has grown so large that it is no longer possible to easily quantify.

A review by Richardson, Frueh, Grubaugh, Egede and Elhai (2009) for the National Institute of Health (NIH) in the USA, of existing literature and the directions for VCP (which they termed “tele- mental health”), suggested that the use of tele- mental health in routine clinical practice is increasing, the costs associated with videoconferencing are decreasing, quality is improving, and patients appear to be more receptive to trying tele- mental health interventions. They reported that the volume of clinical visits via tele- mental health had increased significantly in recent years with the number of publications on the subject that they identified from 2000 to 2008 being more than three times the total number of publications from the preceding 30 years, reflecting the increasing interest into VCP as a service delivery mode.

Prior to 2003, literature about tele-mental health reviewed by Richardson, et al. (2009) was largely descriptive of small applications and case studies, across which they found strong evidence of high patient and moderately high provider satisfaction for tele-mental health services, and strong evidence for reliability of clinical assessments relative to face-to-face assessments. However, they also concluded that there was little research into supporting the effectiveness of tele-mental health to treat specific disorders such as depression and anxiety using established treatments, limited research into unique qualities of tele-mental health that would enhance treatment outcomes, and limited evidence of whether or not tele-mental health has comparable effectiveness compared to traditional in-person services for specific populations (e.g. incarcerated patients, children/adolescents, rural residents, older adults), particularly as a compensatory approach to service gaps in real world settings.

In an extensive review of applications of videoconferencing as a delivery mode for psychotherapy, Backhaus et al. (2012) found that the terms “telehealth”, “telemental health”, “e-health” or “telepsychiatry” were all used to refer to the delivery of mental health services via videoconferencing, but that multiple terms were used within articles to denote psychotherapy delivered via videoconferencing. They raised the importance of precise terminology, particularly the specification of what format was used, concluding that the term “videoconferencing” has the advantage of being more specific than terms like “telehealth” or “telemedicine”. “Videoconferencing” clearly describes

that images (and sounds) are communicated to remotely situated parties. As such, the present study uses the term “Videoconferencing Psychotherapy” (VCP).

Much of the focus on developing VCP has taken place in countries in which mental health services are concentrated in metropolitan areas (Simpson, 2009) because a main attraction of videoconferencing is its ability to overcome the challenge of geographical separation between the provider and the client. For example, the Department of Veteran’s Affairs in the USA has emerged as one of the largest providers of VCP in the USA and has stated that videoconferencing is one of the main ways to improve access to healthcare services for patients who live in regional, rural and remote areas, who would otherwise not be able to have easy access to mental health care services due to geographic remoteness, or mobility limitations (Gros, et al., 2013). The study by Gros et al. (2013) showed evidence to support videoconferencing as a means for service provision of psychotherapy and clinical practice in traditionally underserved areas and populations and suggested that although obstacles have been identified during initial development and investigation of VCP, most of these concerns will likely improve with increased acceptability of VCP among patients, providers, and administrators.

In summary, advances in videoconferencing technology have led to a reduction in costs, improved quality, wider distribution, and therefore greater acceptance. These factors have led to greater support for its use as a primary method for improving access to services, reducing geographical barriers. This is of particular benefit in countries such as Australia, where individuals may be broadly dispersed over wide areas lacking in available mental health services. For this reason, the current study sought to explore the use of VCP as an effective service delivery option for conducting BATA for anxiety sufferers residing in regional and remote areas in Australia. Importantly, whilst there have been considerable advances in videoconferencing technology, there are still challenges that need to be addressed.

3.3 Technical Challenges Relevant to VCP

The problems associated with earlier technology, such as audio and visual delays (“lag”), and line instability (“dropout”) have largely been improved by advances in communication speeds and access to high speed Internet (Gros et al., 2013). However, Gros et al. (2013) identified remaining challenges for VCP, including non-uniform Internet speeds across different regions, the need to modify treatment protocols to cater for the difference between videoconferencing and in-person interactions,

confidentiality and data security, and technological education for both patients and clients so that the benefits of VCP can be maximised. Similarly, Barak, Hen, Boniel-Nissim and Shapira (2008) documented challenges for VCP, including clients who do not have reliable Internet facilities, practical and technical concerns related to training for online therapy (like clients who struggle with basic Internet usage skills), and perceptions of lower security and confidentiality when using videoconferencing (fear of information being hacked or accessed without authorisation) (Young, 2005).

To minimise the remaining challenges, this study adopted suggestions from existing literature for addressing general technology literacy and technical support for videoconferencing, described in detail in Chapter 4 (Method). Mechanisms adopted for minimising treatment protocol impacts with information and education are also described in Chapter 4. The following sections describe this study's approach to the issues of inconsistent Internet bandwidth and concerns over security, privacy and confidentiality.

3.3.1 Internet Bandwidth

With respect to variance in Internet bandwidth across regions, Gros, Yoder, Tuerk, Lozano and Acierno (2011) pointed out that inconsistent Internet bandwidth remains a technological challenge for VCP, because while VCP may be most useful in treating patients in geographically-isolated areas, unfortunately, issues related to poor bandwidth are much more common outside major population centres due to the historical "digital divide" between metropolitan and non-metropolitan areas (Rains, 2008; Wilson, Wallin, & Resier, 2003). This is particularly problematic for home-based VCP, since community mental health clinics in regional and remote areas providing clients with VCP facilities will usually have reliable access to appropriate Internet services.

For example, statistics from the USA show that despite encouraging figures reporting 90% of participants in home-based VCP having good Internet access (Gros et al., 2011), figures are not as good when considering nationwide studies of rural Internet access, with only 40% of homes having broadband Internet, and more than 60% still limited to dial-up modem speeds (≤ 56 kbps) (Rains, 2008; Ruggiero, Gros, McCauley, de Arellano, & Danielson, 2011). Unfortunately for the wide applicability of VCP, lower Internet speeds are associated with increased audio and video delays and increased chances of lost connections ("dropouts") (Gros et al., 2013) and so Gros et al.

(2013) suggest that VCP should be offered through the patient's personal computer only when appropriate broadband Internet is available.

In Australia, one of the business drivers cited by the National Broadband Network (NBN) is the improved access to telehealth for residents of regional and remote areas (NBNC0, 2010; NICTA, 2010). The NBN in Australia is establishing broadband Internet access to regional and remote areas of at least 20Mbps bandwidth using a combination of fixed wireless and satellite technology (NBNC0, 2010), well above the minimum requirement for high quality videoconferencing. In this study, each participant's Internet support for videoconferencing from their regular site of participation was tested during preparatory sessions (described in detail in Chapter 4).

3.3.2 Data Security, Confidentiality and Privacy

Gros et al. (2013) suggest that because patient privacy and confidentiality are important, secure encryption settings are recommended for VCP, but note that true end-to-end encryption is onerous for both client and provider, requiring (usually offline) secure exchange of "secret keys" to enable the use of encryption techniques to ensure that "man-in-the-middle" attacks on security are not possible (Bishop, 2004). Such levels of encryption are used only by organisations that can justify the expense and additional infrastructure, such as government departments, defence organisations and commercial organisations (say in finance) that have high security requirements (Bishop, 2004). Higher levels of encryption typically require more resources, resulting in potential reductions in connection speed and increased delays in audio and video signals. Nevertheless, consumer-grade encryption for videoconferencing is widely available, for example, at the time of writing, Skype's free services utilise end-to-end encryption for videoconferencing (Skype, 2014b).

Today, for most purposes, the confidentiality and data security issues associated with VCP are potentially more to do with perception than the practical level of security and encryption, since just as with the use of any consumer level online "cloud" provider, for example, for email and calendars (Outlook.com, Yahoo! or Google/Gmail), photographs and online storage (iCloud [www.icloud.com], Dropbox [www.dropbox.com] and SkyDrive/OneDrive [onedrive.live.com]), the providers themselves can in most cases gain access to the unencrypted data stream (Bishop, 2004), but consumers nonetheless utilise cloud email services for online shopping, banking, information storage and private, often sensitive, communication.

In summary, there are challenges for contemporary videoconferencing as a delivery mode for psychotherapy including availability of reliable high speed Internet in different regions, perceptions of lower privacy/confidentiality, basic computer and Internet literacy for therapists and clients, and modifications needed to treatment protocols. Nevertheless, with appropriate preparation and training, and minor adjustments to communication techniques and treatment protocols, VCP is an attractive, low cost, potential delivery mode for service provision, especially for regions underserved by appropriately trained mental health professionals. The potential of VCP as a mode of delivery is also supported by more recent research.

3.4 Overview of Contemporary Research into VCP

Research reviewed between 2003 and 2008 by Richardson et al. (2009) has demonstrated generally high satisfaction and acceptance of VCP across a variety of clinical populations over a wide range of services. They concluded that the literature supported the argument that VCP is clinically superior to reduced or no mental health services at all, which is relevant for service delivery to regional and remote areas, a key interest of the current study.

A meta-analysis by Backhaus et al. (2012) reviewed 42 unique studies of VCP categorised by therapy type (71% individual, 17% group based, 10% family based and 2% combined), age group (86% adult, 10% children and adolescents, and 5% not classified), gender (60% male and 40% female), race (61% of studies with more than 50% Caucasian, 55% African American, and one study each respectively for Hispanics and American Indians), civilian (74% of studies) versus military veterans (21% of studies) with 5% of studies using a combined civilian/military cohort, and psychological disorders (21% trauma, 19% mixed disorders, 12% eating disorders, 7% mood, 7% non-trauma anxiety, 7% pain disorders, 7% addiction, 7% adjustment disorders, 5% comorbid depression and anxiety and 7% other disorders). They concluded that the studies reviewed generally supported the feasibility and effectiveness of VCP. The current study aims to provide supporting empirical evidence for VCP applied to anxiety disorders, which formed only 7% of the studies reviewed by Backhaus et al. (2012).

The VCP studies reviewed by Backhaus et al. (2012) covered a range of treatment delivery types and therapy formats, with the largest proportion focussed on individual CBT. They suggest that even though CBT is a broad term that encompasses a wide range of techniques, there is clear evidence that CBT for individuals can be

effectively conducted via VCP. Similarly, Simpson (2009) indicated that the majority of VCP studies described to date used CBT as the main therapeutic model.

Backhaus et al. (2012) pointed out that of the 42 unique studies they reviewed, only 21% had subjects randomised across treatment condition, and of these, many demonstrated differences between the VCP and in-person conditions but did not discuss the statistical or clinical significance of within-group changes. The majority of these studies presented superiority designs, but were generally statistically underpowered due to small sample sizes, potentially missing true differences between conditions. They note that the lack of statistical differences in these studies does not mean that outcomes from VCP and in-person are identical, and non-inferiority and equivalence designs suggested by Greene, Morland, Durkalsi and Frue (2008) offer an alternative experimental design approach.

Similarly, Richardson et al. (2009) found few controlled studies that compared face-to-face with VCP in a standardised manner. They concluded that larger, methodologically sound trials are needed that target specific populations (e.g. veterans, geriatrics, incarcerated detainees) with specific disorders (e.g., trauma, depression, anxiety) using uniform approaches (e.g. application of the same CBT protocol across delivery mode).

Of the 42 unique studies reviewed by Backhaus et al. (2012), at least one standardised measure with well-accepted psychometrics was reported by 29 (69%) of the empirical studies. The most common measures were versions of the Beck Depression Inventory II (Beck, Steer, & Brown, 1996), which was cited in 10 different articles, the Working Alliance Inventory (WAI) (Horvath & Greenberg, 1989), cited in nine different articles, and the Structured Clinical Interview for the DSM-IV (SCID-I [First, Spitzer, Gibbon, & Williams, 1996] and SCID-II [First, Gibbon, Spitzer, Williams, & Benjamin, 1997]), which was utilised in 6 of the reviewed studies. However, 17% of the studies reviewed by Backhaus et al. (2012) did not list any measures used, all of which described uncontrolled studies, and non-standardised measures, including qualitative questionnaires and interviews (Bakke, Mitchell, Wonderlich, & Erickson, 2001; Bischoff, Hollist, Smith, & Flack, 2004; Simpson, Morrow, Jones, Ferguson, & Brebner, 2002), and author-created measures (Cluver, Schuyler, Frueh, Brescia, & Arana, 2005; Deitsch, Frueh, & Santos, 2000; Harvey-Berino, 1998; King et al., 2009) were used by 28% of the studies reviewed. Backhaus

et al. (2012) suggest that future research should utilise standardised psychometric measures where possible.

Richardson et al. (2009) suggested that the low uptake rates they observed could be due to clinicians' scepticism of VCP, with the main objection cited being that the "still artificial" nature of videoconferencing may impact on the therapist-client relationship, despite numerous studies that they reviewed suggesting that minimal technical modifications are required by the therapist, and that VCP delivery mode had little negative influence on clinical outcomes or satisfaction. Wray and Rees (2003) documented similar negative therapist perceptions of VCP, even though they note that only a small number of Australian psychologists took part in their study.

Further, Backhaus et al.'s (2012) findings are consistent with those of Richardson et al. (2009) that the empirical evidence base for VCP remains underdeveloped. Backhaus et al. (2012) conclude that there remains a need for further research into VCP applied to specific disorders, including generalised anxiety disorder, phobias, and personality disorders, as these disorders may pose particular challenges or benefits when treated via VCP, for example, maintaining clinical focus, maintaining therapeutic alliance, and conducting specific exposure therapies at a distance.

In terms of therapist-client relationship, of the 47 studies reviewed by Backhaus et al. (2012), 16 (34%) examined therapeutic relationship. Most found that therapeutic alliance was strong in VCP, and in most of the controlled studies, the ratings of therapeutic alliance were found to be equivalent between VCP and in-person delivery. A minority of articles reported an enhanced (Simpson, 2001) or diminished (Glueckauf et al., 2002; Green et al., 2010) relationship via VCP. Backhaus et al. (2012) recommend that future studies should investigate how therapist-client relationship is influenced by a) population type because, for example, rapport may be more difficult to establish with sufferers of particular disorders, b) therapy format (individual versus group), and c) technology used, for example, standard videoconferencing equipment, videophones, online Web based teleconferencing. Jerome and Zaylor (2000) found evidence that videoconferencing does enable the transmission of social cues and affective information, but argued that more research is needed into examining how these differences might have an impact on therapeutic process and outcome.

Backhaus et al. (2012) recommended that future studies should investigate how therapist-client relationship is influenced by a) population type because, for example, rapport may be more difficult to establish with sufferers of particular disorders, b)

therapy format (individual versus group), and c) technology used, for example, standard videoconferencing equipment, videophones, online Web based teleconferencing.

Narrowing the focus to applying VCP to anxiety conditions, a pilot study by Dunstan and Tooth (2012) compared VCP to traditional face-to-face sessions for clients with anxiety or depressive symptoms. Subjective evaluations by clients indicated improvements for both delivery modes, with positive feedback provided by clients for VCP. Other research by Lazzari, Egan and Rees (2011) provided some validation of the applicability of BAT for depression (BATD), a precursor for the Turner and Leach (2009) BATA protocol investigated in this study for use with VCP, when delivered via videoconferencing.

3.5 Clinical Outcomes from VCP

Clinical outcome data was provided in two-thirds of the 47 studies reviewed by Backhaus et al. (2012). Across the broad range of psychological disorders treated, the studies in general reported that VCP worked well, with one study by Nelson, Barnard, and Cain (2003) showing that VCP worked a little faster than in-person delivery. Importantly, Backhaus et al. (2012) posit that individuals with different psychiatric diagnoses may differentially respond to treatment via VCP, but conclude that the numbers of studies about the applicability of VCP to different psychological conditions remains too small for a meaningful meta-analysis to be performed.

The VCP studies reviewed by Backhaus et al. (2012) applied to participants with many clinical conditions. The largest category was trauma disorders (including PTSD and acute stress disorder). Next largest was “general or mixed presenting problems”, which they noted that while such heterogeneous samples may be easier to recruit, it is more challenging to interpret (and generalise) findings from these cohorts.

Backhaus et al. (2012) concluded that VCP seems well suited to trauma disorders. They suggest that a common feature of PTSD, for example, is avoidance of uncomfortable situations that may remind the person of the traumatic event, and that some individuals with PTSD reported that VCP offers a more comfortable therapeutic distance between them and the provider while the therapeutic relationship is being established (Thorp, Fidler, Moreno, Floto, & Agha, 2012). Similarly Olden, Cukor, Rizzo, Rothbaum and Difede (2010) concluded that patients with psychological trauma conditions may initially be reluctant to disclose personal information, even to mental health professionals. Kavanagh and Yellowlees (1995), Tachakra and Rajani (2002),

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and Wootton, Yellowlees and McLaren (2003) all suggest that VCP can encourage patients to exchange more information with the provider because patients feel less intimidated than during in-person interactions.

Effectiveness of VCP for posttraumatic stress disorder was also examined by Frueh et al. (2007) in a RCT, and by Tuerk et al. (2010) and Germain, Marchand, Bouchard, Drouin and Guay (2009) in nonrandomised comparison studies. While the two non-randomised studies found no major differences between in-person delivery and VCP (both groups demonstrated clinical improvements), in the randomised study neither group had significant changes in posttraumatic stress symptoms attributed to the treatment protocol applied.

Other disorders for which VCP was attempted included addiction disorders, with the three relevant studies reviewed by Backhaus et al. (2012) that provided clinical outcome data all indicating that VCP was an effective method for delivering addiction focused interventions, and five empirical studies reviewed by Barak et al. (2008) applying VCP for miscellaneous clinical areas including parent–child problems, gender reassignment, mood disorders, adjustment, and anger showing positive outcomes. The only randomised controlled study of those reviewed by Backhaus et al. (2012) for anger difficulties, by Morland et al. (2010), found VCP to be just as effective as in person for treating individuals.

Mitchell et al. (2008) was the only study reviewed by Backhaus et al. (2012) with a randomised comparison between in-person treatment and VCP for eating disorders with results indicating that both the in-person and VCP groups had similar treatment retention and both showed clinical improvements. However, the in-person group had a statistically significantly greater reduction in eating-related distorted cognitions and depression than the VCP group, although Mitchell et al. (2008) acknowledge that “the differences overall were few in number and of marginal clinical significance”.

For anxiety and/or depression conditions, clinical outcome data was presented in 10 of the 47 articles reviewed by Backhaus et al. (2012), with two RCT studies (Nelson et al., 2003; Ruskin et al., 2004) finding no significant differences between in-person and VCP delivery for anxiety and depression, with both delivery modes showing improvement, providing some optimism that BATA may be as effectively deliverable via VCP.

A pilot study by Rees and Stone (2005) explored the acceptability and efficacy of a five session behavioural activation treatment (BAT) delivered via VCP to three participants, aged 64 to 73 years, diagnosed with major depressive disorder. Their results showed clinically significant and reliable (maintained at one month follow up) decreases in depression and negative affect, and increases in positive affect. As covered in Chapter 2, BAT for depression was a precursor and inspiration for Turner and Leach's (2009, 2010) BATA, and the early success of the Rees and Stone (2005) study is a motivation for testing BATA for delivery via VCP.

3.6 VCP in the current study

Existing literature has demonstrated that psychotherapy delivered via videoconferencing has gained attention and some empirical support as a potentially attractive, innovative application of increasingly commodity telecommunications and computer technology. As such, VCP could provide a useful delivery mode for evidence-based psychological services, especially to clients who would not otherwise have easy access to traditional in-person, face-to-face services.

In the previous chapter, Behavioural Activation Treatment for Anxiety (BATA) was described as a structured, easy to administer, 12 session protocol for which Turner and Leach (2009, 2010) demonstrated early empirical support as an effective, behavioural approach to the treatment of GAD and social anxiety. The current research is a clinical study that examines how well suited BATA (Turner, 2010; Turner & Leach, 2009, 2010) is to VCP delivery when applied to non-trauma anxiety conditions, specifically exploring whether or not the effectiveness of BATA is affected by delivery via VCP. Since anxiety is the most common type of psychological disorder, BATA delivered via VCP could be an attractive potential way to improve service delivery to anxiety sufferers residing in regional and remote areas.

BATA, as a behavioural approach, has been utilised in this study since Backhaus et al. (2012) point out that the majority of VCP they reviewed used some form of CBT as the treatment. Similarly, Wray and Rees (2003) noted that most of the psychologists using VCP were cognitive-behavioural in orientation, and so studies including a wider range of therapist orientations are warranted. Further, the use in this study of BATA as a treatment protocol specifically for non-trauma anxiety conditions is of interest since only 7% of the 47 studies reviewed by Backhaus et al. (2012) targeted non-trauma anxiety conditions even though non-trauma anxiety is the most common class of psychological disorder. Backhaus et al. (2012) suggest that different

psychiatric conditions may respond differently to VCP, and there was insufficient empirical evidence of use of VCP across psychological conditions identified in their review to undertake a meaningful meta-analysis.

In summary, this study seeks to extend the existing knowledge base for VCP by testing VCP as a delivery mode for treatment of non-trauma anxiety conditions using an easy to administer protocol (BATA) that takes a behavioural approach to treatment, rather than CBT that most of the prior research into VCP has utilised, and aims to lend empirical support to dispel negative notions that psychologists tend to have about VCP, as observed by Richardson et al. (2009) and Wray and Rees (2003). To enhance the assessment of this mode of delivery, the current study follows recommendations by Backhaus et al. (2012) to use standardised psychometric measures, in this case with regard to anxiety symptoms, anxiety diagnosis, and importantly in this context, the therapist-client relationship (see Chapter 4). Specific procedural detail for delivery of BATA via VCP in this study, described in Chapter 4, was framed in accordance with observations and recommendations from existing literature regarding technical aspects of videoconferencing (limitations and mitigations) and adjustments to treatment protocols and client and therapist behaviour.

3.7 Objectives of this study

Recapping, this study's objectives were to a) replicate Turner and Leach's (2009, 2010) original Behavioural Activation Therapy for Anxiety (BATA) findings in a group of clients with a younger age range than in the original research, and b) examine whether or not BATA could be delivered effectively as traditional, in-person delivery via videoconferencing (VCP). The research literature described in this chapter draws on common underlying characteristics of depression and anxiety, explaining how behavioural techniques may be effectively applied to anxiety, and how recent technological improvements in videoconferencing may be used effectively in this context. Based on this, it hypothesised that using BATA as an intervention will result in clinically meaningful improvement of recipients' anxiety symptoms, replicating the original Turner and Leach studies (2009, 2010), and further, that similar improvements will be observable regardless of whether BATA is delivered in person or via videoconferencing.

Chapter 4: Method

4.1 Design

Twelve participants (aged 19-52) were assigned across three groups in order to enable between-groups comparisons of the effectiveness of BATA, namely (a) Metropolitan In-person (MI), (b) Metropolitan Videoconferencing (MV), and (c) Regional/Remote Videoconferencing (RV).

The research used an interrupted time series (A/B/C) design to evaluate treatment effects on the reported anxiety levels for each participant. Each participant in each group took part in all three phases of the study: (A) Establishment of baseline for self-reported anxiety, (B) Treatment phase consisting of 12 weekly sessions of one hour duration following Turner's (2010) BATA protocol, and (C) Maintenance/follow-up phase of 8 weeks.

Repeated measures of anxiety were collected during each phase and participants were required to self-monitor their anxiety related behaviours each day in Phases A and B, but not in Phase C (to control for the potential therapeutic effects of self-monitoring alone) (Barlow, Hayes, & Nelson, 1984). Each case represents a clinical replication of the administration of BATA.

Single case design lends supporting empirical evidence for the generalisation of the effect of an intervention on an individual to other similar individuals, and is often adopted for exploratory research (Yin, 2013). Advantages of single case design include: ability to be applied with smaller numbers of participants, an emphasis on recognisable clinical change, flexibility under a variety of experimental conditions (ABC, ABA, etc.), and ability to be applied in situations where a control group is not available or impractical.

Although single case design is often adopted for exploratory research, limitations for its more general application have been cited, including not being able to quantify what would have happened had there been no intervention, being confident that effects detected are not due to individual or other environmental differences, and whether or not changes detected were purely coincidental (Shadish, Cook, & Campbell, 2001). Larger scale randomised ("controlled") designs seek to "even out" individual and environmental differences between groups (Rubin, 1986) by assigning large numbers of participants randomly across treatment groups so that individual and environmental differences "average out", and when there is an effect (difference)

detected between groups, then it can be attributed to the intervention (Shadish et al., 2001).

This study has adopted the Shadish et al. (2001) suggestions for mitigating the limitations mentioned above, and maximising the robustness of interrupted time series (this form of single case design) by: a) making the baseline phase relatively long, being at least six points of standardised measures and waiting for statistically confirmed “zero-trend” to be established so that each participant effectively provides its own control; and b) staggering (randomised) commencement of starting time for participants so that random variation across the sample minimises the probability that identical confounding factors can affect multiple participants in the same way at the same time. Examples of such factors include calendar or seasonal events like Christmas, other holidays, major sporting events, weather changes, and environmental effects like work activities or changes in family circumstances.

Between-groups comparisons have been included in this study by applying different delivery modes (in-person versus videoconferencing) and participant regions (metropolitan versus regional/remote) across different groups.

Data analysis of the single cases focused on identifying if a treatment effect was observed between the baseline (A) and treatment phases (B), and if there was a treatment benefit, whether or not it was maintained into the follow-up phase (C). Comparisons of outcomes across the different treatment groups were undertaken using a combined non-overlap and trend statistical technique, called Tau-U (Parker, Vannest, Davis, & Sauber, 2010) to measure effects of the two independent variables: participant location and delivery mode.

4.2 Participants

Forty-four (44) adults from local and regional/rural communities responded to advertisements to express an interest in participating in the study, and were considered for potential inclusion in one of the three groups. Respondents were placed in the most appropriate group based on location and access to Internet or private/public transport to the Murdoch University Psychology Clinic. Twenty three (23) respondents were excluded due to having co-morbid depression symptoms. The remaining 21 respondents underwent an intake interview to assess clinical suitability for participation. At this stage, a further seven were excluded due to presenting co-morbid depression symptoms, or presenting with high risk of harm to self, or because places were already full. Ultimately, 14 participants were recruited, of which two

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subsequently withdrew early in the baseline phase, both citing inability to commit to the daily monitoring and reporting requirements.

Four (4) participants were assigned to the Metropolitan In-person (MI) group. They were all female aged between 23 and 31 years ($M = 27$ years; $SD = 3.65$). Five participants were placed in the Metropolitan Videoconferencing (MV) group. They were females aged between 19 and 44 years ($M = 31.2$ years; $SD = 9.09$). Three females and one male were assigned to the Regional/Remote Videoconferencing (RV) group. They were aged between 43 and 52 years (two females: $M = 45.5$ years; $SD = 3.53$; one male aged 52).

Participant information is summarised in Table 1 below:

Table 1

Participants' Demographic Information and Anxiety Conditions

| | Age | Sex | Occupation | Diagnosis |
|-----------------------------------|-----|-----|---|---|
| Metropolitan In-Person (MI) Group | | | | |
| Participant 1 ("Joy") | 25 | F | Nurse | GAD |
| Participant 2 ("Anna") | 31 | F | Part-time university student | Panic disorder |
| Participant 3 | 23 | F | University student | Panic disorder w/agoraphobia & GAD |
| Participant 4 ("Sharon") | 29 | F | Administrator | Panic disorder w/agoraphobia |
| Metropolitan VCP (MV) Group | | | | |
| Participant 1 ("Stacey") | 19 | F | University student | Social anxiety disorder |
| Participant 2 | 34 | F | Part-time administrator & part-time student | Panic disorder w/agoraphobia |
| Participant 3 | 31 | F | Nurse | Agoraphobia without history of Panic disorder & OCD |
| Participant 4 ("Clara") | 28 | F | Part-time cleaner & retail assistant | GAD |
| Participant 5 ("Summer") | 44 | F | Part-time university student | Social anxiety disorder with agoraphobia |
| Regional/Remote VCP (RV) Group | | | | |
| Participant 1 ("John") | 52 | M | Dance instructor | Panic disorder with agoraphobia |
| Participant 2 ("Catherine") | 48 | F | Writer | Social anxiety disorder & GAD |
| Participant 3 ("Gemma") | 43 | F | Part-time university student | Social anxiety disorder & GAD |

Subsequently, three participants withdrew from the study during the treatment phase, Participant 3 from the MI group (at Week 6 of Phase B), Participant 2 in the MI group (at Week 6 of Phase B), and Participant 3 of the MV group (at Week 3 of Phase B). All withdrawing participants cited personal reasons for not being able to commit to

the study, including inability to commit to the daily monitoring and reporting requirements, and difficulty in travelling to the clinic due to work, family and financial constraints.

4.3 Measures

Measures used in this study are consistent with those described by Turner and Leach (Turner, 2010; Turner & Leach, 2009, 2010). The dependent variables were self-reported anxiety and stress. In addition, self-monitoring was used to measure daily activity levels. These measures are described below.

4.3.1 Diagnostic Measures

All potential participants were assessed against the criteria for an anxiety disorder as classified by the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) (APA, 2000) which provides a common language and standard criteria for the classification of mental disorders.

Assessment was made using the clinical standards from the *MINI International Neuropsychiatric Interview* (Sheehan et al., 1998), also known as M.I.N.I or MINI. The MINI is a structured diagnostic interview, developed to assess the diagnoses of patients according to DSM-IV. This differs from Turner and Leach's (Turner & Leach, 2009, 2010) studies that used the SCID-I for DSM-IV (First et al., 1996). However, the MINI has been tested for diagnostic concordance with SCID and results in the same diagnosis for 85-95% of cases (Sheehan et al., 1998). For the purposes of the proposed research, diagnosis based on the MINI will be accepted as being equivalent to SCID-I. The main benefit of MINI is its significantly shorter administration time compared to the SCID-I (Pinniniti, Madison, Musser, & Rissmiller, 2003).

4.3.2 Standardised Anxiety-Related Measures

The standardised anxiety-related measures described in this section were used as the dependent variables for each participant across all phases of the interrupted time series.

The *Beck Anxiety Inventory* (BAI) (Beck & Steer, 1990) has 21 self-report questions that measure the severity of anxiety, and emotional, physiological and cognitive symptoms of anxiety, standardised for adolescents and adults 17-80 years old. It is administered in 5 to 10 minutes. Each question asks respondent to rate on a four point severity scale: Not at all, Mildly, Moderately and Severely in one of the four

expressed aspects (a) subjective, (b) neurophysical, (c) autonomic, and (d) panic related.

The BAI is a psychometrically sound measure, with internal consistency (Cronback's alpha) ranges of 0.90 to 0.94 for adults and test retest (one week interval) reliabilities ranging from 0.62 (seven week interval) to 0.93 (one week interval) (Julian, 2011). The BAI has a good concurrent validity with the Hamilton Anxiety Rating Scales ($R=0.51$), the State-Trait Anxiety Inventory ($R=0.47-0.58$), and the Anxiety Scale of the Symptom Checklist-90 ($r = 0.81$) (Julian, 2011).

The BAI can be used to assess and establish a baseline anxiety level, to help track the effectiveness of treatment as it progresses, and as a post treatment outcome measure. The BAI measure has established validity across languages, cultures and age ranges (Steer & Beck, 1997).

The *Depression, Anxiety and Stress Scales* (DASS-21) (Lovibond & Lovibond, 1995a) is a shorter version of the DASS (42), with seven items in each subscale instead of the usual 14. The DASS is a set of three self-report scales to measure the negative emotional states of depression, anxiety and stress. Respondents are asked to rate on a four point severity/frequency scale the extent to which they have experienced each described state over the past week. Scores for Depression, Anxiety and Stress are calculated by summing the scores of the relevant items. The administration guidelines are provided in the DASS manual (Lovibond & Lovibond, 1995a).

The Depression scale assesses hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia and inertia. The Anxiety Scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious effect. The Stress scale is sensitive to levels of chronic non-specific arousal, including difficulty with relaxing, nervous arousal and being easily upset/agitated, irritable/over-reactive and impatient.

The DASS and the DASS-21 have strong psychometric properties, correlate highly with other anxiety and depression measures, and normative data are available for both clinical and non-clinical adults aged 20 to 60 years (Antony, Orsillo, & Roemer, 2001; Lovibond & Lovibond, 1995a). The DASS-21 has strong psychometric properties when used with older adults aged 60 to 88 years (Gloster et al., 2008). The main advantage of DASS-21 is the reduced administration time (5 to 10 mins), which is especially useful in repeated administrations. The shorter DASS-21 maintains strong psychometric properties and is considered a valid and reliable measure equivalent to

the longer 42 item version (Antony, Bieling, Cox, Enns, & Swinson, 1998; Henry & Crawford, 2005; Lovibond & Lovibond, 1995a). Some have suggested that the DASS-21 may be preferable to the full DASS due to the fact that it reduces the administration time by 50% and holds equivalent psychometric properties to the larger version (Antony, et al., p. 181).

Scores on the DASS Stress scale have been found to differentiate generalised anxiety disorder (GAD) from other types of anxiety disorders (Brown, O’Leary, & Barlow, 2001) and is strongly correlated with a primary GAD self-report measure, the Penn State Worry Questionnaire (Meyer, Miller, Metzger, & Borkovec, 1990). The DASS Depression scale is highly correlated with the Beck Depression Inventory, and the DASS Anxiety scale is highly correlated with the BAI (Lovibond & Lovibond, 1995b).

DASS-21 was selected for use in this study rather than the Beck Depression Inventory II (BDI-II) (Beck, et al., 1996) to retain consistency with the original BATA research (Turner & Leach, 2009; Turner, 2010) and because DASS-21 (with only 21 questions) provided an additional standardised measure of anxiety as well as providing information about whether or not co-morbid depression was present and/or becoming a risk issue for participants.

4.3.3 Self-Monitoring Anxiety and Activity Measures

The *Daily Anxiety Rating Scale* (DARS) (Appendix A) is a daily self-monitoring instrument described by Turner in his original thesis (2010). Participants are asked to rate the average intensity of their anxiety for six time periods: from waking to 9am, 9am to 12 noon, 12 noon to 3pm, 3pm to 6pm, 6pm to 9pm and 9pm to bedtime. The daily averages are calculated by summing each time period and dividing by the number of periods. Anxiety was described to participants by Turner (2010) as, “the co-occurrence of any two or more of the symptoms listed on the standardised measures that you have completed” (see Appendix A). The cues to self-rate anxiety were described for the time periods marked on the form.

The data generated from the DARS were used to account for variability in the participants’ reported levels of anxiety during the baseline phase and as another ongoing measure of self-reported anxiety levels through the treatment phase.

Turner (2010) constructed the DARS as a daily quantitative measure of private ‘anxiety’ based on guidelines by Barlow et al. (1984) for designing self-monitoring devices. The original study by Turner and Leach (2009) demonstrated that DARS had

some degree of concurrent validity with the two standardised anxiety measures (BAI and DASS-21) and concluded that DARS was useful a measure to establish baseline before commencing the treatment phase.

The *Behaviour Self-Monitoring Diary* BSMD (Turner, 2010) shown in Appendix B is a daily diary for recording minutes of activity during three time periods (waking to 12 noon, 12 noon to 6pm, 6pm to bedtime) under four categories of broad classes of overt behaviour (see Appendix C for operational definitions): a) self and other (e.g., pet) care, b) housekeeping, errands, and house maintenance, c) paid or volunteer work, and d) interests, hobbies and recreation (e.g., reading, education, visiting friends). Participants are instructed to record the time spent on a particular activity to the nearest 15 minutes. They are also asked to record whether the reported activity was conducted inside or outside the home and whether they were alone or with others at the time.

BSMD data was used to quantify the amount and type of activities undertaken by participants across the baseline and treatment phases. Examining BSMD data once treatment had commenced showed if behavioural change was made and maintained over the course of the treatment phase.

A DAISO Model pedometer with clear instructions including a demonstration by the therapist was provided to each participant. Participants were asked to reset the pedometer each morning, wear it all day, and record the number of steps taken for the day each night before bed. This provided a measure of overall daily physical activity that may be correlated with treatment outcomes (Strathopoulou, Powers, Berry, Smits, & Otto, 2006).

4.3.4 Other Measures

The *Barrett-Lennard Relationship Inventory: Observer Form (OS-64)* (Barrett-Lennard, 1964) is a 64-item self-report questionnaire that asks respondents to rate on a seven point scale (from -3 to +3), aspects of a therapist/client relationship. Items measure: level of regard, empathy, unconditionality and congruence, all of which are considered to be important characteristics of the therapeutic relationship that can affect therapy outcomes (Barrett-Lennard, 1986). According to Barrett-Lennard (1986), level of regard is “the composite ‘loading’ of the distinguishable feeling reactions of one person towards another, positive and negative, on a single abstract dimension” (p. 440), empathy is “active and purposeful engagement with the other. The region or focus of this engagement ... is the communication, experiencing and (felt) meanings of the

other” (p. 442), unconditionality is “the extent that the regarding person’s response experientially implies that the recipient person is more or less pleasing, worthy, valued, trusted, liked or disliked if he or she manifests certain self-attributes than if or when he or she manifests others” (p. 443), and congruence is “the degree to which one person is functionally integrated in the context of his relationship with another, such that there is absence of conflict or inconsistency between his total experience, his awareness, and his overt communication” (p. 444). Therapist-client relationship is typically not accounted for in cognitive and behavioural research (Lejuez et al, 2006). Prior to the Turner and Leach (2009, 2010) studies, co-variance of ratings of the quality of therapist-client relationship and reported behaviour change in behaviour therapy had not been reported.

This measure was administered at Weeks 4, 8 and 12 of the treatment phase.

4.3.5 Treatment Integrity

Treatment integrity (TI) is the degree to which treatments are implemented as planned and described in treatment manuals. It focuses on the accuracy and consistency of the actual therapist behaviours and technique of intervention used (Peterson, Homer, & Wonderlich, 1982). High TI supports possible conclusions about the effectiveness of the treatment.

Perepletchikova, Treat and Kazdin (2007) suggest that in psychotherapy research, approximately 60% of reports ‘inadequately’ assess TI, 36% ‘approach adequate’, and only 3.5% ‘adequately’ assess TI. Similarly, McIntyre, Gresham, DiGennaro and Reed (2007) concluded that 70% of all school-based experimental studies published in the *Journal of Applied Behavior Analysis* between 1991 and 2005 (n=152) failed to provide TI data, but rather typically relied on subjective evaluations of ‘adherence’ and ‘competence’ by a rater using a Likert-type scale (e.g., 1 (‘none’) to 8 (‘excellent’)).

Criteria have been proposed for assessing adherence and competency (Waltz et al., 1993), yet psychotherapy researchers cite a lack of ‘conventional criteria’ as a barrier to establishing TI (Perepletchikova & Kazdin, 2005). Waltz et al. (1993) state that treatment adherence does not necessarily equate to therapist competence, yet current TI measures in some psychotherapy research provide only loose assessments of competency.

Behar and Borkovec (2003) argue that adherence to treatment protocol is most important in psychotherapy outcome research. They recommended that TI should be

based on adherence checks with clear and stringent (quantitative) measurements. Without such assessment of TI, evaluation results may vary widely because of variance in the therapeutic method, even when therapies bear the same label.

The present study reuses a measure of treatment integrity that was specifically developed by Turner and Leach (2009). It focuses solely on the BA therapist's verbal behaviour and adherence to the BATA treatment model. The Coded Recording System for Behavioural Activation Therapy Sessions (CRS-BATS), shown in Appendix D, was designed by Turner (2010) as a measure of observed therapist verbal behaviour (TVB) during a BATA session.

Applying partial interval time-sampling, the CRS-BATS requires raters of a BATA session to listen to 20s intervals of interactions and classify TVB during each period using coding sheets. The coding sheets contained 24 discrete blocks of symbols matching defined categories of TVB in the CRS-BATS. Categories are considered either compatible or incompatible with BATA. Two additional administrative categories were added to Turner's (2010) CRS-BATS for ease of coding.

The use of partial interval time-sampling with categories of 'prescribed' and 'proscribed' techniques is different from other attempts to establish treatment integrity in BATD (and ACT research) (Hopko et al., 2005) because it provides a real-time ratio measurement of therapist behaviour. For example, in BATD (Hopko et al., 2005) the use of prescribed techniques by the therapist is simply rated on a subjective Likert-type scale accompanying technique labels (e.g., 'psychoeducation', 'treatment rationale', 'life goal assessment') without any definitions of the listed techniques. The use of incompatible techniques is identified by a single question, "Did the therapist use any techniques/skills not included in the manual for this session?", and "If yes, please list". It is not clear how this information could be quantified and included in an objective analysis of treatment integrity.

In the current study, two of the 12 (16.7%) of the digital audio recordings of each participant's treatment sessions were randomly selected for rating. The recordings were played-back on a Dell Inspiron™ notebook computer. The raters listened to 20s of audio and then playback would cease. The raters then independently coded TVB using the coding sheet. If a period of TVB was not able to be categorised according to the CRS-BATS (i.e., was 'unclassifiable' because it was all client verbalisation or therapist non-sequitur) it was excluded. Inter-rater agreement (of treatment integrity) was calculated as the number of agreements divided by agreements plus disagreements.

4.4 Procedure

4.4.1 Recruitment

Recruitment advertisements were placed on information boards at Murdoch University's Murdoch and Rockingham campuses, at the Murdoch University Psychology clinic, and in six GP clinics found in Yellow Pages directory listings in regional and remote areas.

Eligibility as a regional/remote area matched definitions published by the Australian Institute of Health and Welfare (2004), for ratings according to the Accessibility/Remoteness Index of Australia (ARIA, p6) of "moderately accessible", "remote" or "very remote" and a Rural, Remote and Metropolitan Areas (RRMA, p4) classification of "rural" or "remote". In such areas, there are significant impediments or restrictions in accessing a full range of health and mental health services (Australian Institute of Health and Welfare, 2004). Advertisements were posted to GP clinics in Karratha (Shire of Roeburne), Port Hedland and Kununurra (Shire of Wyndam East), which are between 1500 and 3200 kilometres from the Perth metropolitan area.

The advertisement (as shown in Appendix E) asked for 'anxiety sufferers' who would be interested in being involved in a study investigating a new treatment for anxiety. For potential participants who responded to the advertisement via email, an information sheet (shown in Appendix F) and a consent form (provided in Appendix G) were provided. For respondents who contacted the researchers by telephone, the information sheet and the consent form were sent via email. Once interest had been confirmed and acceptance of consent had been gained, intake interviews were arranged either in person for the MI group, or via Skype videoconferencing for the MV and RV groups. Respondents returned completed consent forms and continued to the intake interview. The GP Clinics were provided with the same information sheet so that doctors could discuss with patients whether or not involvement in the study would be appropriate for their particular mental health condition. Metropolitan respondents allocated to the in-person group brought the hardcopy signed consent form to the intake interview instead of submitting via email.

All potential participants underwent a comprehensive intake assessment and 14 were recruited for participation as they satisfied the criteria for at least one anxiety disorder according to the DSM-IV using the MINI. Potential participants were excluded if they also met criteria for another non-anxiety related Axis I disorder such as major depressive disorder, bipolar disorder, schizophrenia, or alcohol dependence.

Respondents who completed the intake interview were allocated to the most appropriate group depending on their location (regional/remote respondents could only participate in the RV group) and circumstances such as access to private or public transport to Murdoch University Psychology Clinic.

Potential participants were given the opportunity to ask questions and state any concerns during the intake interview, and Internet videoconferencing (Skype) facilities were confirmed for those candidates allocated to the videoconferencing groups.

4.4.2 Phase A: Baseline

Candidates who were accepted as participants into the study were provided with materials and instructions for self-monitoring for Phase A including the DASS-21 and BAI (to be completed weekly) and the DARS and BSMD for daily completion. The MI group was provided with paper forms, while the MV and RV groups were provided secure, individual (unique but anonymous) URL links to an online survey facility (surveymonkey.com) made available by the researcher.

For the MV and RV groups, technical assistance sessions were offered for participants if they were having difficulty using Skype videoconferencing. None were required and all videoconferencing participants were comfortable and confident using Skype videoconferencing.

Participants in the MI group attended sessions on-site at weekly intervals for approximately 15 to 30 minutes to submit completed monitoring forms, were issued with new forms, asked any questions, and completed the standardised measures (BAI and DASS 21) until commencement of treatment (Phase B). Participants in the MV and RV groups completed their forms online and attended a weekly videoconference of 15-30 minutes duration to follow up and ask any questions. The links to the weekly measures were sent to MV and RV participants 48 hours prior to the weekly videoconference.

Baselines were established for each participant using measures consistent with the original Turner and Leach (2009) study including the Beck Anxiety Inventory (BAI) the short version of the Depression Anxiety Stress Scales (DASS-21), and self monitoring of anxiety and activity levels using diaries as per the original Turner and Leach (2009, 2010) research. Each participant was asked to complete the daily self monitoring of anxiety and activity levels using the self monitoring diaries developed by Turner (2010) (see Appendix B).

Baseline in the original Turner and Leach (2009, 2010) research was between 4 and 6 weeks. However, to enable a more robust statistical analysis comparing two different treatment groups and the need for more pre-intervention control data, baseline was increased to a minimum of six data points on standardised anxiety measures for this study. The duration of the baseline phase was different for each participant and was determined by the length of time required to establish stability, as indicated by a non-significant C Statistic (described below) applied to the DARS scores in the self-monitoring data over a minimum of 6 weeks. Baseline duration ranged from 34 days to 77 days ($M = 46.67$, $SD = 13.21$). No treatment was conducted during this phase and discussions with participants were limited to procedural concerns of accurate assessments and self-monitoring.

4.4.3 Phase B: Treatment

The duration of Phase B was 12 weeks following the BATA protocol (Turner, 2010). Treatment involved twelve weekly 60 minute individual sessions. All treatment sessions were recorded using a Sony™ digital voice recorder. 16.6% (2) of the recordings of each participant's treatment sessions were randomly selected, one from the first six sessions, and one from the second six sessions, and independently rated for treatment integrity by the research student and supervisor using a coded-interval recording sheet that included categories of therapist verbal behaviours that were both compatible and incompatible with the treatment protocol using the same guidelines as in the original BATA research (Turner, 2010) (see Appendix D). For the MI group, treatment was delivered by the researcher onsite at Murdoch University in a standardised consulting room, whereas for RV group, it was delivered from the researcher's home office.

Treatment followed the protocol called Behavioural Activation Treatment of Anxiety (BATA) (Turner, 2010). BATA combines the essential, common principle-based elements of contemporary behavioural activation (BA) (Martell et al., 2001) and brief behavioural activation treatment for depression (BATD) (Lejuez et al., 2001). All participants received the same treatment as set out in the protocol as defined by Turner (2010).

The focus of the BATA as defined by Turner and Leach (2009) was to produce a reduction in the frequency of habitual avoidance behaviour by increasing the amount of approach-oriented socially important behaviour in their daily life by assisting client to focus on their overt behaviours that are brought under the control of their life goals

and daily scheduled activities. Throughout the treatment sessions, participants were given ongoing education regarding the function of their clinically relevant behaviours and shown how to conduct a standard functional (ABC) assessment of their anxiety-related behaviours.

The key components of BATA are defined by Turner and Leach (2009) as:

1. Self-monitoring
2. Psycho-education
3. Functional Analysis
4. Goal-setting
5. Activity Scheduling
6. Activity Review
7. Collaborative problem solving using a behavioural framework

4.4.4 Phase C: Maintenance

The duration of Phase C was 8 weeks, commencing immediately at the conclusion of Phase B, with the aim to observe participant behaviour independent of structural procedures inherent in the earlier baseline and treatment phases to determine if treatment effects (if any) were maintained subsequent to the cessation of treatment. During this phase, participants for the MI group attended face-to-face session for 15 - 30 minutes at 1, 2, 4 and 8 weeks after the cessation of treatment for administration of the BAI and DASS. For participants in the MV and RV groups, online videoconferences of similar duration were scheduled and participants were sent links to online forms for BAI and DASS 48 hours before the videoconference. This phase technically was not a return to baseline due to participants' not having to complete formal self-monitoring to avoid potential effects of self-monitoring alone.

In the final session, all participants were shown a graph of their anxiety level using the BAI and DASS-21 measures across all phases. All participants were encouraged to ask or clarify questions.

4.4.5 Procedural Detail for VCP Delivery Mode

In framing the procedure for delivery of BATA via VCP for the videoconferencing groups, particular attention was given to either overcoming or mitigating challenges and limitations of VCP that have been observed in prior literature, without fundamentally changing the BATA protocol.

For example, Wells, Mitchell, Finkelhor and Becker-Blease (2007) documented restrictions in VCP's ability to provide a full spectrum of psychological therapy

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compared to traditional face-to-face services including: a) inability to provide emergency services (albeit a similar limitation to many non-hospital mental health services); b) limitations in the ability to provide warnings to vulnerable third parties; c) contemporary laws and regulations did not always cover various situations created by online therapy; and d) limitations (albeit less than other communications modes) in being able to communicate consciously or unconsciously via non-verbal cues, including body language.

Gros et al. (2013) suggested that providers of VCP must have available the contact information for appropriate emergency mental health services in the patient's locality prior to the first session. Such services could include emergency departments of local hospitals, police and ambulance, and other local mental health facilities, if available. Emergency contact information is vital for managing suicidality and other acute risk situations and be made available to the client at the beginning of a VCP treatment series.

For this study, participants were only recruited if they were not experiencing severe psychological symptoms that could possibly require emergency services. This is similar to standard policy at many outpatient psychological clinics. The university clinic where participants received treatment face-to-face, for example, does not provide emergency psychological services.

To address point c) above, only participants in Western Australia were included, keeping the statutory and regulatory framework consistent across client and service provider location. The usual contact details for a family member or friend were collected for all participants as part of the standard university clinic procedures.

Specific training and communications protocols were included for VCP to address d) above from Wells et al. (2007). In particular, this study adopted suggested adjustments to communications style for both clients and providers made by Gros et al. (2011) to minimise the restrictions of videoconferencing. These were introduced prior to the beginning of the treatment series, specifically, during the first session of the baseline phase, to make the client familiar with "common sense" changes for videoconferencing: a) using a slower rate of speech; b) polite turn-taking because of the "data in flight" delay (latency), which Gros and colleagues (2013) suggest because some videoconferencing technologies only allow one party to speak at a time; and c) being mindful of the conscious use of body language and hand gestures that may be more difficult to interpret when using small screen sizes (sometimes required because

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of bandwidth limitations) or the field-of-view of the Webcam is small and focussed on only the head and shoulders, so clients and the provider were encouraged to augment or replace the use of conscious gestures with verbal questions and/or answers.

Gros et al. (2011) suggest that these adjustments are relatively minor, should not impact substantially on the treatment protocol, and are easy to get used to within the first two sessions of treatment, and that patient and provider experiences should be monitored and assessed throughout a treatment series. They did cite some rare cases in which clients refused VCP due to dissatisfaction with technology and communication style. They identified a small number of providers who expressed dissatisfaction with the adjustments required for VCP, but these providers generally had initial perceptions that VCP was inferior and more time-intensive than traditional in-person therapy, despite empirical evidence to the contrary. This study seeks to find out if the VCP delivery mode improves, diminishes, or has no impact on the therapist-client relationship.

Adjustments to treatment protocols themselves may be required, as suggested by Gros et al. (2013), when delivered via VCP, varying by disorder and treatment approach, but according to their work, do not appear to typically influence the effectiveness of treatment if incorporated and acknowledged. This study applies their recommendations for the use of self-report questionnaires, treatment handouts, and in-session examples (e.g., figures presented on dry erase board). A dry-erase “whiteboard” was placed behind the therapist and the therapist was directed to write clearly in large font and make diagrams large and legible, seeking feedback from the client as to the readability.

No assumption was made about in-situ access to scan/print facilities. Required written materials were sent by email in PDF format of materials prior to VCP sessions. Self-report questionnaires were converted to anonymous online format at www.surveymonkey.com.

Although Gros et al. (2013) concluded that some in-session situational exercises, for example riding an elevator and other in-situ exposures also may be more difficult to run via VCP and may need to be completed between sessions via homework assignments, no adjustments in this regard were required for the BATA protocol. Gros and colleagues, however, acknowledge that continued technological advances are already beginning to address such limitations with portable videoconferencing equipment like smartphones and tablets.

4.4.6 Technical Support for VCP

As with any usage of videoconferencing, Gros et al. (2011) suggest that it is helpful if both client and provider have access to personnel familiar with computers, Internet, and videoconferencing software who can assist in combating technical issues. Further, they accept that it is assumed that providers of VCP will be able to establish appropriate treatment facilities including an appropriately furnished and lit consulting room with a computer capable of videoconferencing and broadband Internet access, but acknowledge that it is more difficult to ensure appropriate facilities at the client end, especially for home-based treatment, and that home-based VCP may require additional training for the client, including instructions on how to install the necessary videoconferencing software. Their recommendations are pertinent for this study given that most clients engaged in VCP from their residences.

Increasingly though, videoconferencing via Internet is becoming commonplace and general computer literacy is increasing. Self-help guides are made available by major vendors like Skype (see support.skype.com) that can be used by non-experts to resolve technical issues that may be impeding videoconferencing. Setup and use of videoconferencing is even easier with smartphone and tablet device “apps” for videoconferencing.

This study adopted guidelines by Gros et al. (2011) that video and audio settings should be inspected and tested in a pre-treatment orientation session (first session of the baseline phase), originally recommended by Egede et al. (2009) and Morland, Greene, Rosen, Mauldin and Frueh (2009), and that a backup option was available (Skype was the primary platform with Cisco Webex as the fallback). Connectivity and connection quality were verified at the start of each session.

An orientation session at the beginning of the baseline phase was undertaken, as suggested by Egede et al. (2009) and involved reviewing the operation of equipment including Webcam, microphone, and speakers, as well as verification that Internet access bandwidth was sufficient to conduct videoconferencing using Skype by undertaking a connectivity test between client and provider. The session also allowed for fine-tuning of videoconferencing arrangements such as camera position and lighting and was used to identify problems and to undertake troubleshooting. Troubleshooting, where required was undertaken offline (e.g. two participants needed to purchase better Webcams and one needed to work with an Internet Service Provider to solve bandwidth

issues). Follow-up test sessions were scheduled where required to confirm connectivity prior to the commencement of the treatment series.

Clients were informed of the requirement from the Gros et al. (2011) recommendations that clients receiving home-based VCP must have a quiet, private location, free from distractions, in which to conduct their therapy sessions. Gros and colleagues originally asserted that it is preferred that the client has easy access to a scanner and printer, used to exchange assessment forms and treatment documents, including session handouts and homework assignments, with the provider. They suggest that if this cannot be guaranteed, then providers should plan accordingly and mail documents to the clinic and/or patient's home. However, with the increasing use of smartphones and tablets with built-in cameras, it is possible for clients to use them to "scan" documents for sending to the provider by email, and in this study, clients all indicated comfort with reading documents on-screen, for example, using a PDF reader program.

4.5 Data Analyses

Participants were grouped into three categories for: Metropolitan In-person (MI), Metropolitan Videoconferencing (MV), and Regional/Remote Videoconferencing (RV). Statistical analyses were performed for within-subject (single subject) and comparisons of outcomes across groups (delivery mode). Data analysis began with a replication of the repeated single-case data analyses used in the original Turner and Leach (2009, 2010) research. Statistical testing was conducted using Microsoft Excel 2007.

4.5.1 Within-Subject analysis

The data were presented in standard graphical form for single-case experimental research for each participant. For self-monitoring data, superimposing a horizontal middle line based on the phase median, across the baseline phase and treatment phase, provided a visual target for comparing measures across the different phases.

Changes in treatment (Phase B) and follow-up (Phase C) BAI and DASS-21 scores from baseline were analysed using three methods, two as used in the original Turner and Leach (2009) research, presented for consistency and reference: a) Young's C Statistic (Tryon, 1982; Young, 1941) and b) split-middle binomial time-series test (Kazdin, 1982), and c) a new combined non-overlap and trend analysis technique called Tau-U (Parker et al., 2010), to identify non-random variations that can be attributed to

the treatment. Baseline scores of self-monitored data from the DARS and the BSMD were assessed for non-random variations (e.g. trends) using the same techniques.

Young's C Statistic (Young, 1941) is a simplified method for time series analysis that compares overall variability in data to the variability that occurs from data point to data point. It was designed to identify if there is systematic movement away from random variation (i.e. a trend) that could be attributed to the treatment/intervention.

$$C = 1 - \frac{\sum_{i=1}^{n-1} (X_i - X_{i+1})^2}{2 \sum_{i=1}^n (X_i - M_x)^2}$$

The ratio of the C Statistic and standard error of measurement (SEM) tests for statistical significance. In terms of statistical power, a minimum of 8 data points is needed to detect a medium effect size (in the proposed research, each participant has 25 data points).

$$se_c = \sqrt{\frac{n-2}{(n-1)(n+1)}}$$

The "split-middle" technique (Kazdin, 1982) starts with the calculated baseline phase mean and slope (which is ideally 0). The null hypothesis is that if treatment has no effect, then data points in treatment phase will remain variable (50%/50% distributed) above and below an extrapolated baseline trend line. Binomial testing is then employed to determine the significance of any change (Sheskin, 2000) with the test statistic transformed to a standardised score using the following equation: $z = (X/n - p) / \sqrt{(pq/n)}$. The percentage of treatment phase data points above or below may also be interpreted as an effect size with scores of 0.9 and above indicating highly effective, 0.7 to 0.9 moderately effective, 0.5 to 0.7 mild or questionable, and below 0.5 considered ineffective (Ma, 2006). In terms of statistical power, if 70% points above trend line (a medium effect size), a one tailed test at $\alpha = .05$ and power $(1-\beta)$ of 0.5 requires 23 data points (in this study there are a minimum of 25 data points per subject for scores on the standardised psychometric measures).

Tau-U is a weighted effect size measure for non-overlap between A and B phases (Parker, et al., 2010) derived from Kendall's rank correlation and the Mann-Whitney U between groups test. Tau-U was derived by demonstrating equivalence between Kendall's Rank Correlation (KDRC) and Mann-Whitney U (MW-U). Kendall's rank correlation is an analysis algorithm of time and score, comparing

ordered scores and all possible pairs of data. Each pairwise comparison represents an “improved” score, an “unchanged” score or a “worse” score. The percentage of all data pairs that show improvement measures the tendency for scores to improve over time and quantifies monotonic trend. The Mann-Whitney U test assesses for non-overlap between two phases. Scores from two phases are combined for a cross-group ranking. The separate rankings are then statistically compared for mean differences. The Mann-Whitney U (MW-U) technique uses two continuous variables: score and time. By replacing the time variable with a dummy code representing either Phase A or B, the same result as the KDRC is obtained. Tau-U combines non-overlap between phases with (optionally) trend from within phases. Described simply, MW-U's “percent of nonoverlapping data” = $(U_{\text{larger}} - U_{\text{smaller}}) / (U_{\text{larger}} + U_{\text{smaller}}) = (\text{Kendall's } S) / (\text{number of paired comparisons}) = ((\text{number of positive pairwise differences} - (\text{number of negative pairwise differences})) / (\text{number of pairs})) = \text{Tau-U}$, when Phase A and Phase B are non-parametrically compared.

Tau-U does not have to meet the assumptions (e.g., no or low autocorrelation) required of Cohen's d , Hedges's g , or R^2 (Parker et al., 2010). Tau-U has more statistical power than many other non-overlap or nonparametric techniques, is distribution-free and is suitable for ordinal and interval scaled scores, is complementary of visual analysis, avoids ceiling effects, controls for level and trend, (optionally) controls for pre-existing trend in Phase A, and importantly, provides an overall effect size that quantifies the results of an intervention. This study used the Tau-U “4th” form for controlling undesirable Phase A (baseline) trend, and for this study, has been designated as the primary statistical significance measure.

4.5.2 Comparison of Outcomes Across Treatment Groups

The key benefit of Tau-U introduced in the previous section is that as a “complete” nonparametric statistic, comparisons of outcomes across groups can be made possible using straightforward reliable-difference tests that can be directly evaluated against a specified α statistical significance level (Bowman-Perrott, Burke, Zhang, & Zaini, 2014). Such statistical analysis using Tau-U enabled the testing of effects of the BATA treatment, comparing its performance across location and delivery mode (in person versus via videoconferencing), catering for both within-subject variation (BATA treatment) and between-group (location and delivery mode) variations.

The Tau-U statistic can be converted to “equivalent” Cohen’s *d*, an effect size measure, as follows (Bowman-Perrott et al., 2014):

$$d = 3.464[1 - \sqrt{1 - \text{Tau-U}}]$$

Bowman-Perrott et al. (2014) also showed that Tau-U for a “pooled group” can be calculated by firstly summing the weighted Tau-U scores for members of the group (A), where the weighted Tau-U for each individual score is Tau-U / StdErr (Tau-U). Secondly, a global sum of 1/StdErr(Tau-U) is calculated across the pooled group (B). The “omnibus” Tau-U statistic for the pooled group is calculated using A/B.

A test of statistical significance (*z*) is calculated by dividing the omnibus Tau-U by the sum of squared StdErr(Tau-U) values. The reliable difference statistic used for between-groups comparisons of the pooled Tau-U statistics is calculated as follows (Bowman-Perrott et al., 2014):

$$z = (\text{TauU}_{\text{Group1}} - \text{TauU}_{\text{Group2}}) / \sqrt{[(\text{StdErr}(\text{TauU}_{\text{Group1}}))^2 + (\text{StdErr}(\text{TauU}_{\text{Group2}}))^2]}$$

4.6 Overview of Results Presentation

Results for this study are presented in four chapters to allow single case analyses to follow grouping of participants according to residence and delivery mode, followed by the overall results and between-groups analyses. Specifically, the chapters separately presents analysis sections for each of the three participant groups: Metropolitan In-Person (Chapter 5); Metropolitan Videoconferencing (Chapter 6); and Regional/Remote Videoconferencing (Chapter 7), where each chapter is presented as a series of single case study results analyses. Chapter 8 presents analyses across participants, specifically omnibus (across all participants) and between-groups (Metropolitan vs Regional/Remote and In-Person vs Videoconferencing) statistical comparisons.

Chapter 5: Single Case Results for Metropolitan In-Person Group

Each of the following three sections is presented as a single case analysis for each participant in the Metropolitan In-Person group, including details of psychological assessment at intake, DSM-IV diagnosis at intake using the MINI-International Neuropsychiatric Interview, a graphical presentation of standardised anxiety measures across phases, specifically BAI and DASS-21, and self-monitored anxiety (DARS) and activity measures, accompanied by relevant within-subject statistical analyses. Each single case analysis also includes a presentation of therapist-client relationship from the *Barrett-Lennard Relationship Inventory: Observer Form (OS-64)*, and treatment integrity statistics. A discussion of case results concludes each case study, focussing on the observed changes in activity, behavioural cusps that were identified, and a summary of participant outcome at 8 week follow-up. Note that identifying details of each participant have been altered where necessary to maintain confidentiality of participants.

5.1 Case 1: Joy

5.1.1 Characteristics

“Joy”, a nurse, was 25 years old at the time of her assessment for suitability for participation in this study. Joy stated that she was a recent migrant from China, moving to Australia in 2008 to further her studies.

By way of background history, Joy recalled that she was often lonely when she was growing up and had no friends. She reported previous self-harm approximately 2 years prior to her participation in this study. No current suicidal ideation or self harm was apparent at the time of Joy’s intake assessment.

Joy reported that in 2012, she was drinking alcohol excessively and lost 4kg. Joy she further reported that at the time of her intake assessment, she was only drinking socially once or twice a month.

Current symptoms included general worry about getting work, her financial situation, and her visa status. Joy described finding it difficult to control her worrying, meaning that she was often restless, including physiological symptoms of muscle tension. Joy reported difficulty concentrating, irritability, and that her anxiety affected several facets of her life including work and her relationships.

5.1.2 Intake Assessment.

Based on her responses to the MINI International Neuropsychiatric Interview MINI-V, Stacey fulfilled DSM-IV criteria for General Anxiety. At intake, Joy scored 23 on the BAI which was in the moderate range, 10 on the DASS-21 Depression Scale which is in the mild range, 12 on the DASS-21 Anxiety Scale which is in the moderate range, and 20 on the DASS-21 Stress Scale, which is in the moderate range.

5.1.3 Standardised Anxiety-Related Outcomes

Joy's BAI scores are presented graphically in Figure 1. *Case 1 BAI raw scores at baseline, treatment, and maintenance phases.* All three statistical analyses of Joy's BAI raw scores revealed evidence of a downward change across phases: C Statistic $z = 2.68, p < .01$, split-middle binomial test ($z = 2.37, p < .01$) and Tau-U ($z = 3.67, p << 0.01$). The changes in BAI scores are clinically meaningful because Joy's scores moved from the moderate range into the mild range and then towards the lower end of the mild range.

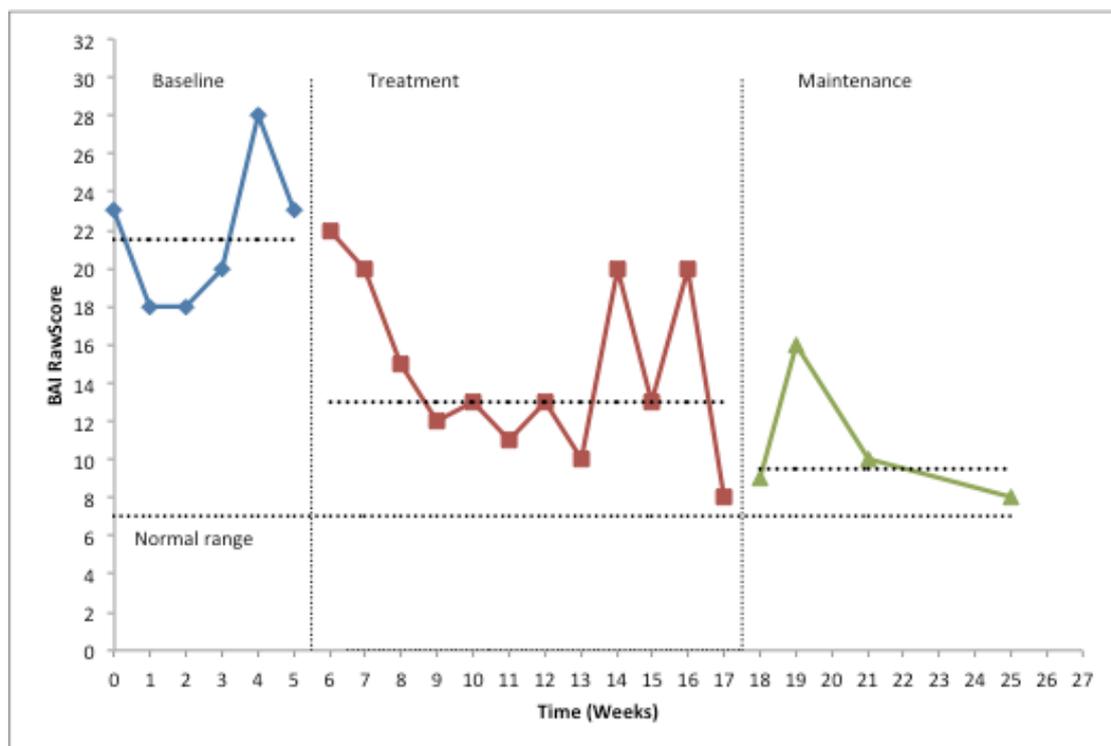


Figure 1. Case 1 BAI raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 7 : minimal, 8-15: mild, 16-25: moderate, and ≥ 26 : severe.

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Of the three statistical analyses applied to Joy's scores for the DASS-21 Anxiety Scale, which are shown graphically in Figure 2, only one of the applied statistical tests showed statistically significant downward change across phases: C Statistic ($z = 2.143, p < .05$). The split-middle binomial test ($z = 1.47, p > .05$), and Tau-U ($z = 1.89, p > .05$) did not detect statistically significant downward change across phases. The changes in DASS-21 Anxiety Scale scores are clinically meaningful because Joy's scores moved from the severe range into the moderate range during the course of treatment.

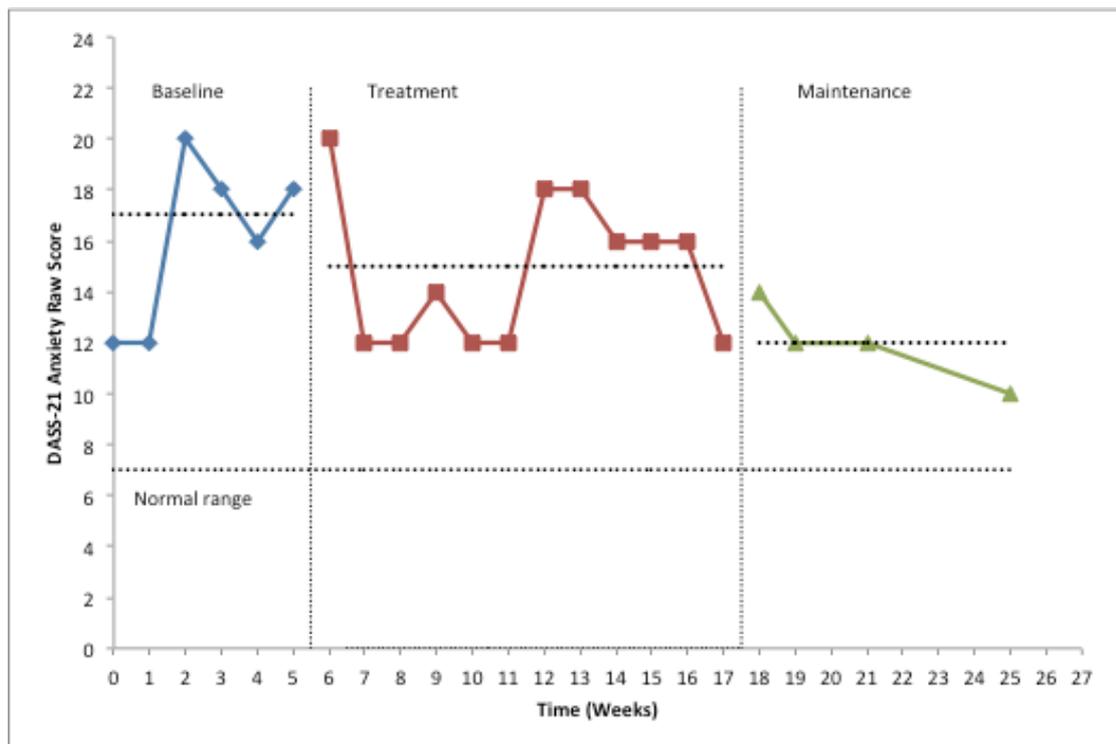


Figure 2. Case 1 DASS-21 Anxiety scale raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 6 : normal, 7-10: mild, 11-14: moderate, 15-19: severe, and ≥ 20 : extremely severe.

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Two of the three statistical tests performed on DASS-21 Stress Scale scores for Joy, which are shown graphically in Figure 3, showed statistically significant downward change across phases, with the and split-middle binomial test ($z = 2.37, p < .01$), Tau-U ($z = 2.54, p < .05$) showing statistically significant decrease, while the C Statistic ($z = 1.204, p > .05$) did not show a statistically significant trend. Clinically, Joy's DASS-21 Stress Scale scores moved from moderate range to normal range during the course of treatment.

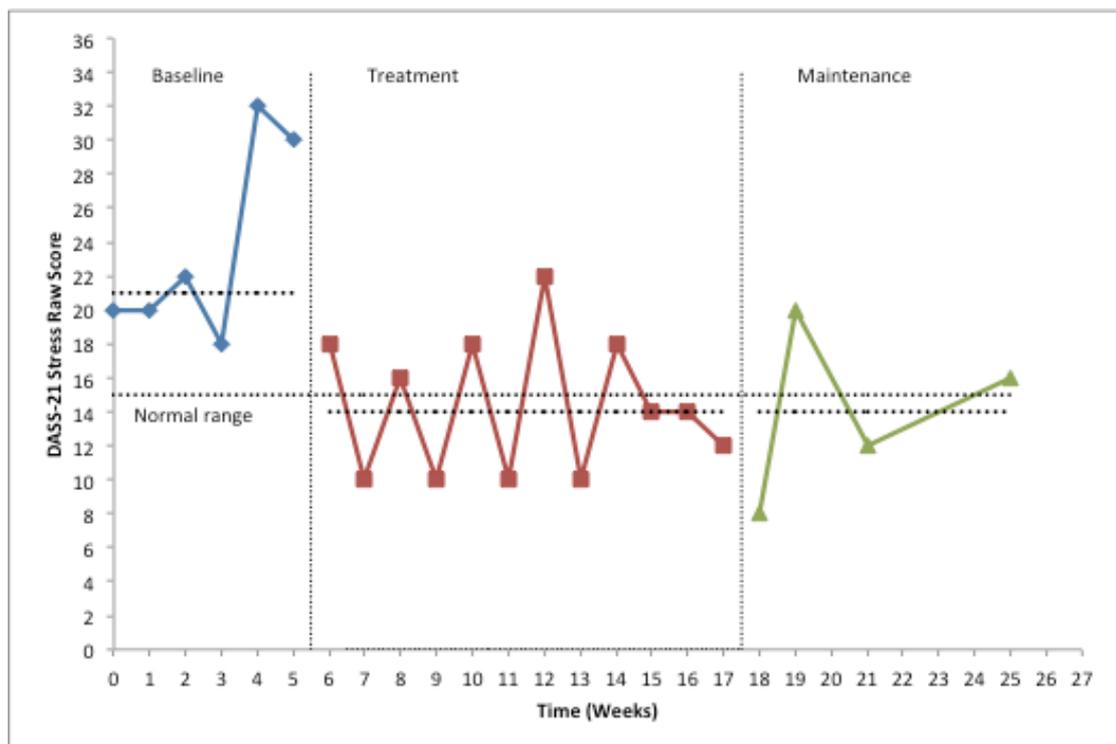


Figure 3. Case 1 DASS-21 Stress scale raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 14 : normal, 15-18: mild, 19-24: moderate, 25-33: severe, ≥ 34 : extremely severe.

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Two of the three statistical tests applied to Joy's DASS-21 Depression Scale scores, which are shown graphically in Figure 4: the C Statistic ($z = 2.80, p < .05$), and Tau-U ($z = 3.07, p < .01$) are significant. The split-middle binomial test ($z = 0.53, p > .05$) did not detect statistically significant change across phases. Clinically, Joy's phase medians remained in the normal range, though moving towards the lower end of the range during the course of treatment.

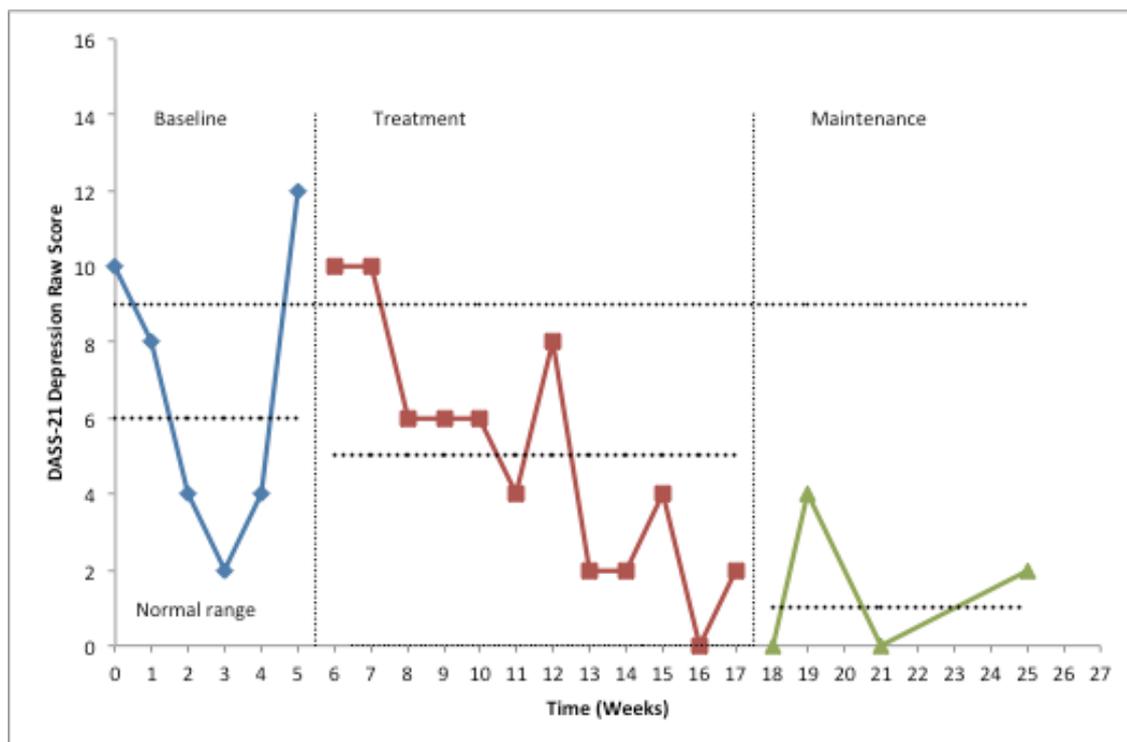


Figure 4. Case 1 DASS-21 Depression scale raw scores at baseline, treatment and maintenance phases.

Note: Scores ≤ 8 : normal, 9-12: mild, 13-20: moderate, 21-27: severe, and ≥ 28 : extremely severe.

5.1.4 Self-Monitored Anxiety and Activity Outcomes

Joy's DARS scores are presented graphically in Figure 5. Joy completed a 42 day baseline. Analysis of the baseline phase data showed an absence of trend using the C Statistic ($z = -0.085, p > .05$). Across phases, downward change was detected by the all three of the statistical tests applied: C Statistic ($z = 3.68, p << .01$), split middle binomial test ($z = 4.60, p << .01$), and Tau-U ($z = 6.86, p << .01$). The difference in phase medians was 20 points.

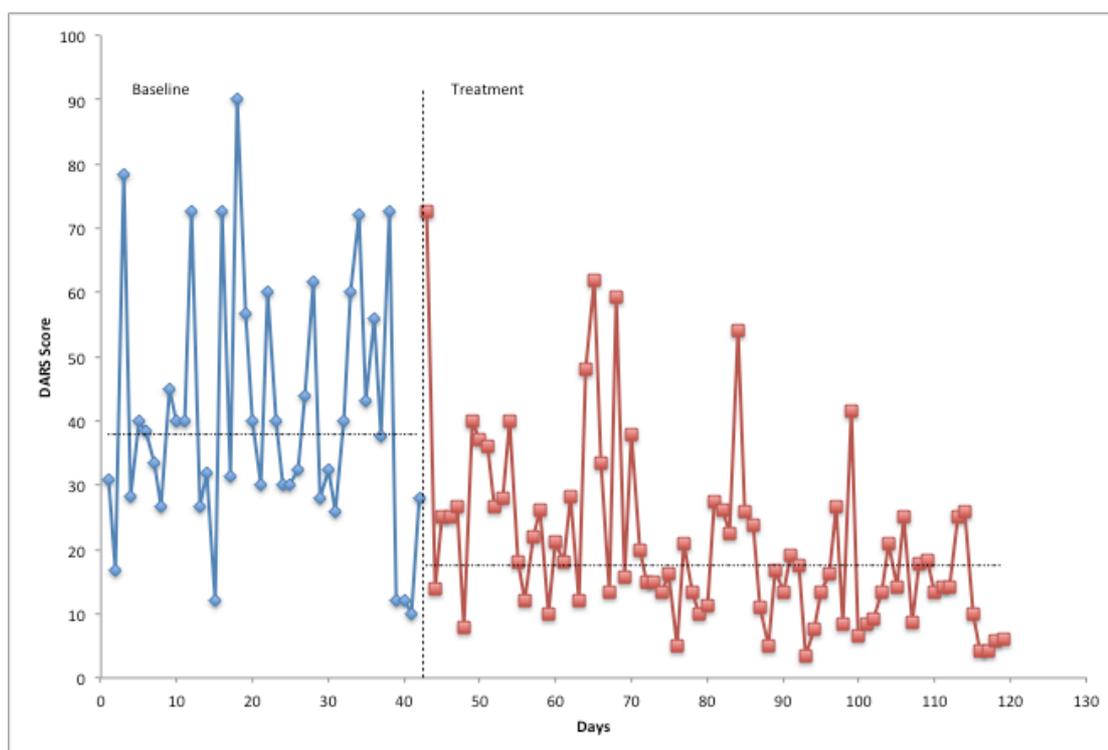


Figure 5. Case 1 Daily Anxiety Rating Scale (DARS) scores across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Joy's self- and other-care data across baseline and treatment phases are presented in Figure 6. Analysis of the baseline phase revealed an absence of trend within the data as indicated by the C Statistic ($z = 0.609, p > .05$). Compared to baseline, there was no significant change during the treatment phase indicated by all three of the statistical tests applied: the C Statistic ($z = 0.29, p > .05$), the split middle binomial test ($z = 1.60, p > .05$), and Tau-U ($z = 0.22, p > .05$). There was no difference in phase medians.

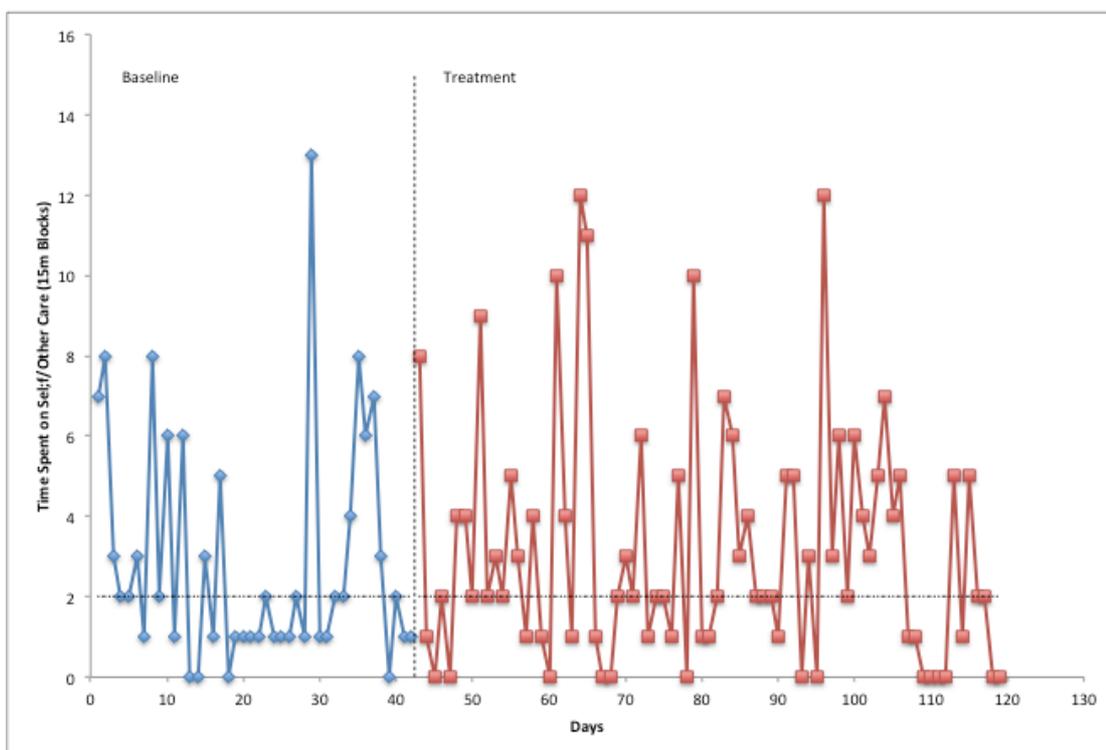


Figure 6. Case 1 Minutes spent per day on Self- and Other- Care baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Joy's Housework and Errands data across baseline and treatment phases are presented in Figure 7. Analysis of the baseline phase revealed an absence of trend within the data as indicated by the C Statistic ($z = -0.571, p > .05$). Compared to baseline, two of the three statistical tests applied showed a decrease in housework and errands across phases: the split middle binomial test ($z = 2.31, p < .05$) and Tau-U ($z = 2.15, p < .05$). The C Statistic ($z = 0.97, p < .05$) detected no significant downward trend across phases. The change in phase medians showed a decrease of 30 minutes per day spent on housework and errands.

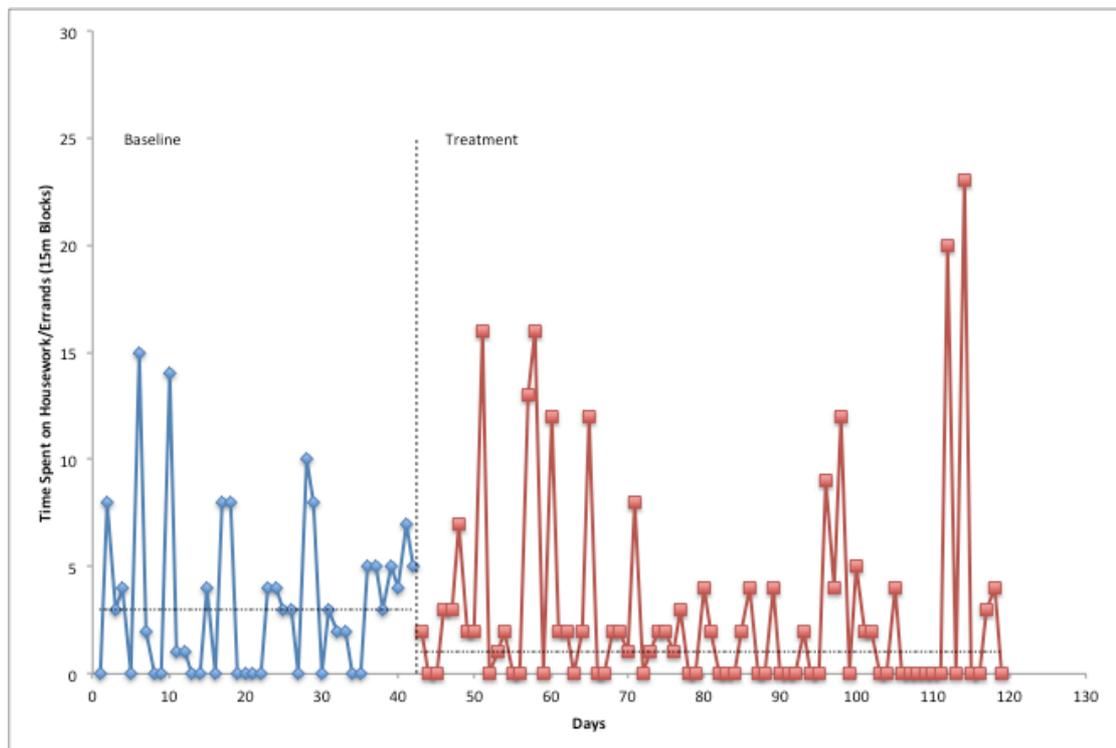


Figure 7. Case 1 Minutes spent per day on Housework and Errands across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Joy's Paid and Unpaid Work data across baseline and treatment phases are presented graphically in Figure 8. Analysis of the baseline phase revealed an absence of trend within the data as indicated by the C Statistic ($z = 0.957, p > .05$). Compared to baseline, all three statistical tests showing no significant change across phases: C Statistic ($z = 1.04, p > .05$), split middle binomial test ($z = 0.34, p > .05$) and Tau-U ($z = 0.57, p > .05$). The difference in phase medians indicates a 45 minutes per day increase in time spent on paid or unpaid work.

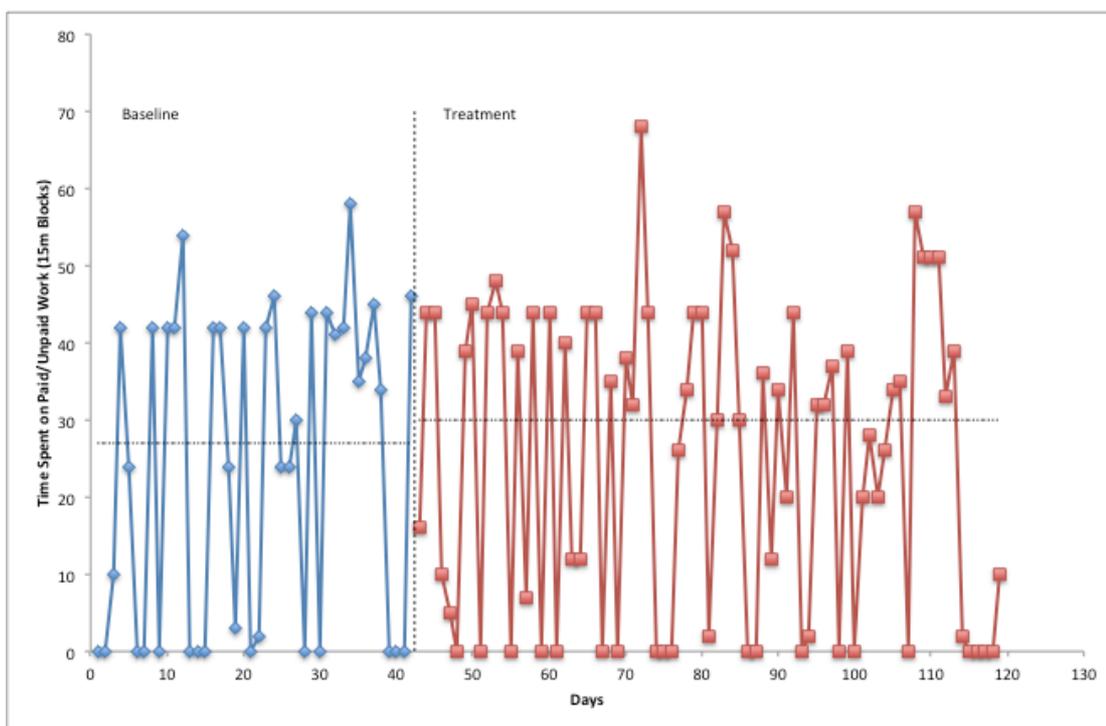


Figure 8. Case 1 Minutes spent per day on Paid and Unpaid Work across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Joy's Interests, Hobbies, and Recreation data are presented in Figure 9.

Analysis of the baseline phase using the C Statistic revealed an upwards trend within the data ($z = 2.088, p < .05$). One out of the three statistical tests used showed a significant change comparing baseline and treatment phases: C Statistic ($z = 2.85, p < .01$). The split middle binomial test ($z = 1.31, p > .05$), and Tau-U ($z = 0.89, p > .05$) did not show significant change across phases. The difference between phase medians indicates an increase of 60 minutes per day spent on interests, hobbies and recreation.

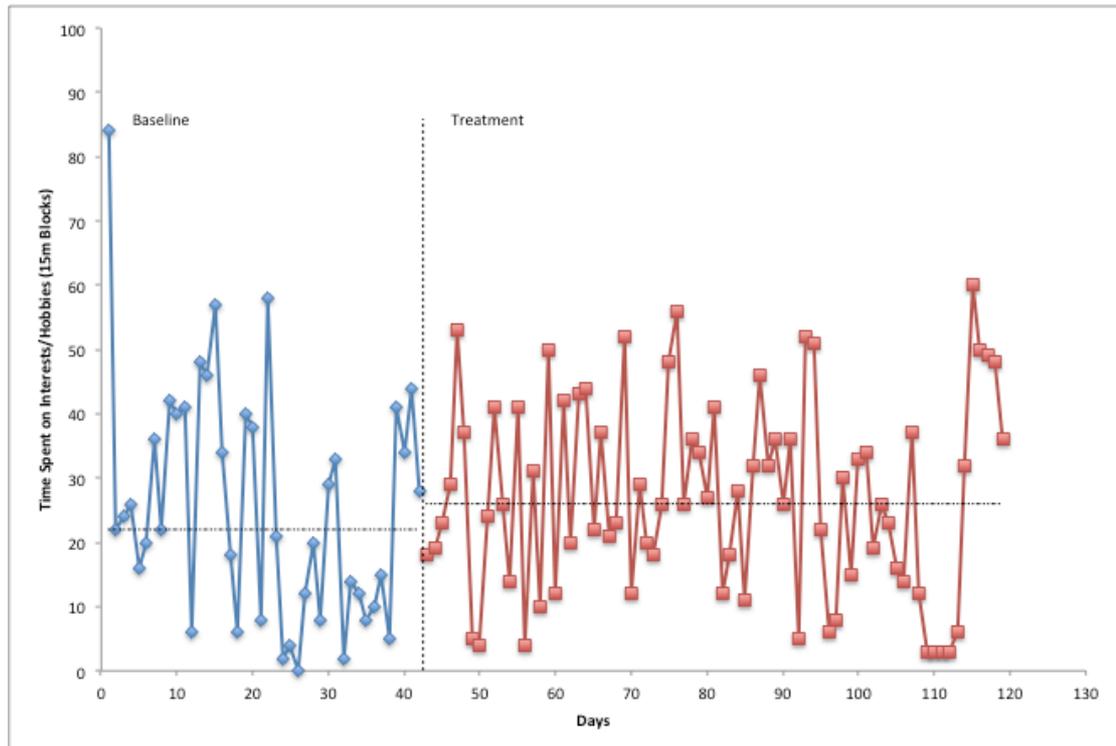


Figure 9. Case 1 Minutes spent per day on Interests, Hobbies, and Recreation across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Joy's data representing time spent with other people (as opposed to alone) across baseline and treatment phases are presented in Figure 10. Analysis of the baseline phase revealed an absence of trend within the data as indicated by the C Statistic ($z = -0.294, p > .05$). Compared to baseline, there was no significant difference during the treatment phase detected by any of the three of the statistical tests applied: C Statistic ($z = 1.04, p > .05$), split middle binomial test ($z = 0.611, p > .05$), and Tau-U ($z = 0.06, p > .05$). The difference in phase medians showed an increase of 15 minutes per day.

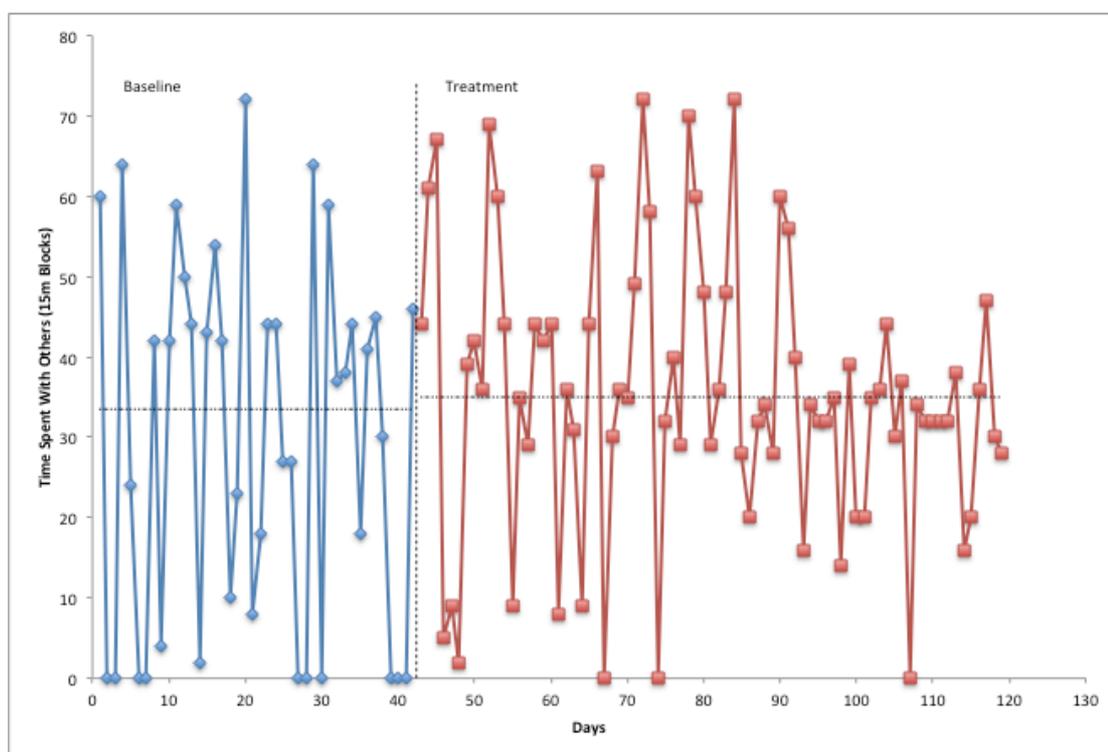


Figure 10. Case 1 Minutes spent per day spent with other people across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Joy's Out of Home data across baseline and treatment phases are presented in Figure 11. Analysis of the baseline phase revealed an absence of trend within the data as indicated by the C Statistic ($z = -0.151, p > .05$). Compared to baseline, one out of the three statistical tests showed significant decrease in the amount of time Joy spent out of home: C Statistic ($z = 2.16, p < .05$). The split middle binomial test ($z = 1.30, p > .05$) and Tau-U ($z = 1.26, p > .05$) did not detect significant change across phases. The difference in phase medians showed a decrease of 75 minutes per day spent out of home.

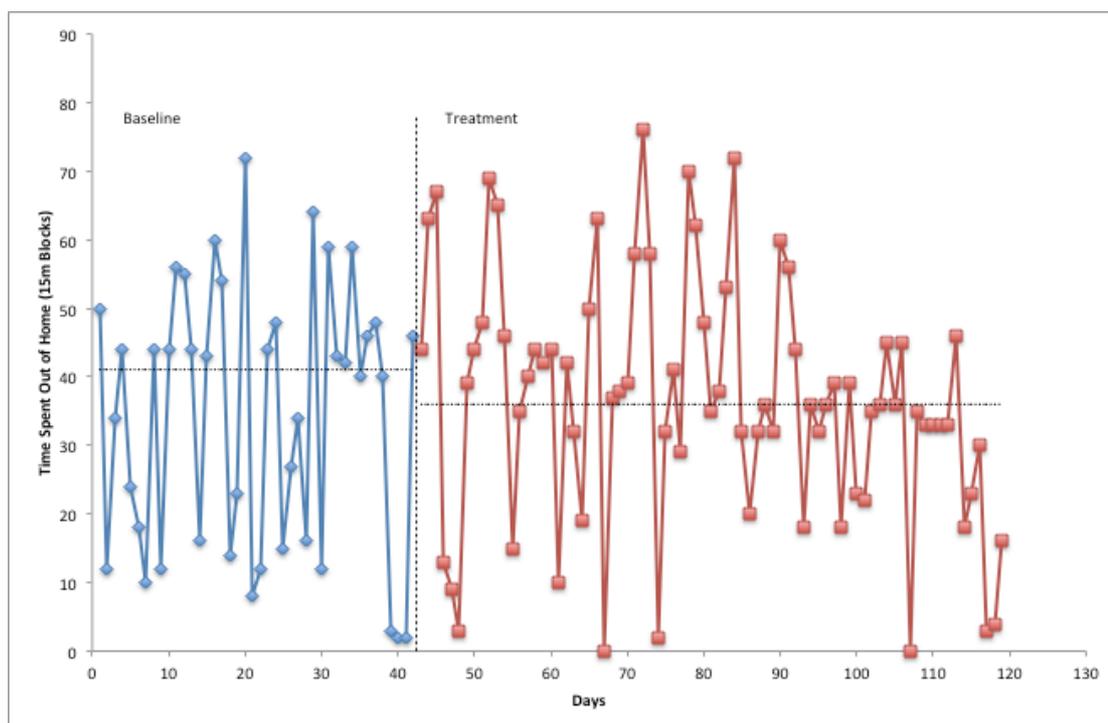


Figure 11. Case 1 Minutes spent per day spent out of home across baseline and treatment phases.

5.1.5 Therapist/Client Relationship

Joy's total scale scores across the treatment phase from the Barrett-Lennard Relationship Inventory: Observer Form (OS-64) are presented in Figure 12. The OS-64 was administered at 4, 8, and 12 week periods during treatment.

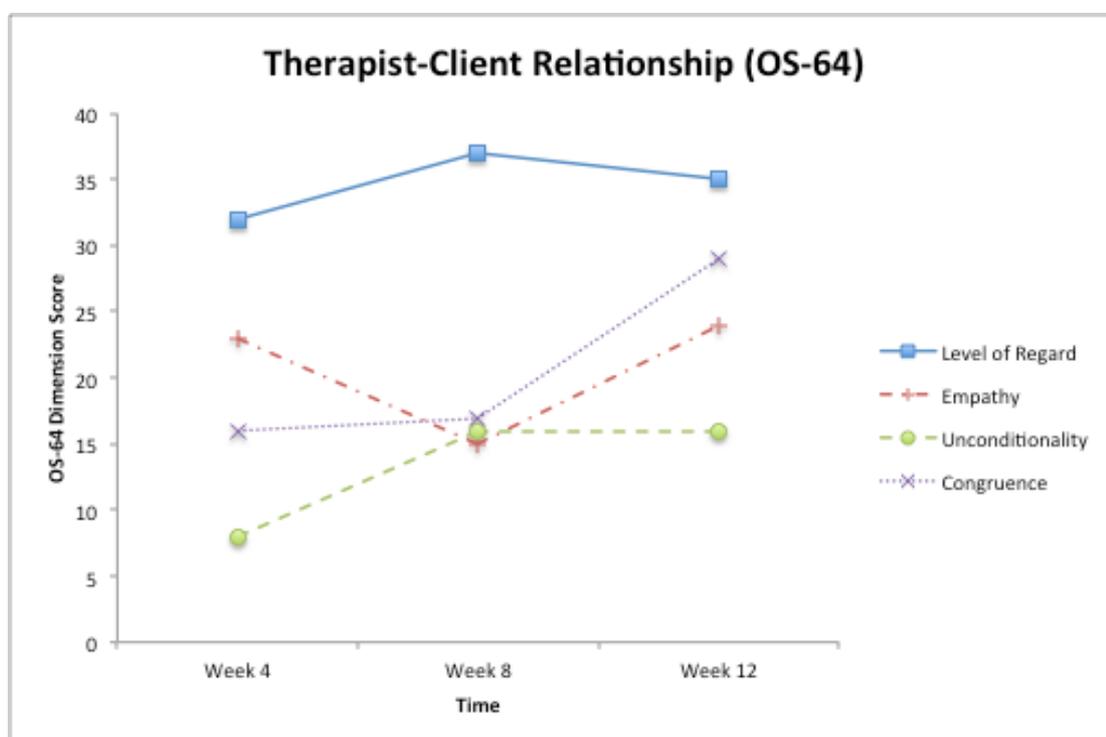


Figure 12. Case 1 OS-64 Assessment of Therapy Relationship Variables across the treatment phases.

Inspection shows that the “level of regard” and “empathy” dimensions were consistent across the treatment phase, whilst there were improvements in the “congruence” and “unconditionality” dimensions. “Level of regard” was generally higher than the other dimensions. While the unconditionality scale score commenced at close to the threshold of 0 for a “level adequate for a constructive relationship” (Barrett-Lennard, 1986), all scores thereafter stabilised above or well above the 0 threshold.

5.1.6 Behavioural Cusps

Formal activity scheduling commenced on Week 3, and though it is difficult to quantify, Joy did seem to engage in activities that could qualify as behavioural cusps. It is the aim of the treatment plan to engage the participant's expanding repertoire of clinically “healthy” behaviours.

Joy's results show a significant decrease in standardised anxiety measures. Activities scheduled for Joy included, attending church, organising for moving house, being more active in her job search, undertaking yoga and Pilates exercise, setting up healthy eating routines, organising paperwork and following up her visa application, and more frequent contact with her parents. At the Week 8 follow up, she stated that she had recommenced attending church and reconnected with people.

5.1.7 Treatment Integrity

All of Joy's treatment sessions were audio-recorded and two sessions were randomly selected and independently scored for treatment integrity. Inter-observer agreement averaged 92.7% across scored sessions with 99.6% of therapist in-session behaviour compatible with the treatment modality (BATA). Please refer to Appendix D for items that define 'compatible' and 'incompatible'.

5.1.8 Post-Treatment Diagnosis

At the end of the treatment phase, Joy reported that without behavioural activation, she would not get things done and felt that behavioural activation had also led to changes in her thinking. She reported feeling more confident and secure. Joy stated that she had more energy, a reduction of her headaches, less anxiousness, and more motivation. Post-treatment, Joy no longer met DSM-IV criteria for General Anxiety and maintained this 2 months post-treatment, indicating that the changes in behaviour were robust and maintained without contact with therapy.

5.2 Case 2: “Anna”

5.2.1 Characteristics

“Anna” was a 31 year old part time university student, and a mother of an 8 year old child at the time of assessment for participation in this study.

In terms of her presenting symptoms, Anna reported that for approximately 6 weeks leading up to the intake assessment, she had been feeling anxious, including the physiological symptom of breathlessness. She stated that she felt overwhelmed and that “there was too much to do”. She described a panic attack when she was at home with her husband. She stated her first panic attack occurred approximately 6 years before her participation in the study, when she was in overseas.

By way of background history, she reported that her husband works away from home. Anna stated that she had a history from her youth of eating and purging, however, there were no current eating disorder related symptoms at the time of assessment. She stated that she had been married for 5 years. She described a good relationship with her mother, but that she did not have much contact with her father.

5.2.2 Intake Assessment

Based on her responses to the MINI International Neuropsychiatric Interview MINI-V, Anna fulfilled DSM-IV criteria for Panic Disorder. At intake, Anna scored 15 on the BAI which was at the top end of the mild range, near the threshold for the moderate range, 2 on the DASS-21 Depression Scale which is in the normal range, 14 on the DASS-21 Anxiety Scale in the moderate range near the threshold of the severe range, and 14 on the DASS-21 Stress Scale, which is in the normal range.

5.2.3 Standardised Anxiety-Related Outcomes

Anna's BAI scores are presented graphically in Figure 13. Two of the three statistical analyses of Anna's BAI scores revealed evidence of a downward change across phases: C Statistic ($z = 2.061, p < .05$), and Tau-U ($z = 2.48, p < .05$). The split-middle binomial test ($z = 0.89, p > .05$) did not detect significant change across phases. The changes in BAI scores are clinically meaningful because Anna's scores moved from high in the mild range (crossing into the moderate range occasionally in the baseline phase), lower into the mild range during treatment, crossing into the normal range late in the treatment phase and in the maintenance phase.

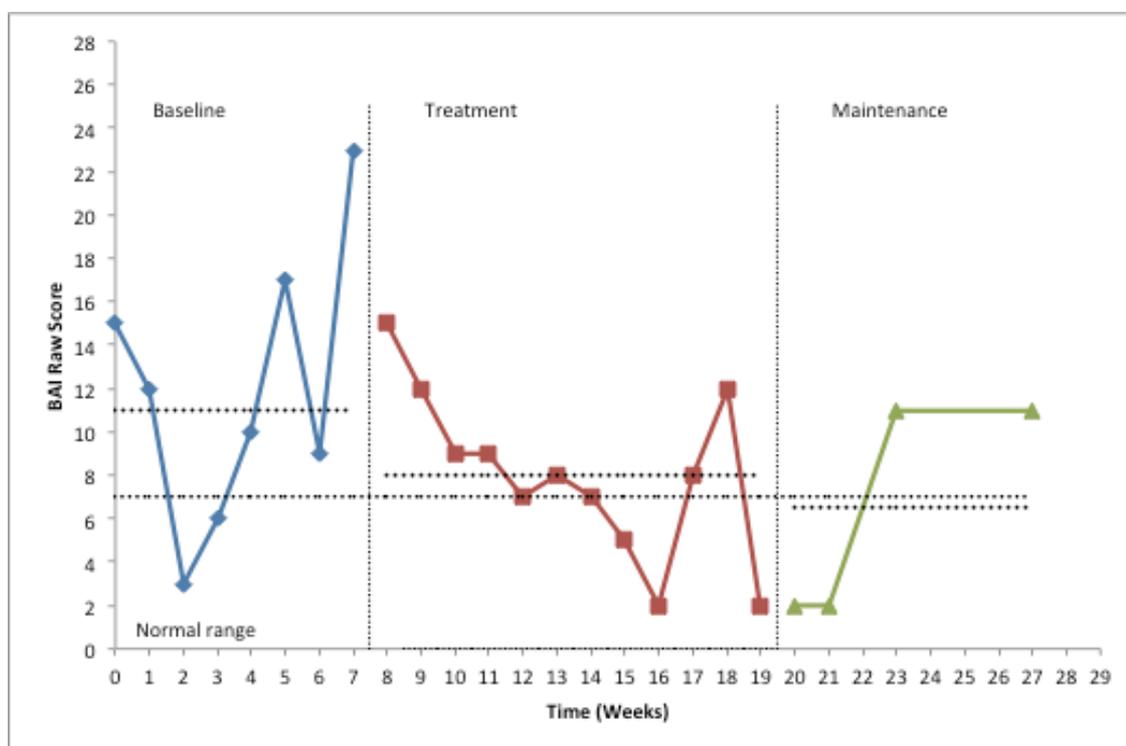


Figure 13. Case 2 BAI raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 7 : minimal, 8-15: mild, 16-25: moderate, and ≥ 26 : severe.

Inspection of the graph above shows an increase of reported anxiety symptoms in Weeks 4 and 8 of the follow up phase. Anna reported that this was related to her husband being away for work and the increased stress of running the household alone.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

All three statistical analysis applied to Anna's scores for DASS-21 Anxiety Scale, which are shown graphically in Figure 14, showed statistically significant downward change across phases: C Statistic ($z = 4.19, p \ll .01$), split-middle binomial test ($z = 2.23, p < .05$), and Tau-U ($z = 4.69, p \ll .01$). The changes in DASS-21 Anxiety Scale scores are clinically meaningful because Anna's scores moved from the moderate range into the normal range in the treatment and maintenance phases.

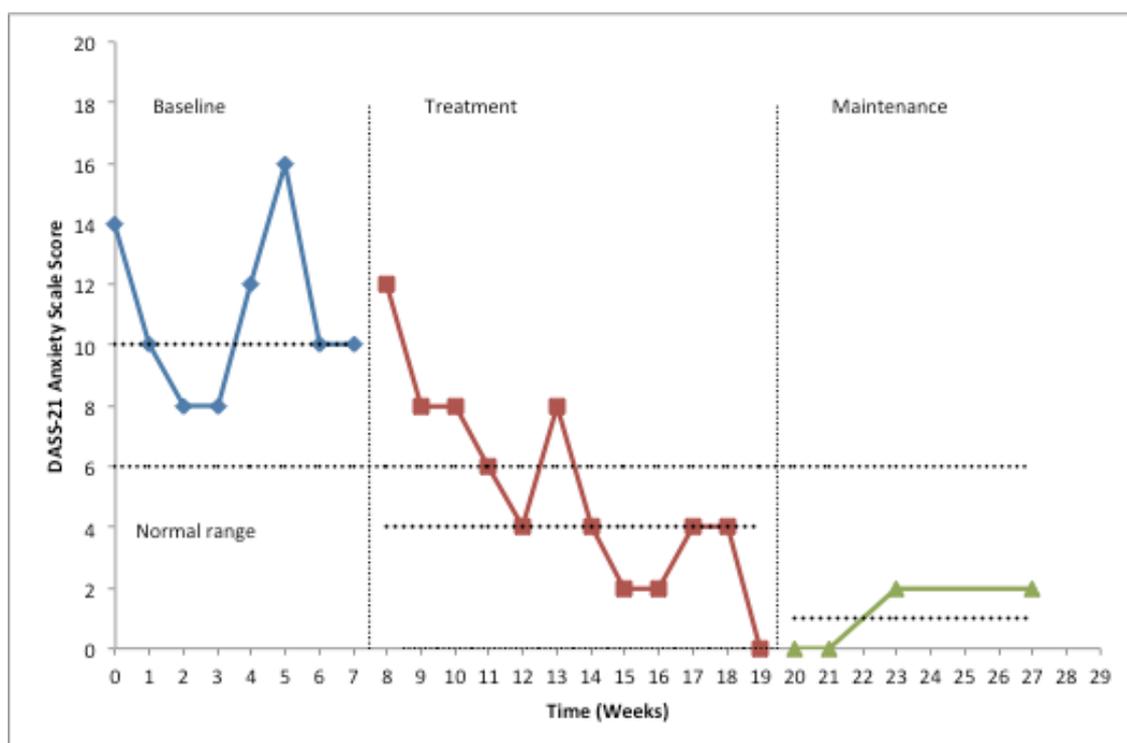


Figure 14. Case 2 DASS-21 Anxiety raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 6 : normal, 7-10: mild, 11-14: moderate, 15-19: severe, and ≥ 20 : extremely severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

One of the three statistical tests performed on DASS-21 Stress Scale scores for Anna, which are shown graphically in Figure 15, showed statistically significant downward change across phases: Tau-U ($z = 2.26, p < .05$). The C Statistic ($z = 0.56, p > .05$) and the split-middle binomial test ($z = 1.22, p > .05$) did not detect statistically significant change across phases. Clinically, Anna's DASS-21 Stress Scale scores moved from the border between the normal and mild range into the normal range over the course of treatment.

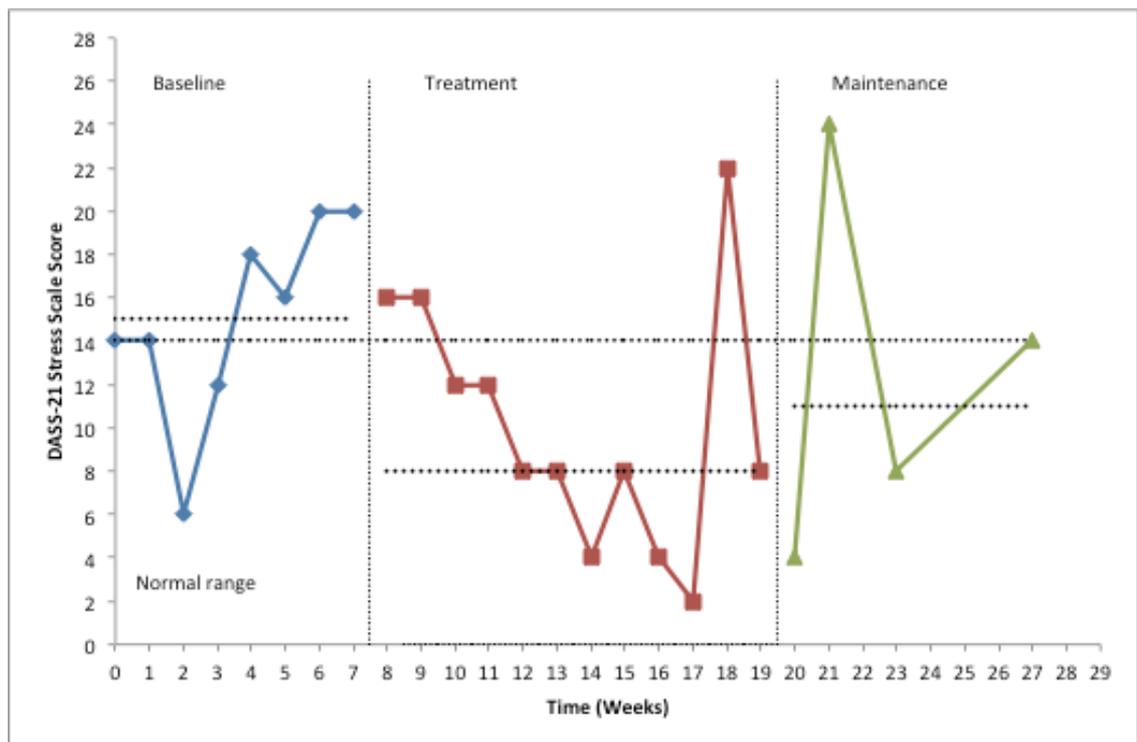


Figure 15. Case 2 DASS-21 Stress raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 14 : normal, 15-18: mild, 19-24: moderate, 25-33: severe, ≥ 34 : extremely severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

One of the three statistical tests performed on Anna's DASS-21 Depression Scale raw scores, which are depicted in Figure 16, showed a statistically significant change across phases at the $\alpha = .05$ level of significance: the C Statistic ($z = 2.991, p < .05$) detected a statistically significant upward trend. The split-middle binomial test could not be calculated because all post-baseline values were greater than or equal to the baseline median (effectively an infinite superiority) and indicative of increase in scores post-baseline. Tau-U ($z = 2.75, p > .05$) did not detect a statistically significant change across phases.

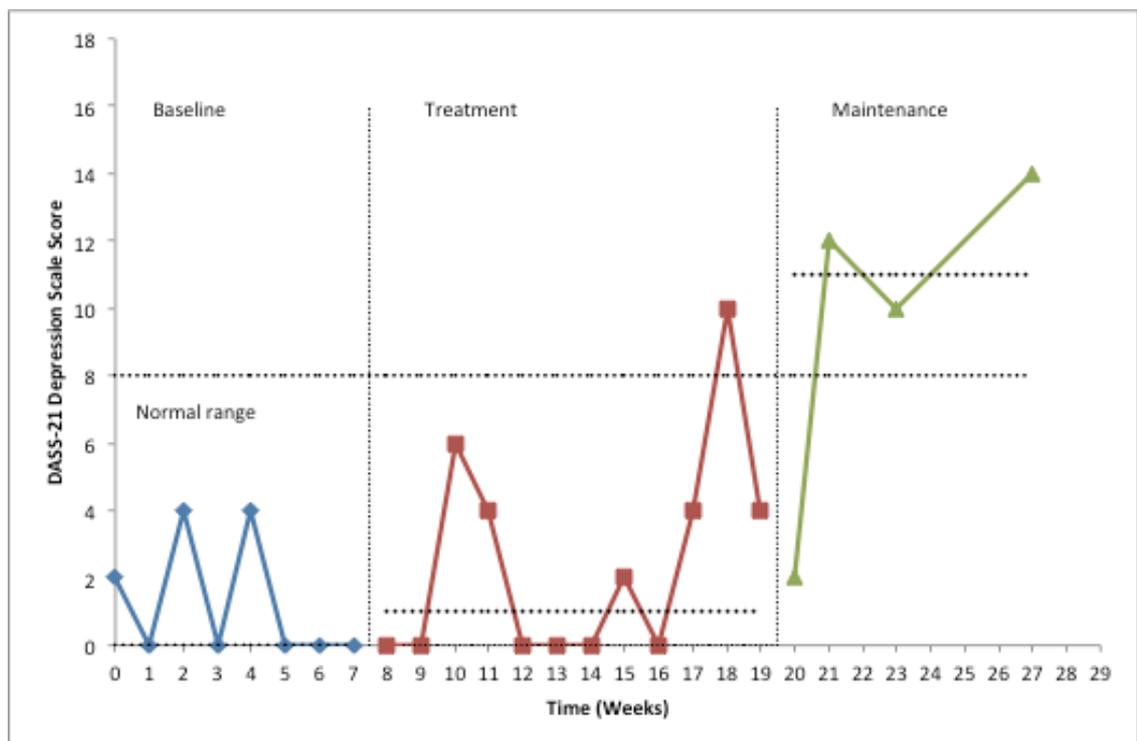


Figure 16. Case 2 DASS-21 Depression raw scores at baseline, treatment and maintenance phases.

Note: Scores ≤ 8 : normal, 9-12: mild, 13-20: moderate, 21-27: severe, and ≥ 28 : extremely severe.

Visual inspection of the graph above shows that Anna's depressive symptoms increased towards the end of the treatment phase and persisted into the follow-up phase (mild range). Some of this is explained by her husband being away for longer than planned for work (across Weeks 2 and 4 of the follow up phase), however these depressive symptoms did not decrease on her husband's return. The increase in depressive symptoms was not mirrored in the DASS Anxiety scale or DASS Stress

scales, although the corresponding “spike” in Anna’s BAI scores has been noted in a previous section.

5.2.4 Self- Monitored Anxiety and Activity Outcomes

Anna’s DARS scores are presented graphically in Figure 17. Anna completed a 55 day baseline. Analysis of the baseline phase data showed an absence of trend indicated by the C Statistic ($z = 1.062, p > .05$). All three tests applied detected statistically significant downward change across phases: C Statistic ($z = 3.61, p << .01$), split middle binomial test ($z = 4.11, p << .01$), and Tau-U ($z = 6.45, p < .01$). The change in phase medians was 7 points.

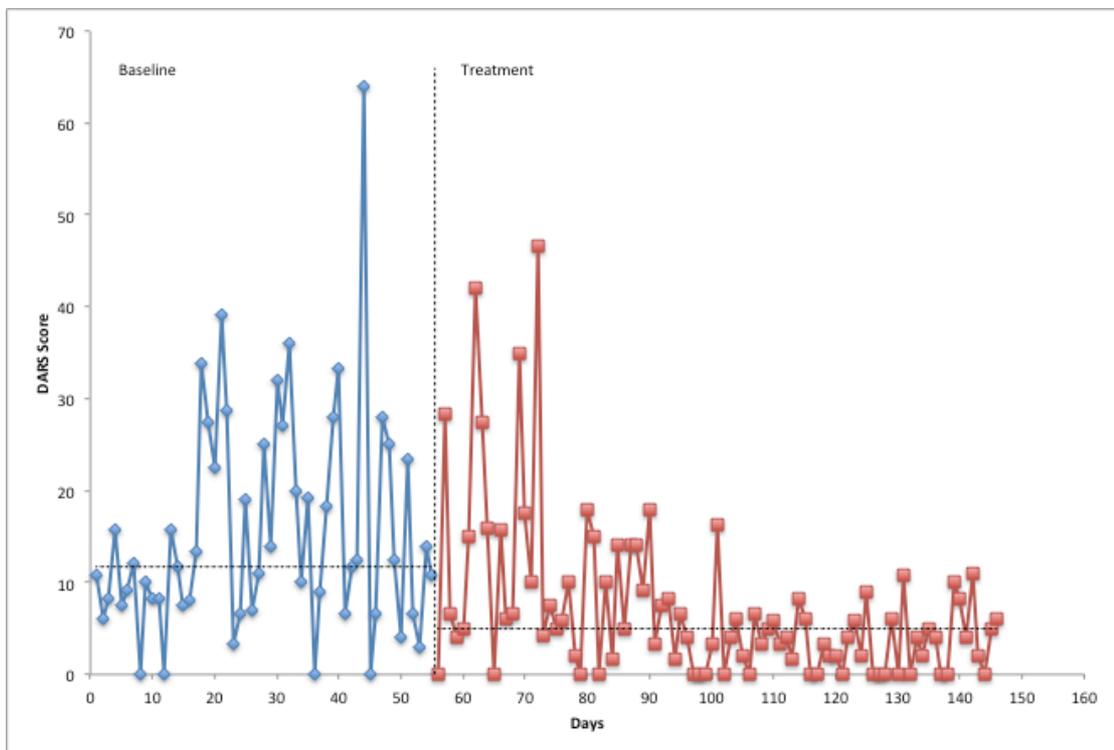


Figure 17. Case 2 Daily Anxiety Rating Scale (DARS) scores across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Anna's self- and other-care data across baseline and treatment phases are presented in Figure 18. Analysis of the baseline phase revealed evidence of an downward trend within the data, as indicated by the C Statistic ($z = 2.53, p < .01$). Compared to baseline, there was a significant increase during the treatment phase detected by one out of three of the statistical tests applied: C Statistic ($z = 5.53, p < .01$). However, the split middle binomial test ($z = 0.19, p > .05$) and Tau-U ($z = 1.03, p > .05$) did not detect significant change across phases. By visual inspection, the detected change from the C Statistic is probably due to the two "spikes" observed at Weeks 10 and 17. There was no difference in the phase medians.

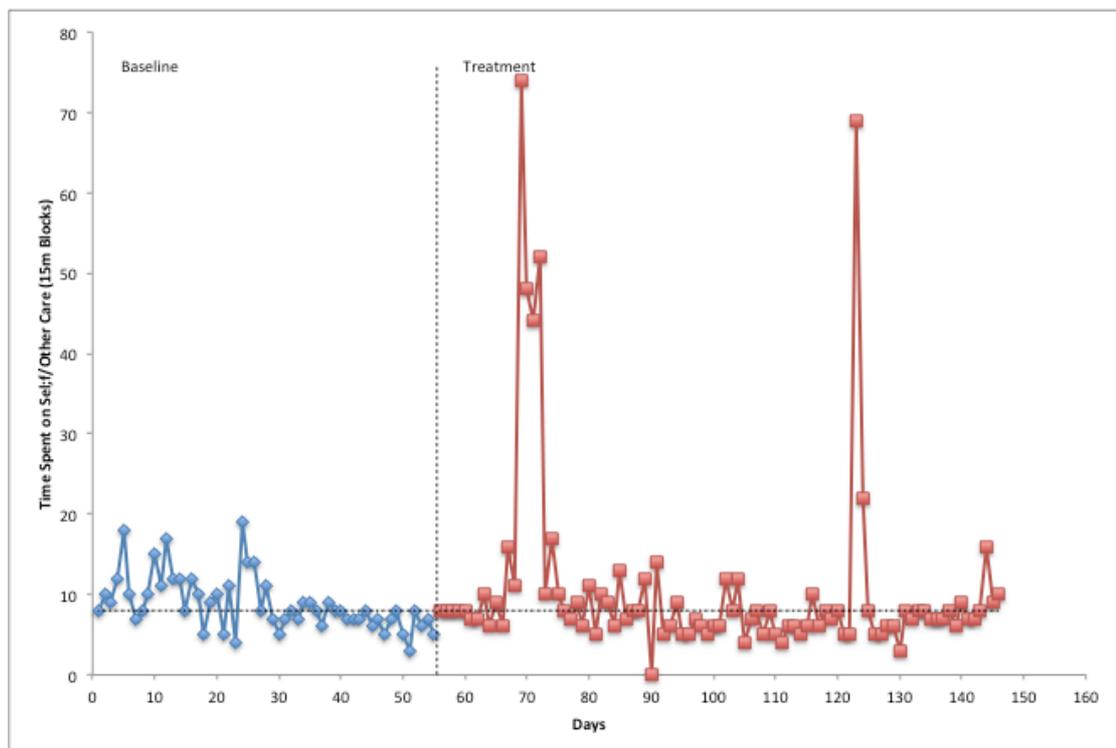


Figure 18. Case 2 Minutes spent per day on Self- and Other- Care baseline and treatment phases.

Two transient spikes are noted by visual inspection in the graphs above related to intensive day-activities for self-care including watching movies, running and walking, going to the beach and reading.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Anna's Housework and Errands data across baseline and treatment phases are presented in Figure 19. Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = -0.006, p > .05$). Compared to baseline, one of the three statistical tests applied detected a significant increase in the amount of time Anna spent on housework and errands: the C Statistic ($z = 3.10, p < .01$). The split middle binomial test ($z = 0.19, p > .05$) and Tau-U ($z = 0.95, p > .05$) did not show significant change across phases. The there was no difference in phase medians.

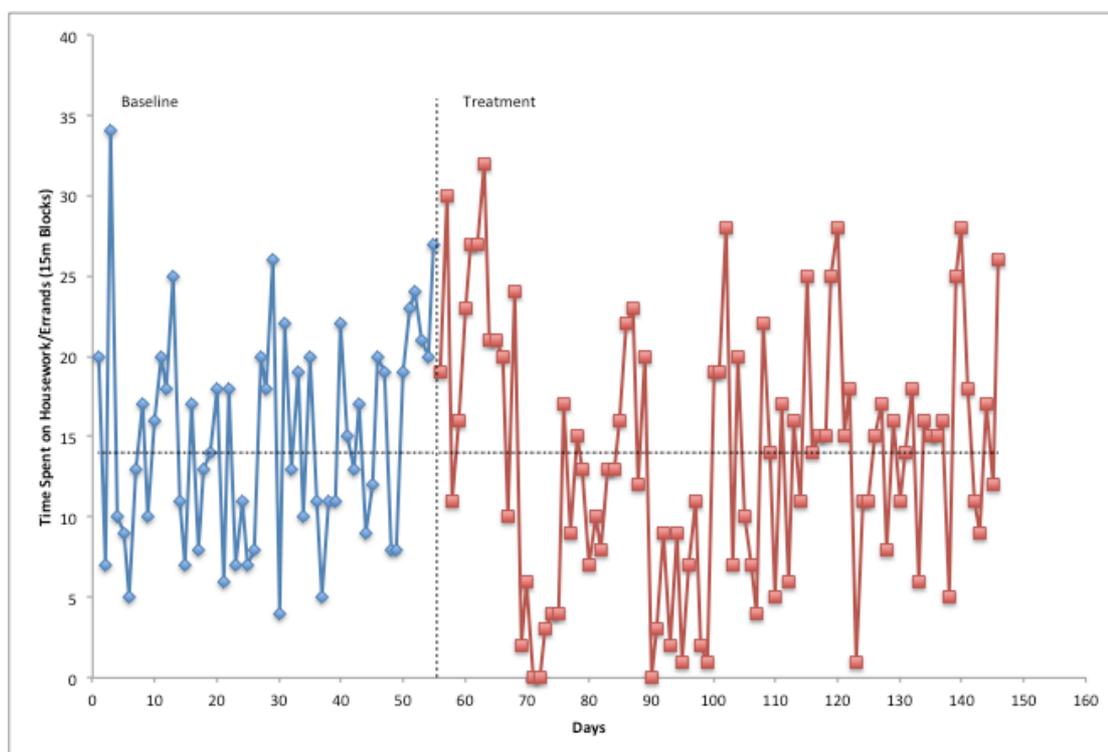


Figure 19. Case 2 Minutes spent per day on Housework and Errands across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Anna's Paid and Unpaid Work data across baseline and treatment phases are presented in Figure 20. Analysis of the baseline phase using the C Statistic detected an upward trend within the data ($z = 2.86, p < 0.01$). Compared to baseline, two of the three statistical tests detected a significant decrease during the treatment phase in the amount of time Anna spent on paid or unpaid work: C Statistic ($z = 5.08, p < .01$) and the split middle binomial test ($z = 2.46, p < .01$). Tau-U ($z = 0.23, p > .05$) did not detect significant difference in the time spent on paid/unpaid work. The difference in phase medians indicated a decrease of 2 hours per day in time spent on paid or unpaid work.

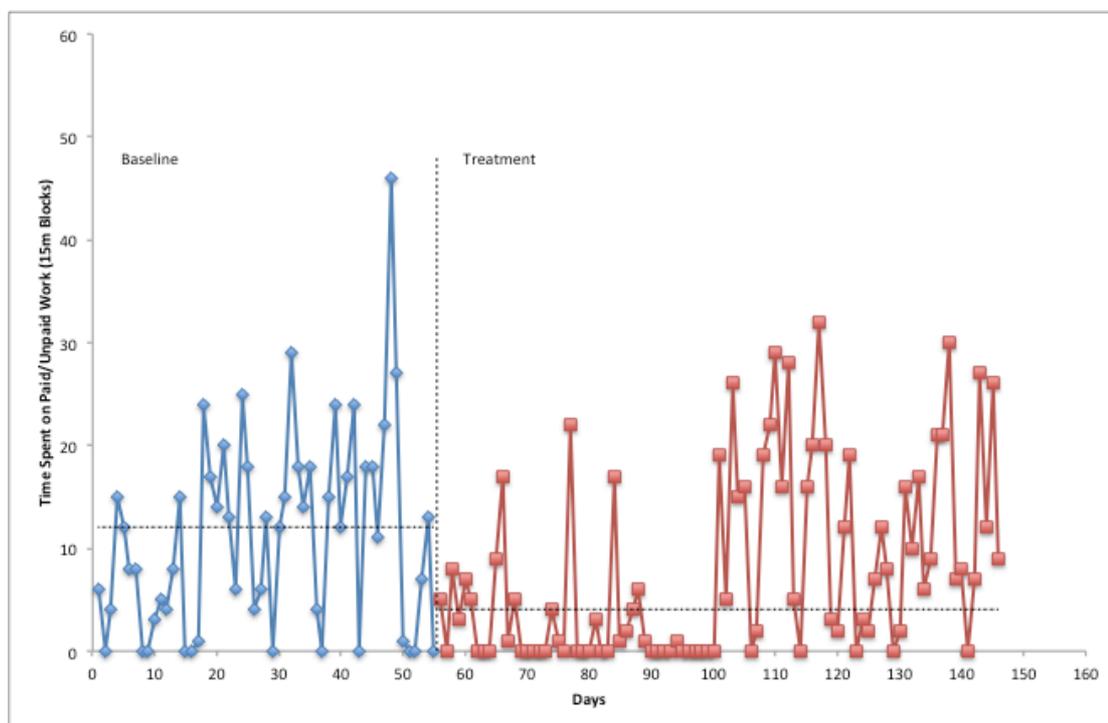


Figure 20. Case 2 Minutes spent per day on Paid and Unpaid Work across baseline and treatment phases.

Visual inspection of the graph above shows that between the commencement of treatment and Day 100, paid and unpaid activities were lower, but then increased again after Day 100 to baseline levels. Anna was a part time student who was not employed and has classified her studies as paid/unpaid work. The drop in paid and unpaid work activities is related to the completion of semester exams and a holiday interstate.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Anna's Interests, Hobbies, and Recreation data are presented in Figure 21. Analysis of the baseline phase using the C Statistic revealed an absence of trend within the data ($z = -0.488, p > .05$). One of the three statistical tests applied detected a significant change comparing baseline and treatment phases: C Statistic ($z = 3.08, p < .01$). The split middle binomial test ($z = 0.58, p > .05$), and Tau-U ($z = 0.27, p > .05$) did not detect significant change across phases. There was no difference in the phase medians.

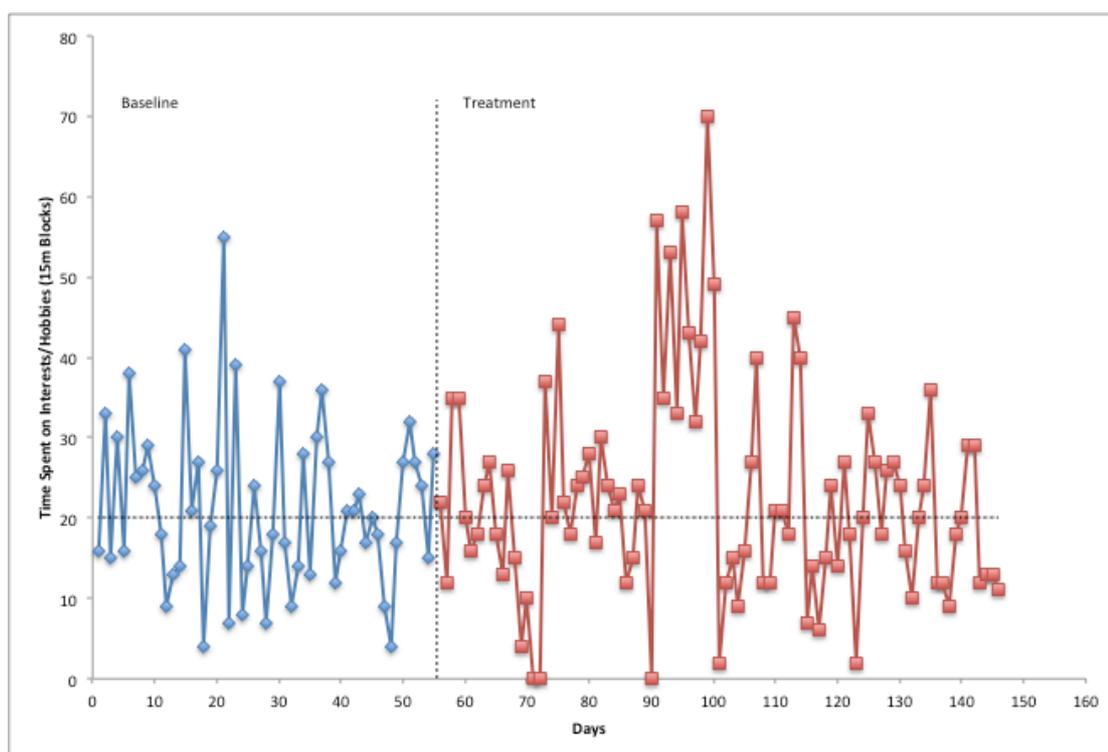


Figure 21. Case 2 Minutes spent per day on Interests, Hobbies, and Recreation across baseline and treatment phases.

Visual inspection show a jump in time spent in interests, hobbies and recreation from Day 90 to Day 100, when Anna was on holiday and undertaking activities like walking in a rainforest, going to the beach, walking around town, going out for coffee, attending art exhibitions, and going to a theme park.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Anna's data representing time spent with other people (as opposed to alone) across baseline and treatment phases are presented in Figure 22. Analysis of the baseline phase using the C Statistic revealed an absence of trend within the data ($z = -1.273, p > .05$). Compared to baseline, there was no significant change across phases detected by any of the three statistical tests applied: C Statistic ($z = 1.08, p > .01$), split middle binomial test ($z = 0.32, p > .05$), and Tau-U ($z = 0.28, p > .01$). The difference in phase medians showed a decrease of 30 minutes per day.

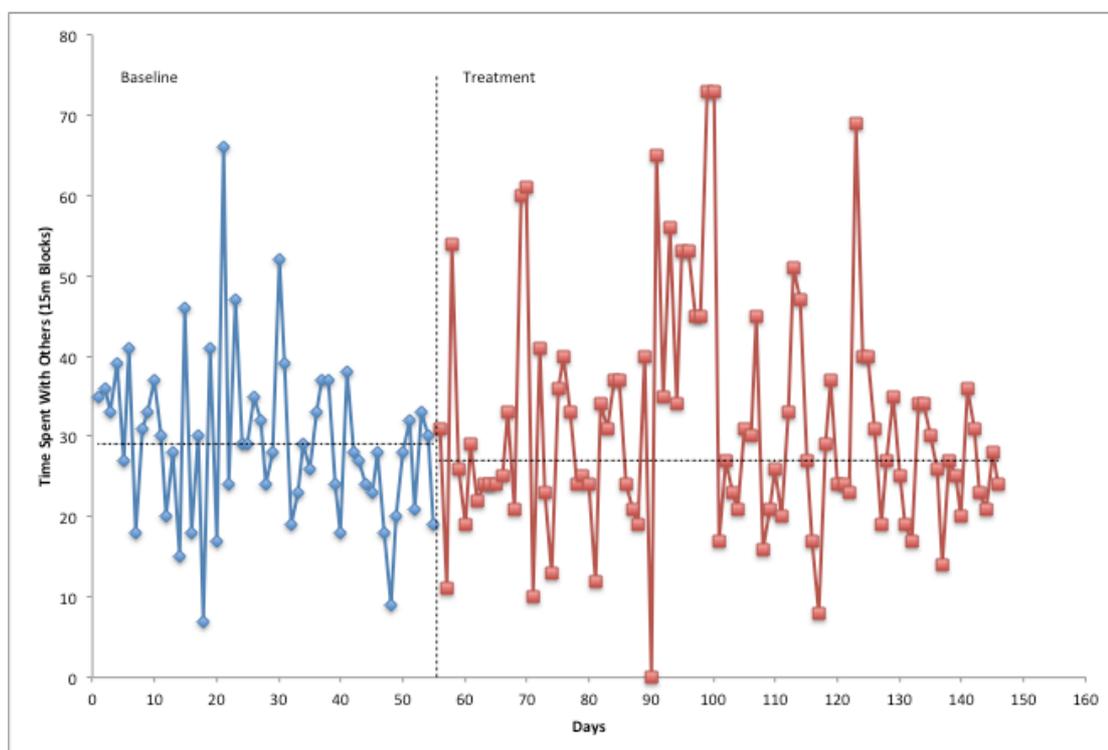


Figure 22. Case 2 Minutes spent per day spent with other people across baseline and treatment phases.

Visual inspection shows a jump in time spent with other people between Day 90 and Day 100 while she was on holiday with family and friends.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Anna's Out of Home data across baseline and treatment phases are presented in Figure 23. Analysis of the baseline phase revealed an upward trend within the data, indicated by the C Statistic ($z = 2.34, p < .05$). Compared to baseline, one of the three statistical tests detected significant increase in the amount of time Anna spent out of home: C Statistic ($z = 3.37, p < .01$). The split middle binomial test ($z = 0.45, p > .05$) and Tau-U ($z = 1.04, p > .05$) tests did not detect significant change across phases. The decrease in phase medians was 45 minutes per day.

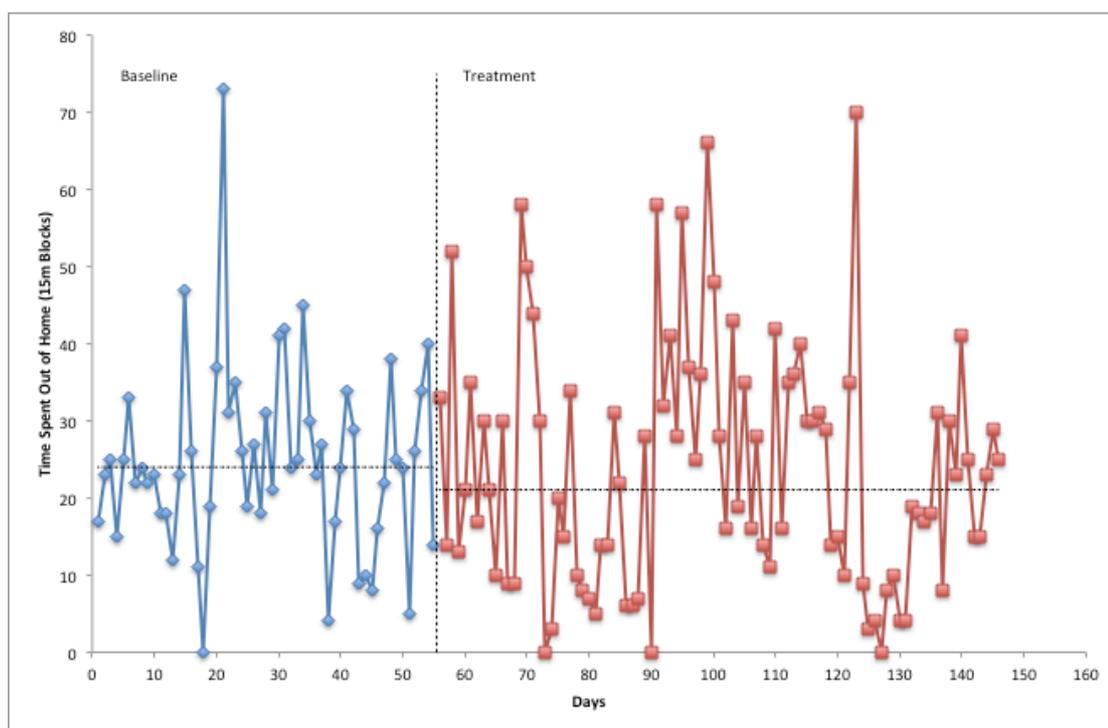


Figure 23. Case 2 Minutes spent per day spent out of home across baseline and treatment phases.

5.2.5 Therapist/Client Relationship

Anna's total scale scores across the treatment phase from the Barrett-Lennard Relationship Inventory: Observer Form (OS-64) are presented in Figure 24. The OS-64 was administered at 4, 8, and 12 week periods during treatment.

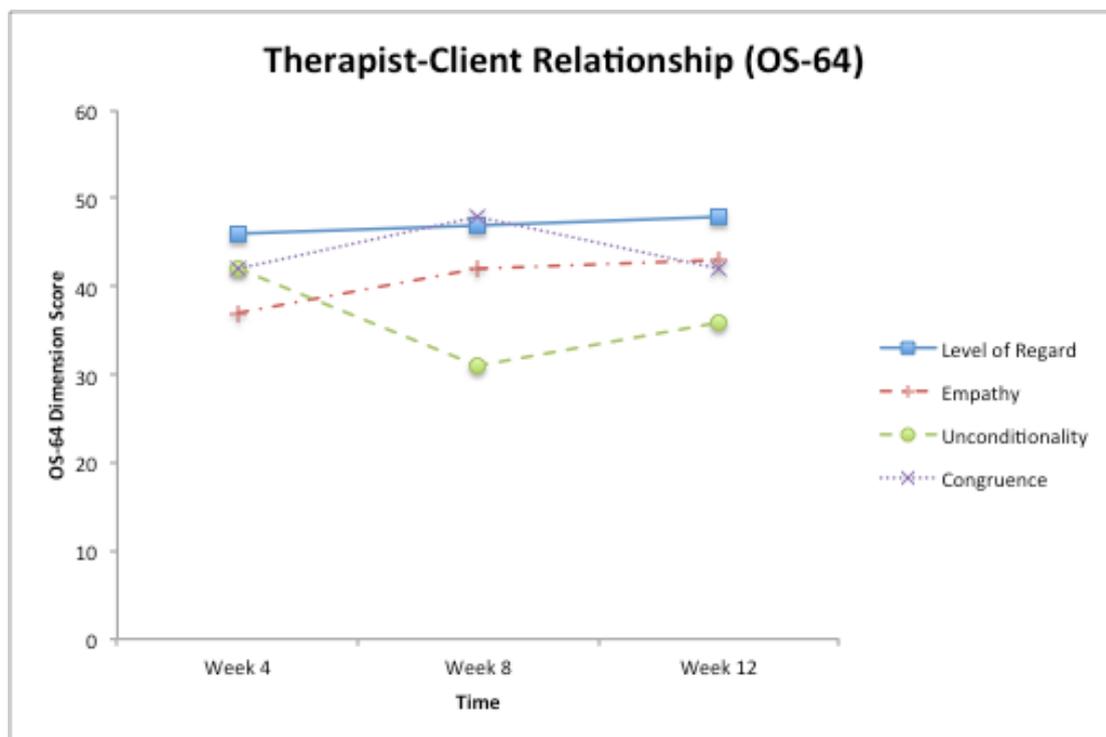


Figure 24. Case 2 OS-64 Assessment of Therapy Relationship Variables across the treatment phases.

Visual inspection shows consistency across all dimensions during the course of treatment, well above the threshold of 0 required for a “level adequate for a constructive relationship” (Barrett-Lennard, 1986).

5.2.6 Behavioural Cusps

Formal activity scheduling commenced on Week 3, and though it is more difficult to quantify, Anna did seem to engage in activities that could qualify as behavioural cusps. Anna's results show a significant decrease in standardised anxiety measures. We note an upward spike in her BAI scores at Week 2 follow up, Anna stated that she had injured her hamstring and pain had increased her anxiety. Activities scheduled for Anna included being more active, registering for a “fun run”, walking her dogs, studying with her child, scheduling time for her own studies, making decisions rather than waiting for her husband to decide things, visiting her grandmother,

swimming, and spending quality time with her family. Scheduling time to study with her child improved her relationship with her child and post-treatment they look forward to working together. Making decisions increased her feelings of control and self-confidence, which reinforce her to make more decisions. Finally, her enjoyment of exercise and walking her dogs led her to being healthier and feeling better physically, which encouraged her to enter running competitions.

5.2.7 Treatment Integrity

All of Anna's treatment sessions were audio-recorded and two sessions were randomly selected and independently scored for treatment integrity. Inter-observer agreement averaged 92.9% across scored sessions with 98.3% of therapist in-session behaviour compatible with the treatment modality (BATA).

5.2.8 Post-Treatment Diagnosis

At the end of the treatment phase, Anna reported a significant and consistent decrease in her everyday stress and anxiety levels across settings. Anna stated that she had a more relaxed relationship with her daughter. She stated that she was coping well with her studies and assignments and felt more motivated about her university course. Post-treatment, Anna no longer met DSM-IV criteria for Panic Disorder and maintained this 2 months post-treatment, indicating that the changes in behaviour were robust and maintained without contact with therapy.

5.3 Case 3: “Sharon”

5.3.1 Characteristics

"Sharon" was a 29 year old woman who resided in the Perth metropolitan area at the time of the study. She stated that she had previously attended psychological counselling (Cognitive Behavioural Approach) in 2011 and 2009, but described that she did not find it helpful. Sharon indicated that she had not been taking anxiety medication for a period of 6 months leading up to her participation in the study, but had recently been prescribed instead with Valium to be taken on an “as needs” basis.

Sharon described that she withdrew from her university studies in 2006 and “spent 3 months in bed”. She reported that she experienced panic attacks in 2006 that led to her resigning from her job. She stated that she ended up attending an emergency department at a hospital because of panic symptoms.

On more than one occasion, Sharon reported, she experienced panic attacks in which she suddenly felt anxious, and the surge of anxiety would peak within 10 minutes of it starting. She stated that panic attacks would occur unpredictably and unprovoked, which increased her concern about having another attack. Sharon described that during panic attacks, she would experience physiological responses, including “pounding” and racing heart, shaking, a feeling of “choking”, numbness in her body, hot flushes, accompanied by a fear of dying, and a sense of “losing control”. Sharon stated that she feels anxious in situations in which she thinks that help might not be available, including driving, catching the bus, hiking or flying, usually related to a fear of not able to escape. She described that she “suffers through those situations”. She reported that she had experienced panic symptoms in month leading up to her assessment for suitability for participation in this study

By way of background history, Sharon reported that she had a good relationship with her adopted parents. Sharon reported that she was in a relationship.

5.3.2 Intake Assessment.

Based on her responses to the MINI, Sharon fulfilled DSM-IV criteria for Panic Disorder with Agoraphobia. Sharon scored 41 on the BAI which was in the severe range, 2 on the DASS-21 Depression Scale which is in the normal range, 30 on the DASS-21 Anxiety Scale which is in the extremely severe range, and 22 on the DASS-21 Stress Scale, which is in the moderate range.

5.3.3 Standardised Anxiety-Related Outcomes

Sharon's BAI scores are presented graphically in Figure 25. Two of the three statistical analyses of Sharon's BAI scores across the phases revealed evidence of a downward change across phases: C Statistic ($z = 4.47, p < .01$) and Tau-U ($z = 4.86, p << .01$). The split-middle binomial test ($z = 1.35, p > .05$) did not detect a statistically significant change across phases. The changes in BAI scores are clinically meaningful because Sharon's scores moved from the severe range into the moderate and then into the normal range.

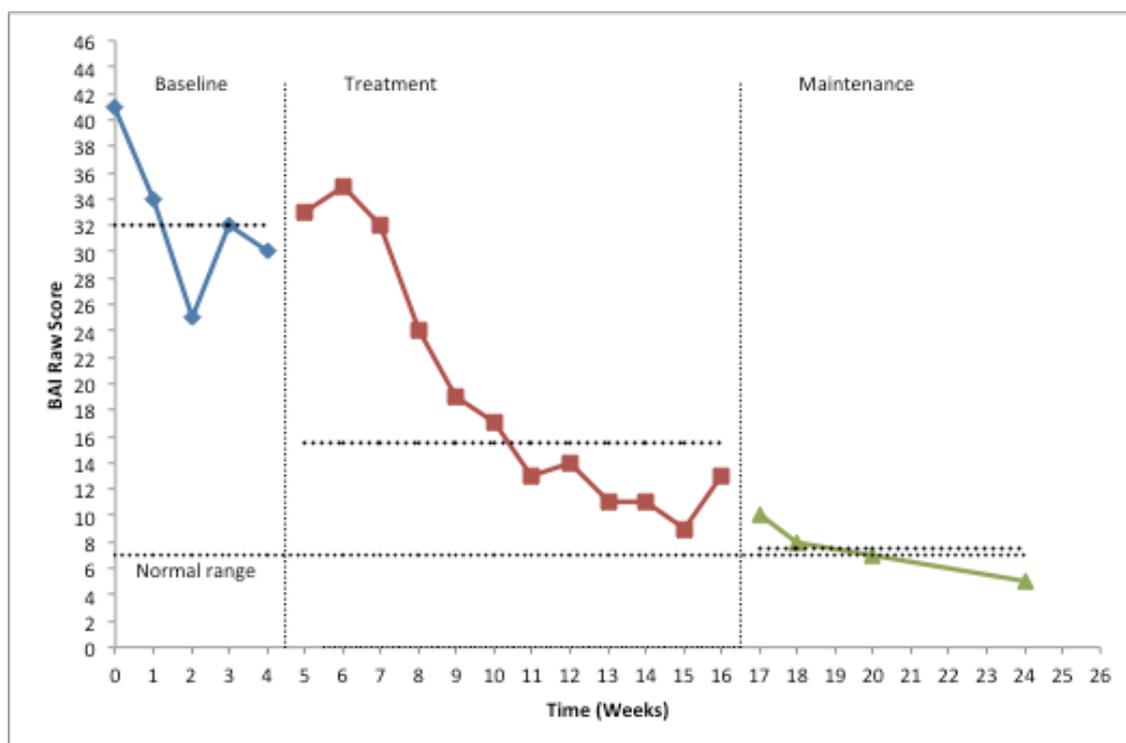


Figure 25. Case 3 BAI raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 7 : minimal, 8-15: mild, 16-25: moderate, and ≥ 26 : severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Similarly, two of the three statistical analyses of Sharon's scores for DASS-21 Anxiety Scale, which are shown graphically in Figure 26, showed statistically significant downward change across phases: C Statistic ($z = 4.26, p \ll .01$) and Tau-U ($z = 4.05, p \ll .01$). The split-middle binomial test ($z = 1.35, p > .05$) did not detect statistically significant change between phases. The changes in DASS-21 Anxiety Scale scores are clinically meaningful because Sharon's scores moved from the extreme severe range at the assessment phase, into the moderate range during the treatment phase and then into the normal range at during the maintenance phase.

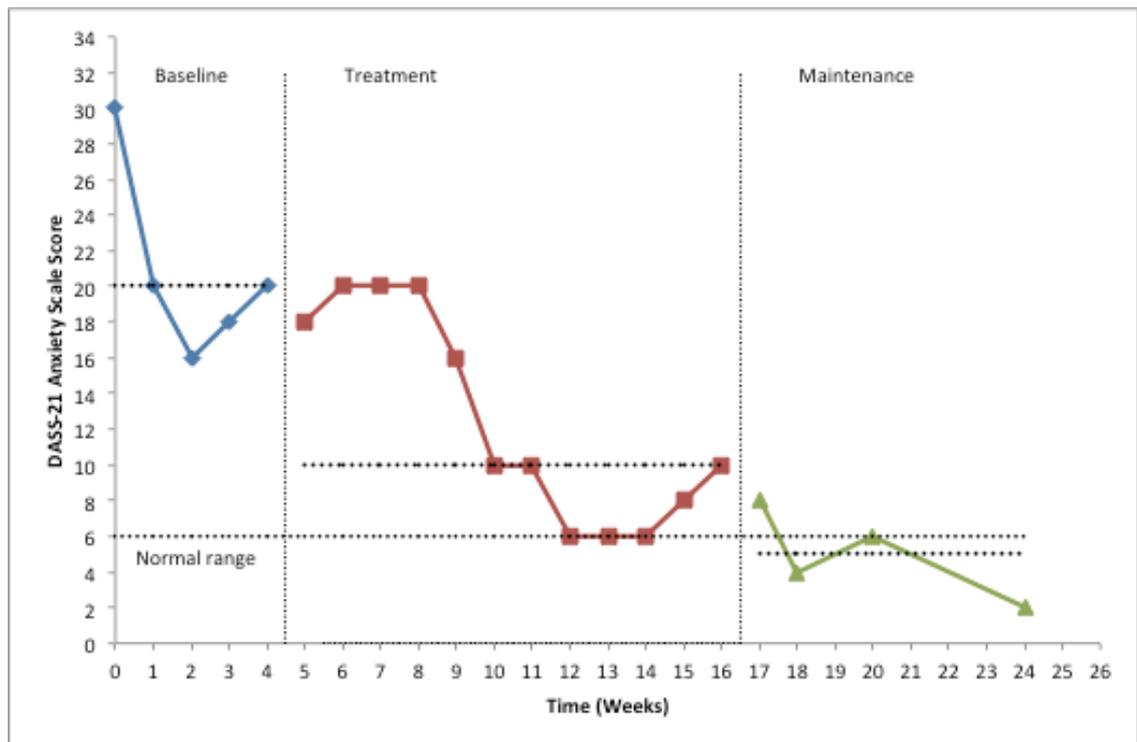


Figure 26. Case 3 DASS-21 Anxiety raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 6 : normal, 7-10: mild, 11-14: moderate, 15-19: severe, and ≥ 20 : extremely severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Two of the three statistical tests performed on DASS-21 Stress Scale raw scores for Sharon, which are shown graphically in Figure 27, showed statistically significant downward change between phases, with the C Statistic ($z = 2.771, p < .01$) and Tau-U ($z = 3.62, p < .001$) showing statistically significant change, while the split-middle binomial test ($z = 1.26, p > .05$) did not show a statistically significant change. Clinically, Sharon's DASS-21 Stress Scale scores moved from the mild range during baseline phase into the normal range during treatment phase, and then maintaining and improving during the follow-up phase.

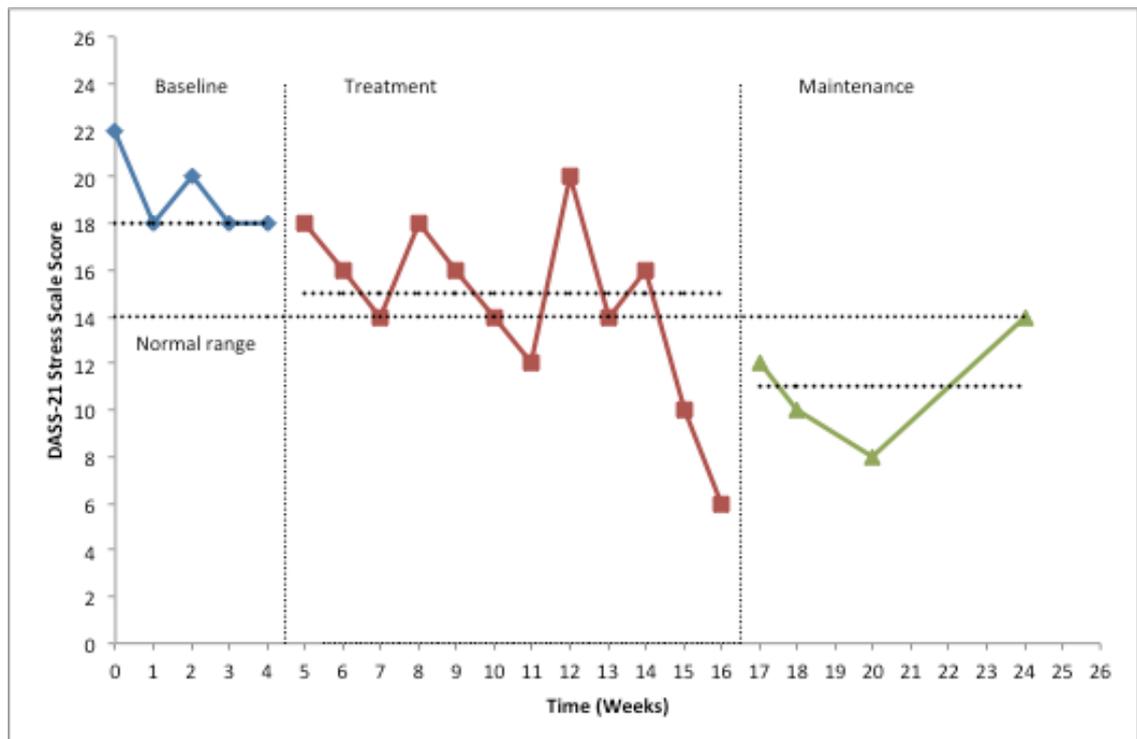


Figure 27. Case 3 DASS-21 Stress raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 14 : normal, 15-18: mild, 19-24: moderate, 25-33: severe, ≥ 34 : extremely severe.

Visual inspection of the graph shows a rise in reported stress levels at Week 8 follow up. Sharon reported a reduction of anxiety symptoms, finding work easier and generally coping better. She received good study results and stated that the BATA related schedule for study helped with this, as compared to her previous behaviours of avoidance and procrastination.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

None of the three statistical tests performed on Sharon's DASS-21 Depression Scale scores, which are depicted in Figure 28, showed a statistically significant change across phases at the $\alpha = .05$ level of significance: C Statistic ($z = 1.18, p > .05$), the split-middle binomial test ($z = 0.25, p > .05$), and Tau-U ($z = 0.54, p > .05$).

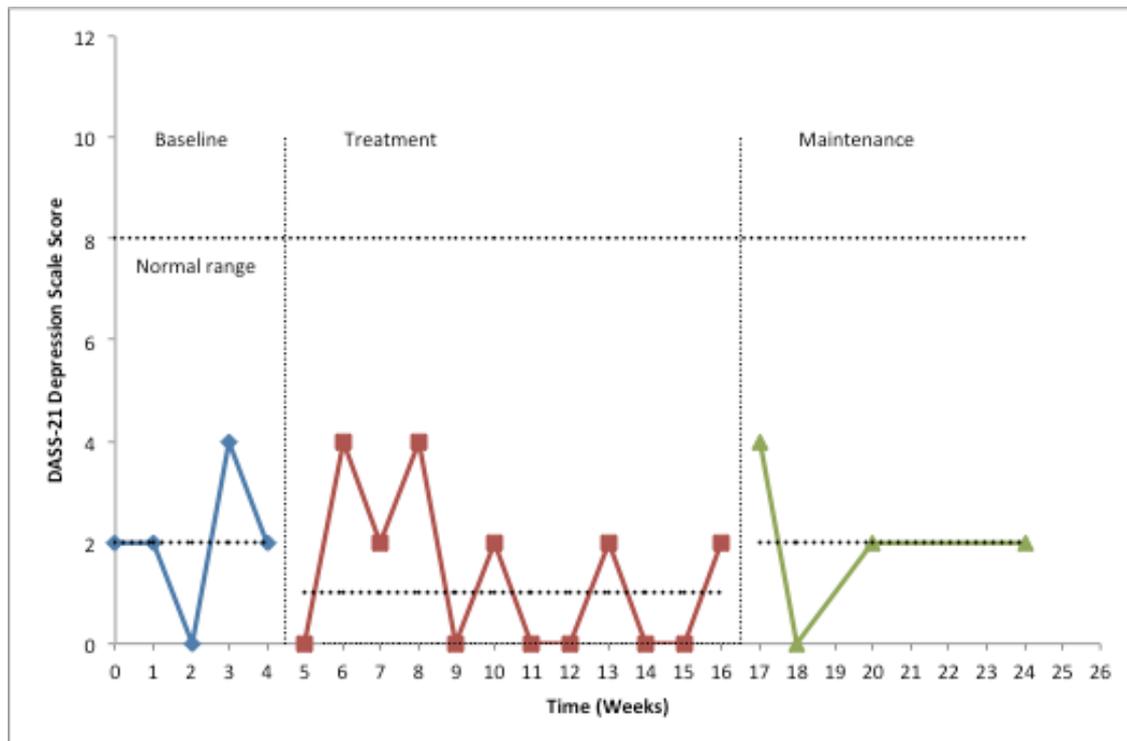


Figure 28. Case 3 DASS-21 Depression raw scores at baseline, treatment and maintenance phases.

Note: Scores ≤ 8 : normal, 9-12: mild, 13-20: moderate, 21-27: severe, and ≥ 28 : extremely severe.

5.3.4 Self- Monitored Anxiety and Activity Outcomes

Sharon's DARS scores are presented graphically in Figure 29. Sharon completed a 34 day baseline. Analysis of the baseline phase data showed an absence of trend using the C Statistic ($z = 0.758, p > .05$). Across the phases, downward trend was shown by all three statistical tests: C Statistic ($z = 4.86, p \ll .01$), split middle binomial test ($z = 3.39, p \ll .01$), and Tau-U ($z = 4.41, p \ll .01$). The difference in phase medians indicated a drop of 7 points between phases.

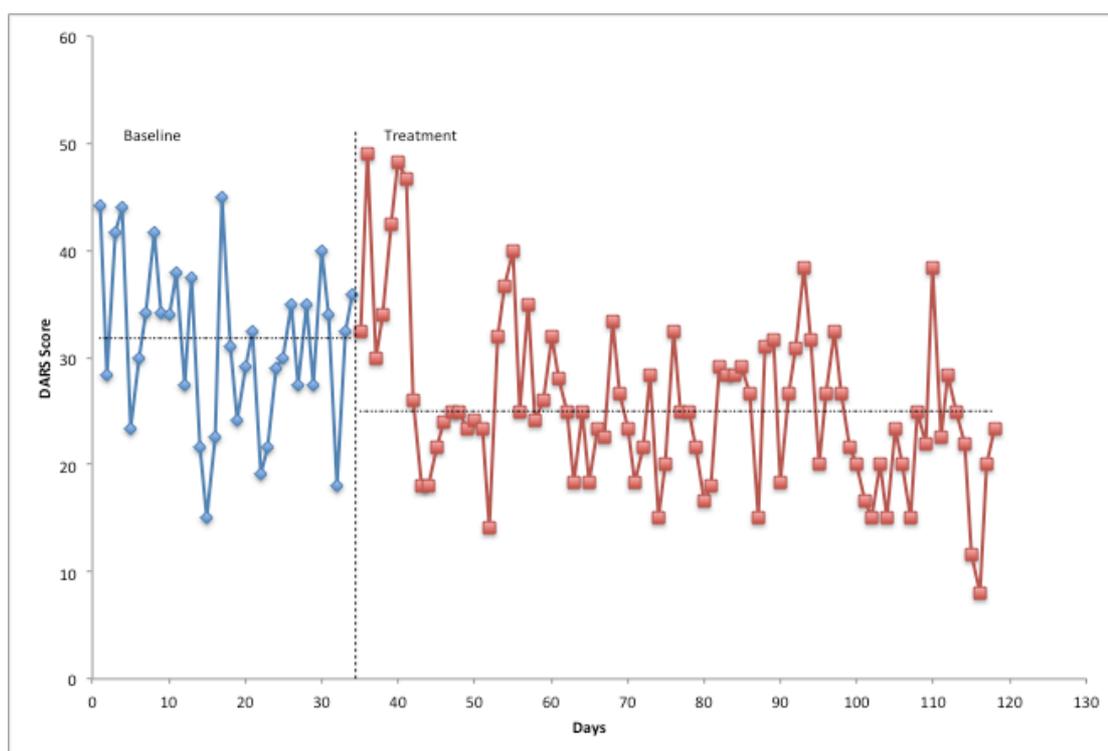


Figure 29. Case 3 Daily Anxiety Rating Scale (DARS) scores across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Sharon's self- and other-care data across baseline and treatment phases are presented in Figure 28. Analysis of the baseline phase revealed evidence of an upward trend within the data as indicated by the C Statistic ($z = 1.83, p < .05$). Compared to baseline, there was a significant decrease during the treatment phase indicated by all three of the statistical tests applied: C Statistic ($z = 4.43, p < .01$), the split middle binomial test ($z = 1.80, p < .05$), and Tau-U ($z = 3.27, p < .01$). The difference in phase medians showed a decrease of 15 minutes per day.

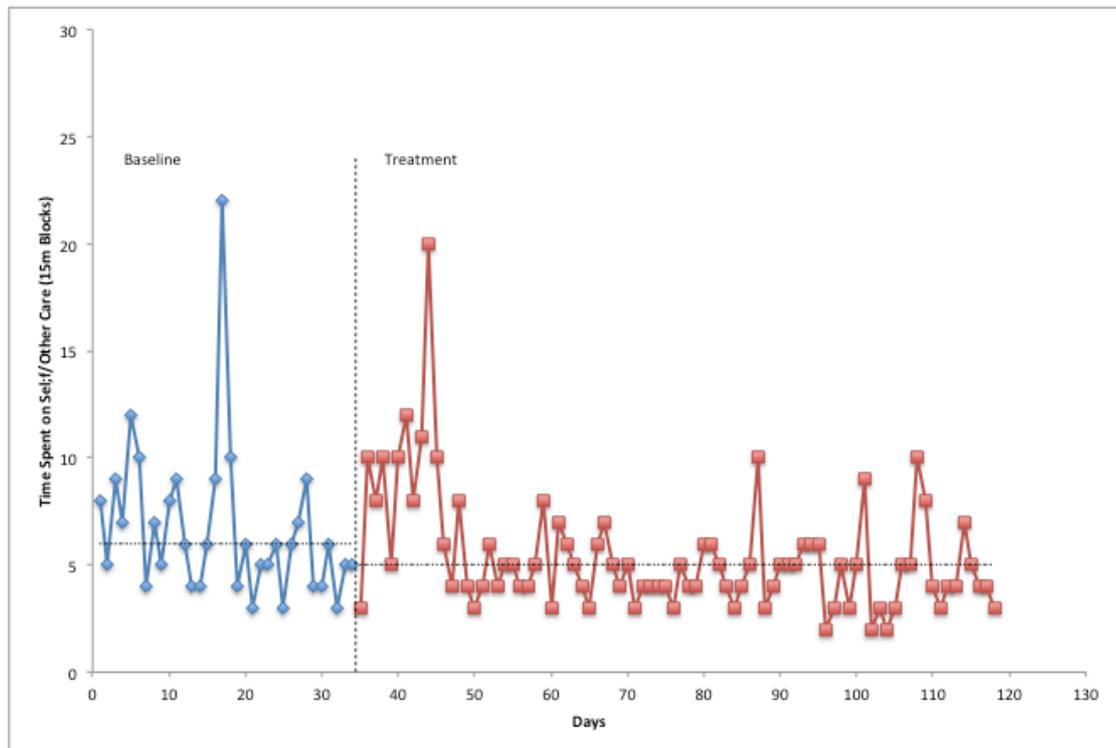


Figure 30. Case 3 Minutes spent per day on Self- and Other- Care baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Sharon's Housework and Errands data across baseline and treatment phases are presented in Figure 31. Analysis of the baseline phase revealed an absence of trend as indicated by the C Statistic ($z = 0.713, p > .05$). Compared to baseline, one of the three statistical tests showed significant decrease in the amount of time Sharon spent on housework and errands: the C Statistic ($z = 2.22, p < .05$). The split middle binomial test ($z = 0.47, p > .05$) and Tau-U ($z = 0.10, p > .05$) did not detect significant change across phases. The change in phase medians indicated a decrease of 15 minutes per day spent on housework and errands.

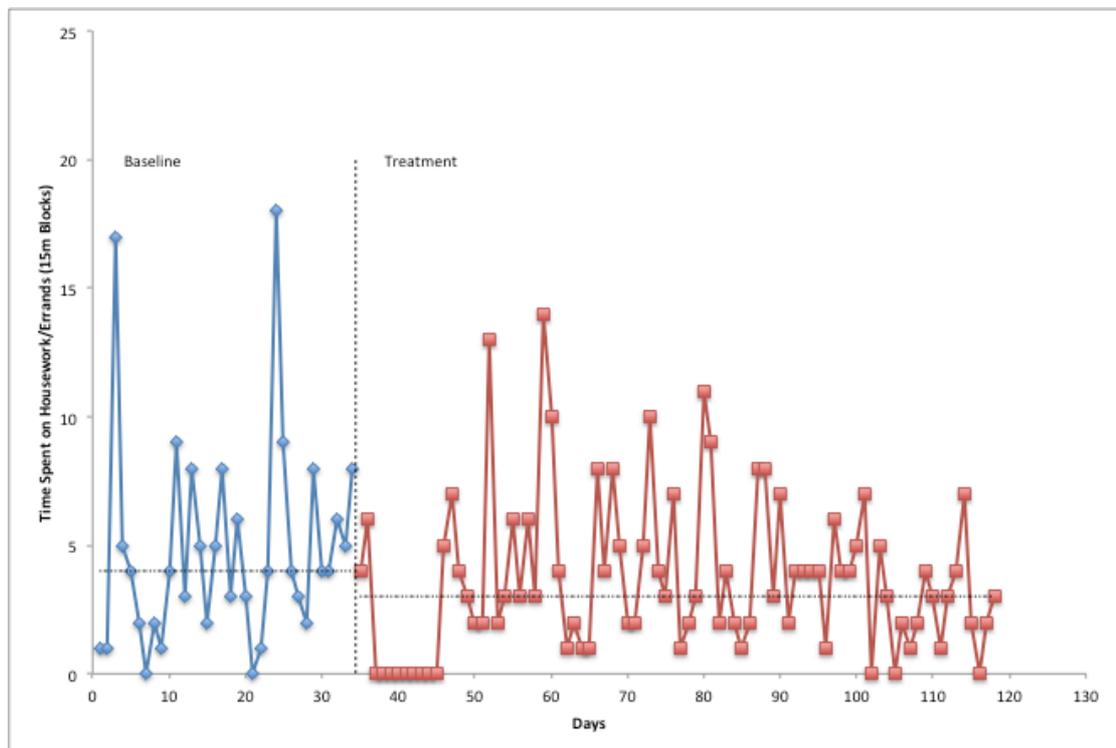


Figure 31. Case 3 Minutes spent per day on Housework and Errands across baseline and treatment phases.

Note that there were minimal reported activities for housework and errands around Day 40 because Sharon was overseas on holiday.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Sharon's Paid and Unpaid Work data across baseline and treatment phases are presented in Figure 32. Analysis of the baseline phase revealed an absence of trend within the data as indicated by the C Statistic ($z = 1.51, p > .05$). Compared to baseline, two out of three tests showing a significant increase during the treatment phase in the amount of time Sharon spent on paid or unpaid work: C Statistic ($z = 4.46, p \ll .01$) and Tau-U ($z = 2.26, p < .05$). The split middle binomial test ($z = 0.95, p > .05$) did not show significant difference between phases. The difference in phase medians indicates a 1 hour per day increase in time spent on paid or unpaid work.

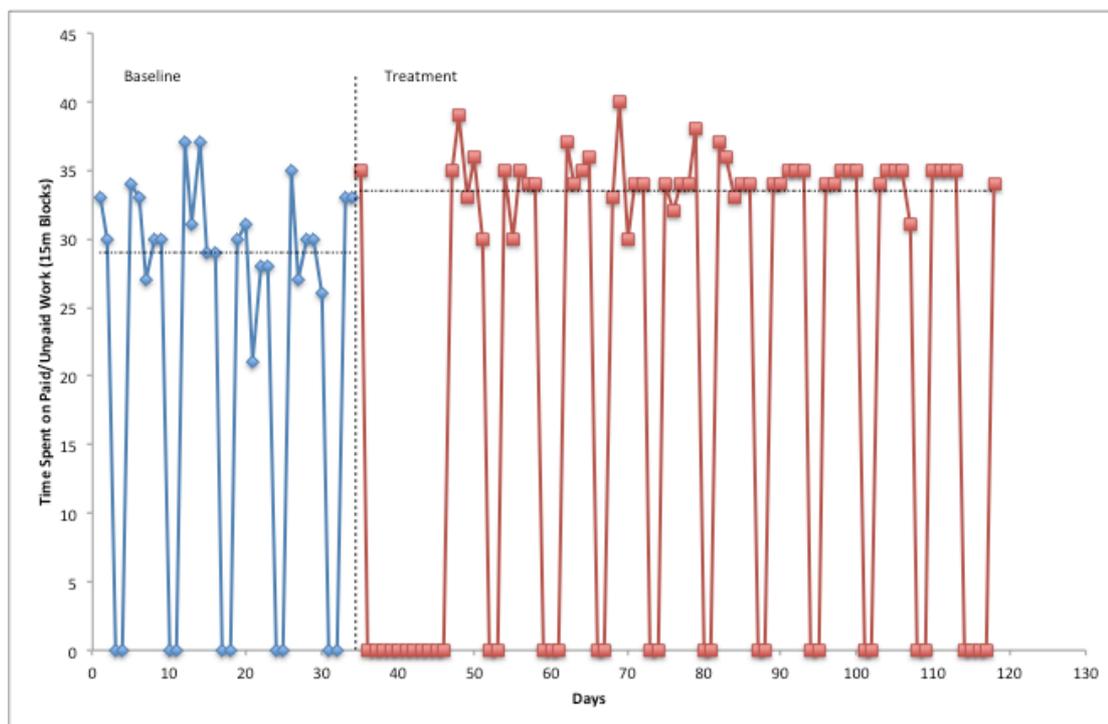


Figure 32. Case 3 Minutes spent per day on Paid and Unpaid Work across baseline and treatment phases.

Visual inspection of the graph above shows that Sharon did not engage in work during her holiday overseas. However, on her return from holiday, there was a perceptible increase in her work activities, related to activity scheduling.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Sharon's Interests, Hobbies, and Recreation data are presented in Figure 33. Analysis of the baseline phase revealed an absence of trend within the data as indicated by the C Statistic ($z = 1.20, p > .05$). One of the three statistical tests applied detected a significant change comparing baseline and treatment phases with C Statistic ($z = 4.20, p < .05$). The split middle binomial test ($z = 1.44, p > .05$), and Tau-U ($z = 1.33, p > .05$) did not detect a significant change in the amount of time spent on interests/hobbies across phases. The difference between phase medians indicates an increase of 45 minutes per day spent on interests, hobbies and recreation.

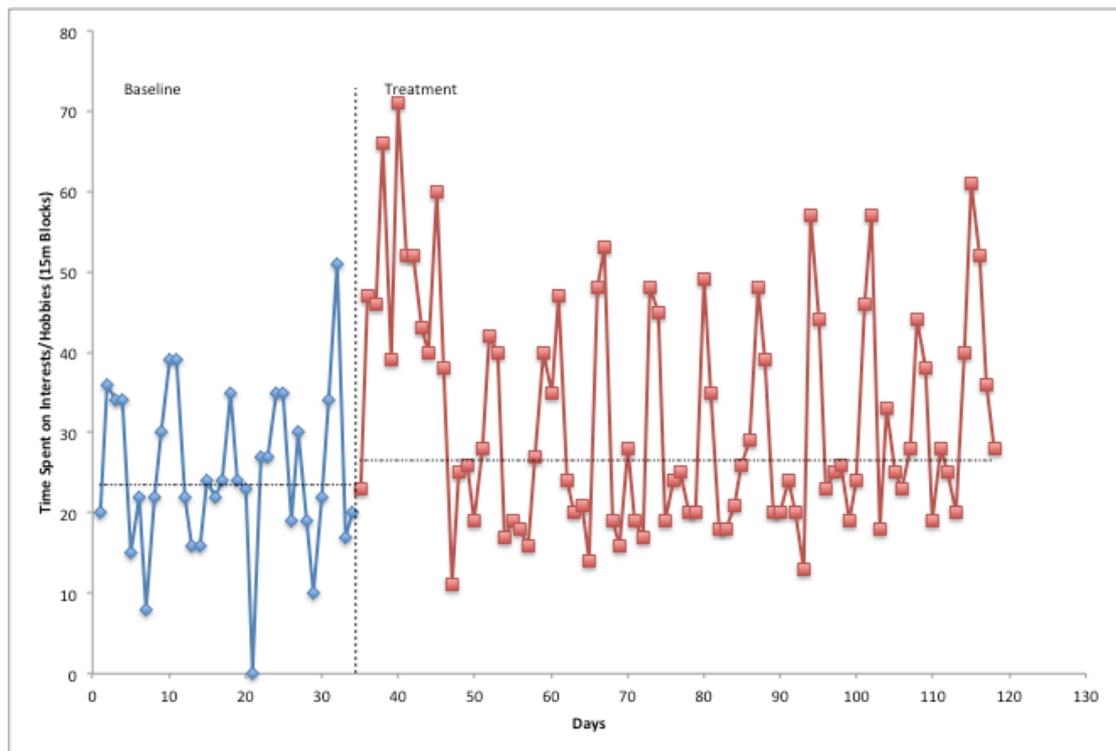


Figure 33. Case 3 Minutes spent per day on Interests, Hobbies, and Recreation across baseline and treatment phases.

The graph above shows an increase in her activities for interests, hobbies and recreation in Week 1 and 2 of the treatment phase related to her holiday overseas. Nonetheless, even excluding her holiday, there is a noticeable increase in her activities in interests, hobbies and recreation in the treatment phase related to activity scheduling.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Sharon's data representing time spent with other people (as opposed to alone) across baseline and treatment phases are presented in Figure 34. Analysis of the baseline phase revealed an absence of trend as indicated by the C Statistic ($z = 0.460, p > .05$). Compared to baseline, there was no significant change between phases detected by any of three of the statistical tests applied: C Statistic ($z = 0.84, p > .05$), split middle binomial test ($z = 0.23, p > .05$), and Tau-U ($z = 0.71, p > .05$).

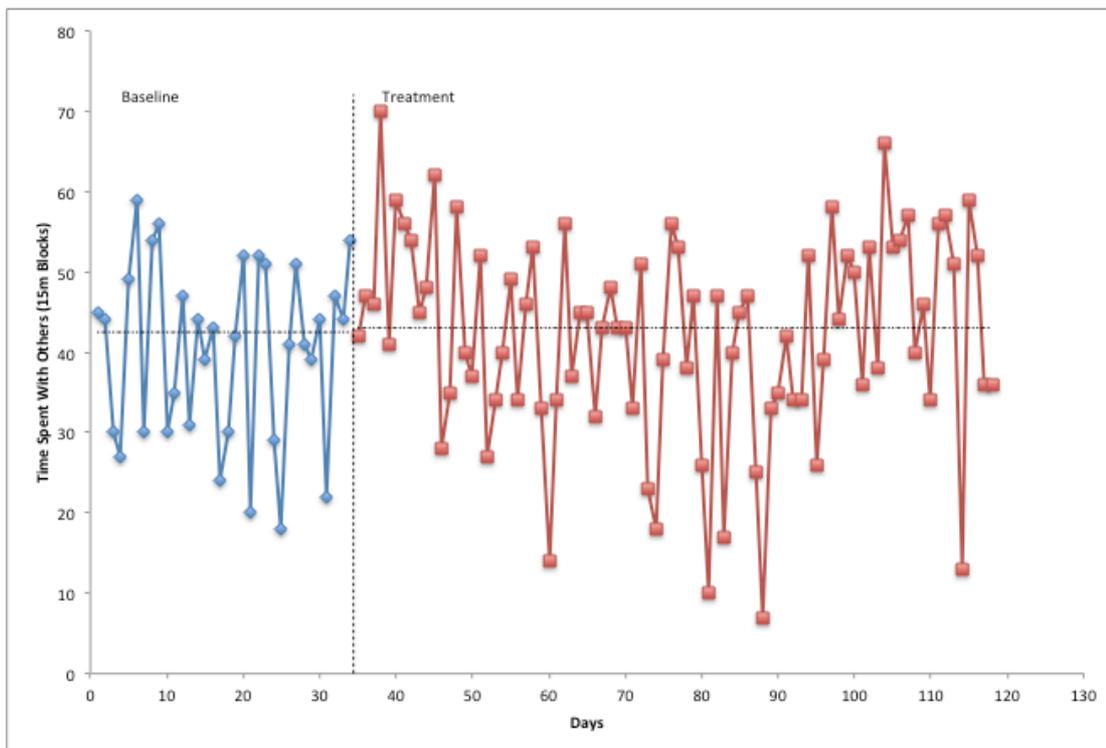


Figure 34. Case 3 Minutes spent per day spent with other people across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Sharon's Out of Home data across baseline and treatment phases are presented in Figure 35. Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = -0.397, p > .05$). Compared to baseline, two of the three statistical tests applied detected statistically significant changes in the amount of time Sharon spent out of home, C Statistic ($z = 2.84, p < .05$) and the split middle binomial test ($z = 2.21, p < .05$). The Tau-U ($z = 1.24, p > .05$) test did not detect statistically significant change between phases. The change in phase medians showed an increase of 60 minutes per day spent on housework and errands.

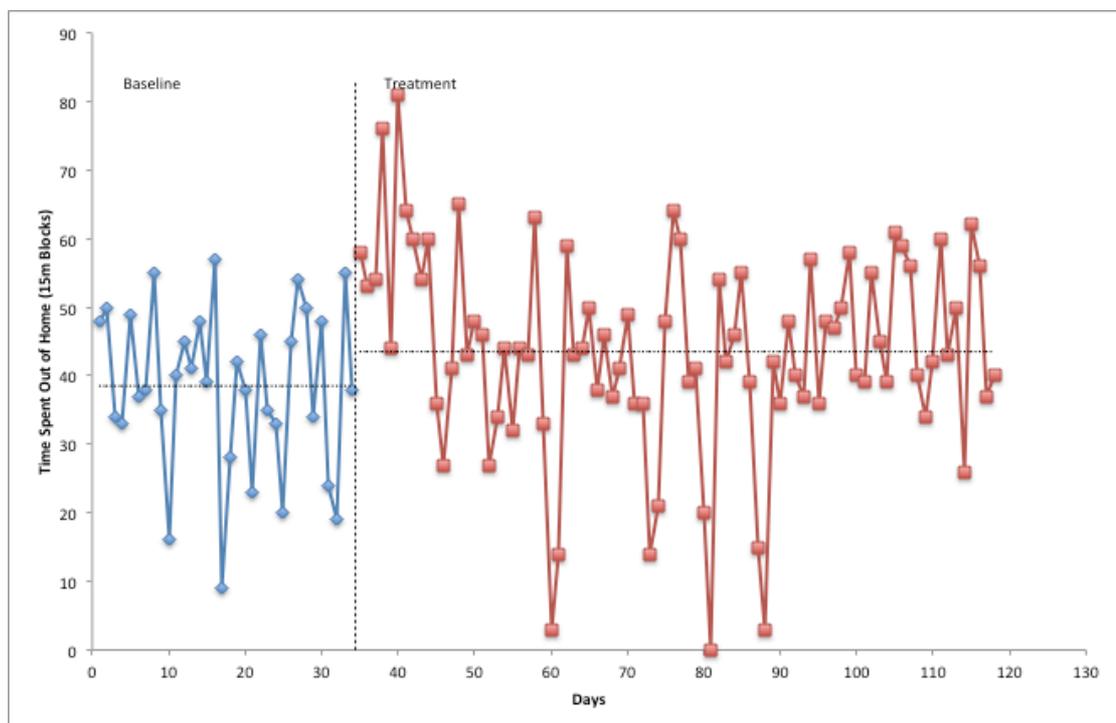


Figure 35. Case 3 Minutes spent per day spent out of home across baseline and treatment phases.

Visual inspection of the graph above shows a small but discernable consistent overall increase in Sharon's out of home activities related to activity scheduling.

5.3.5 Therapist/Client Relationship

Sharon's total scale scores across the treatment phase from the Barrett-Lennard Relationship Inventory: Observer Form (OS-64) are presented in Figure 36. The OS-64 was administered at 4, 8, and 12 week periods during treatment.

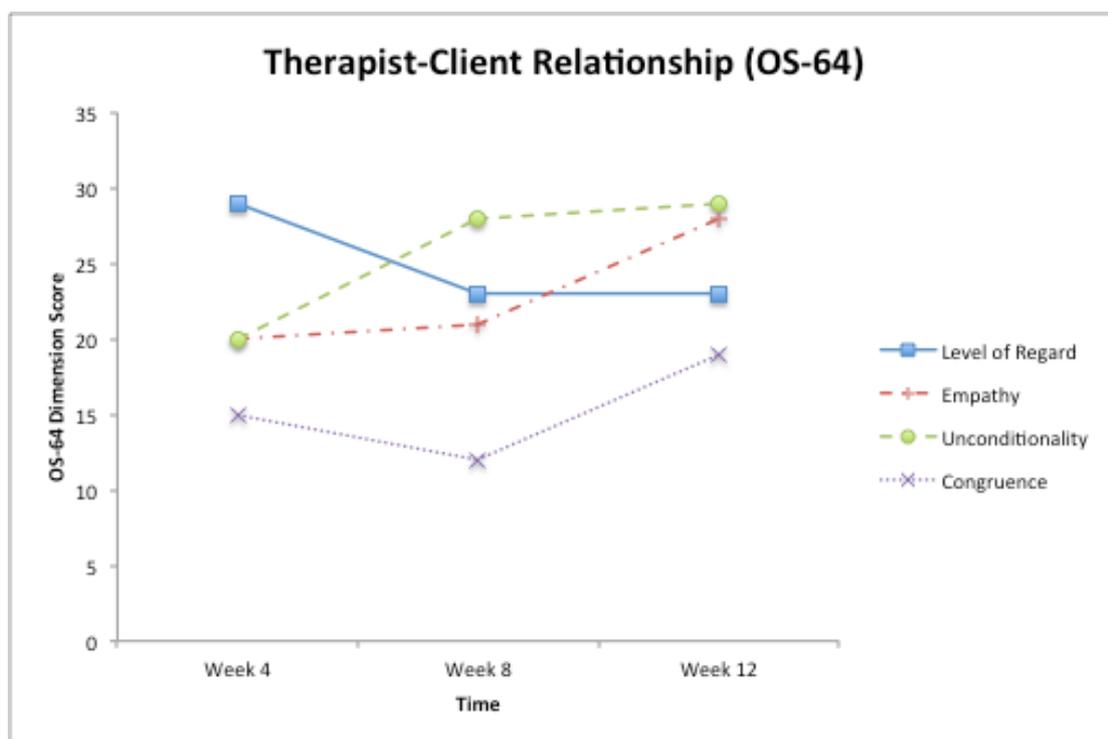


Figure 36. Case 3 OS-64 Assessment of Therapy Relationship Variables across the treatment phases.

Inspection shows that all four scales remained relatively consistent across the treatment phase, all above the threshold of 0 required for “a level adequate for a constructive relationship” (Barrett-Lennard, 1986).

5.3.6 Behavioural Cusps

Formal activity scheduling commenced on Week 3, and though it is more difficult to quantify, Sharon did seem to engage in activities that could qualify as behavioural cusps. Sharon's results show a significant decrease in standardised anxiety measures during the treatment phase. Activities scheduled for Sharon included, scheduling time to do study for her examinations, completing the examinations, taking more active approach to communication, including greeting her colleagues, walking,

planning for a holiday, working through a friendship issue that had been bothering her, and actively going out with her family members.

When asked at 2-month follow-up about her progress, Sharon reported that she was managing better and had been getting to work on time, and had improved the relationship with her boss.

5.3.7 Treatment Integrity

All of Sharon's treatment sessions were audio-recorded and two sessions were randomly selected and independently scored for treatment integrity. Inter-observer agreement averaged 93.2% across scored sessions with 96.6% of therapist in-session behaviour compatible with the treatment modality (BATA).

5.3.8 Post-Treatment Diagnosis

At the end of the treatment phase, Sharon reported a significant and consistent decrease in her everyday stress and anxiety level. She reported that she noticed that she had been feeling good, was feeling calmer, and was sleeping well. She stated that she had been more active, doing Pilates and walking. She also stated that she was managing better at work. Post-treatment, Sharon no longer met DSM-IV criteria for Panic disorder with Agoraphobia, indicating that the changes in behaviour were robust and maintained without contact with therapy.

5.4 Summary

All three participants in the Metropolitan In-Person (MI) group showed reduction in self-reported anxiety symptoms indicated by statistically significant reduction indicated on at least two of the three statistical tests applied on either one or both of the standardised psychometric measures of anxiety (BAI and DASS Anxiety scale).

Chapter 6: Single Case Results for Metropolitan Videoconferencing Group

As with the preceding chapter, each of the following three sections is presented as a single case analysis of a participant, but this time for the Metropolitan Videoconferencing group.

6.1 Case 4: Stacey

6.1.1 Characteristics

"Stacey" was a 19 year old female university student at the time of her initial assessment. Stacey reported that she lived at home with her parents and siblings. Stacey described that she was in a 4-year relationship that she described as "being good". Stacey resided in a metropolitan suburb of Perth, Western Australia.

Stacey reported that she had been feeling anxious and had been avoiding situations that were anxiety provoking, including attending university, and talking to classmates. Stacey stated that she had attended two psychological counselling sessions when she was in Year 12 of school. Stacey recalled that her anxiety started when she was in Year 11 at a music camp. She described that the anxiety at that time affected her music performance. She stated that her anxiety became so intense that she vomited in the bathroom just after she lost many friends in high school because of breaking up with her then boyfriend. Stacey reported that after that, she felt nervous and panicky.

Stacey stated that after graduation from high school, she became anxious when attending university lectures and classes, leading her to avoid classes. She reported that her attendance rate for lectures was very low. Stacey described that she felt uncomfortable speaking up in class. She reported that she would feel worried sitting in classes.

Stacey reported that she felt anxious, that she was not coping well with day-to-day activities, that she felt that people were watching her at university and in social situations, and that she was fearful of people judging her. She stated that her anxiety was affecting her functioning and though she recognised that her anxiety was "unreasonable", she nevertheless suffered through it.

6.1.2 Intake Assessment

Based on her responses to the MINI, Stacey fulfilled DSM-IV criteria for Social Anxiety. At intake, Stacey scored 16 on the BAI which was in the moderate range, 6 on the DASS-21 Depression Scale which is in the normal range, 16 on the DASS-21 Anxiety Scale which is in the severe range, and 18 on the DASS-21 Stress Scale, which is in the mild range.

6.1.3 Standardised Anxiety-Related Outcomes

Stacey's BAI scores are presented graphically in Figure 37. All three statistical analyses of Stacey's BAI raw scores revealed evidence of a downward change across phases: C Statistic ($z = 3.96, p \ll .01$), split-middle binomial test ($z = 3.04, p < .01$), and Tau-U ($z = 4.31, p \ll .01$). The changes in BAI scores are clinically meaningful because Stacey's scores moved from the moderate range into the mild and then normal range.

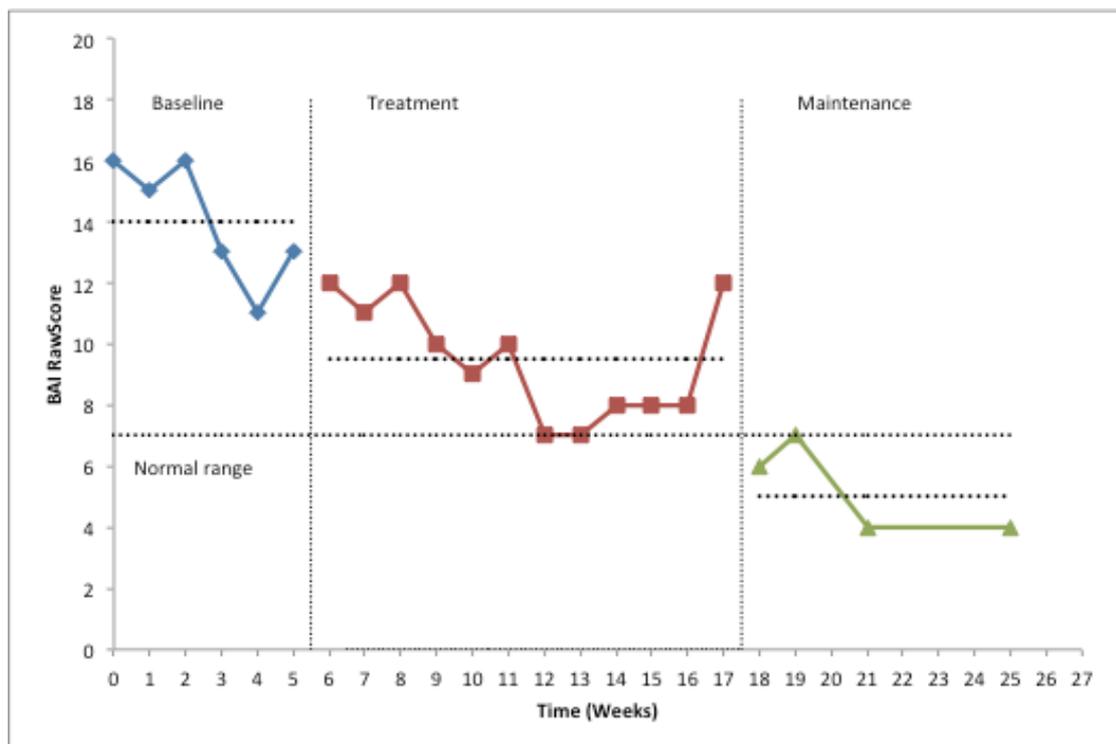


Figure 37. Case 4 BAI raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 7 : minimal, 8-15: mild, 16-25: moderate, and ≥ 26 : severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Similarly, all three statistical analysis of Stacey's raw scores for DASS-21 Anxiety Scale, which are shown graphically in Figure 38, showed statistically significant downward change across phases: C Statistic ($z = 3.17, p < .01$), split-middle binomial test ($z = 1.76, p < .01$), and Tau-U ($z = 3.16, p < .01$). The changes in DASS-21 Anxiety Scale scores are clinically meaningful because Stacey's scores moved from the mild range into the normal range.

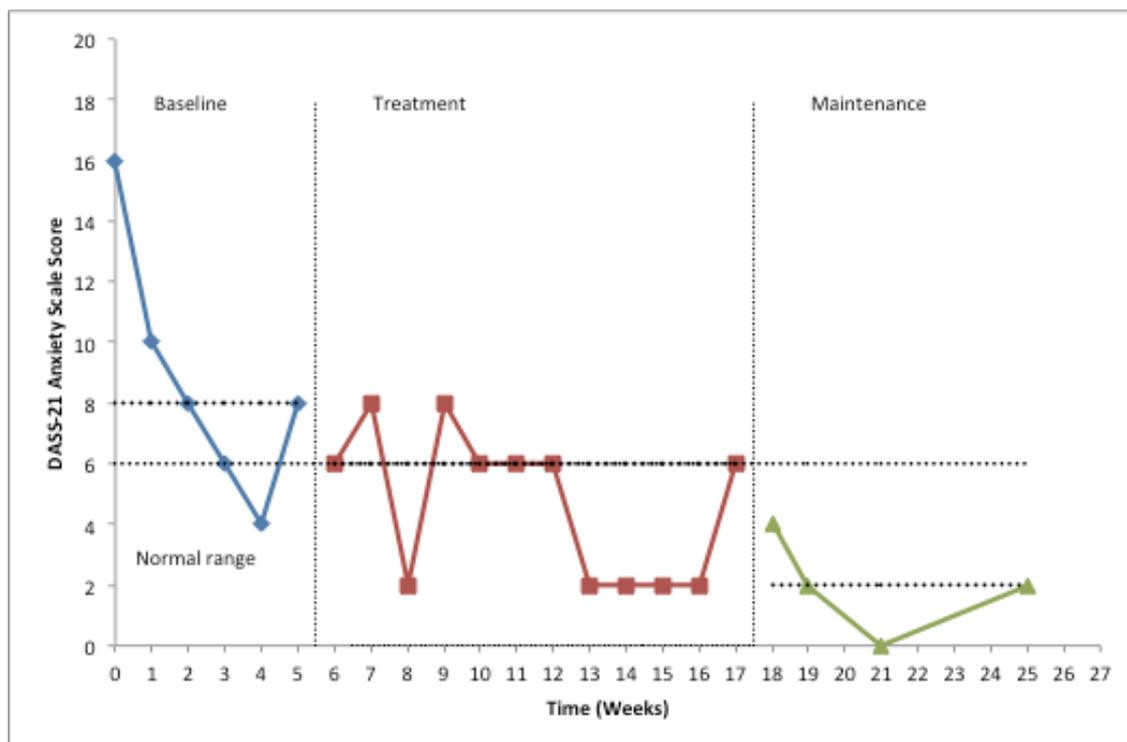


Figure 38. Case 4 DASS-21 Anxiety raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 6 : normal, 7-10: mild, 11-14: moderate, 15-19: severe, and ≥ 20 : extremely severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Two of the three statistical tests performed on DASS-21 Stress Scale raw scores for Stacey, which are shown graphically in Figure 39, showed statistically significant downward change across phases: the C Statistic ($z = 1.85, p < .05$) and Tau-U ($z = 2.17, p < .05$). The split-middle binomial test ($z = 0.262, p > .05$) did not show a statistically significant trend. Clinically, Stacey's DASS-21 Stress Scale scores moved from the border between the normal and mild range into the normal range over the course of treatment.

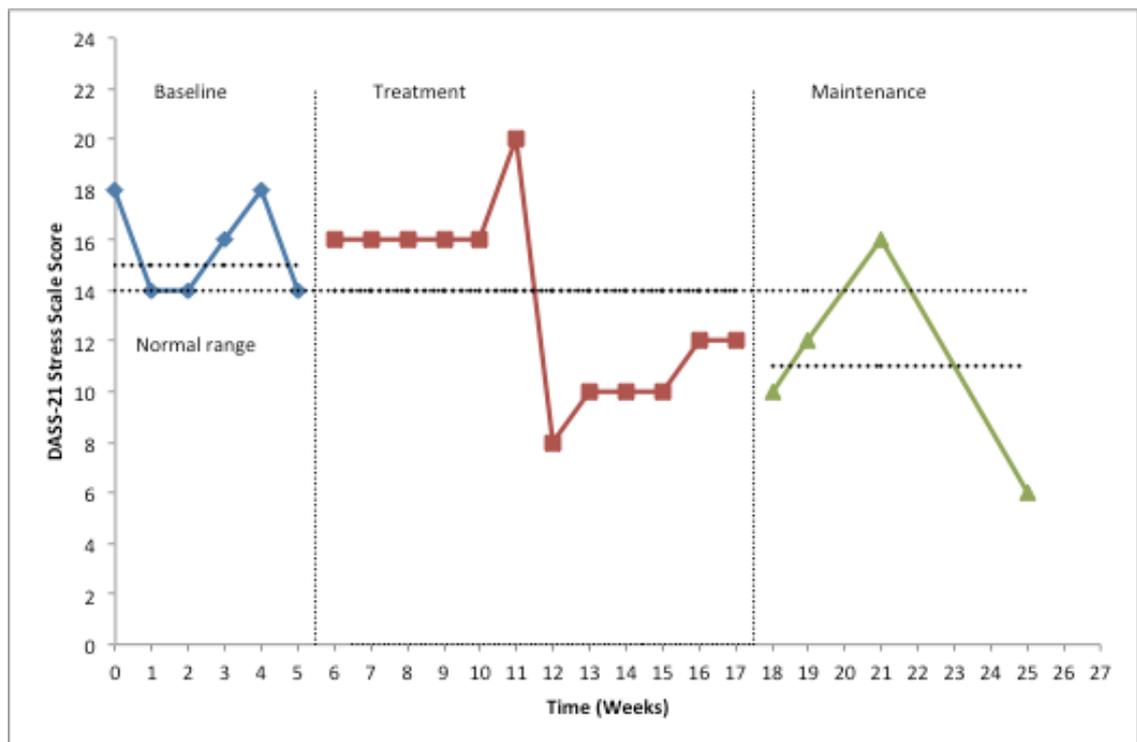


Figure 39. Case 4 DASS-21 Stress raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 14 : normal, 15-18: mild, 19-24: moderate, 25-33: severe, ≥ 34 : extremely severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Only one of the three statistical tests performed on Stacey's DASS-21 Depression Scale raw scores, which are depicted in Figure 40, showed a statistically significant trend at the $\alpha = .05$ level of significance: the C Statistic ($z = 0.073, p > .05$) and Tau-U ($z = 1.13, p > .05$) were not statistically significant, while the split-middle binomial test detected a statistically significant downward change ($z = 1.87, p < .05$).

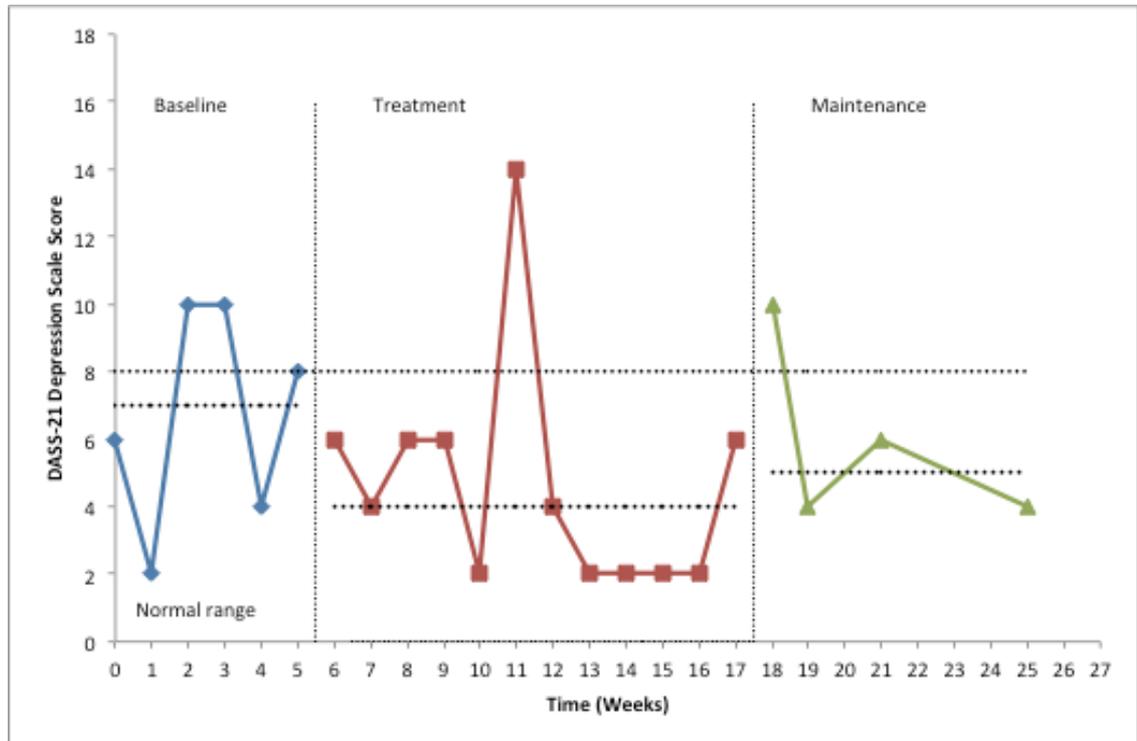


Figure 40. Case 4 DASS-21 Depression raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 8 : normal, 9-12: mild, 13-20: moderate, 21-27: severe, and ≥ 28 : extremely severe.

Visual inspection shows a “spike” in depressive symptoms at approximately Week 11. Stacey described a challenging potential work issue, but she stated that she was proud of the way that she handled it. Stacey mentioned that she realised that her problems would not go away until she faced them constructively rather than avoiding them, and that she could get through challenging situations.

6.1.4 Self- Monitored Anxiety and Activity Outcomes

Stacey's DARS scores are presented graphically in Figure 41. Stacey completed a 35 day baseline. Analysis of the baseline phase data showed an absence of trend using the C Statistic ($z = 1.63, p > .05$). Across phases, no downward change was detected by all three statistical tests: C Statistic ($z = 1.26, p > .05$), split middle binomial test ($z = 0.12, p > .05$), and Tau-U ($z = 1.41, p > .05$).

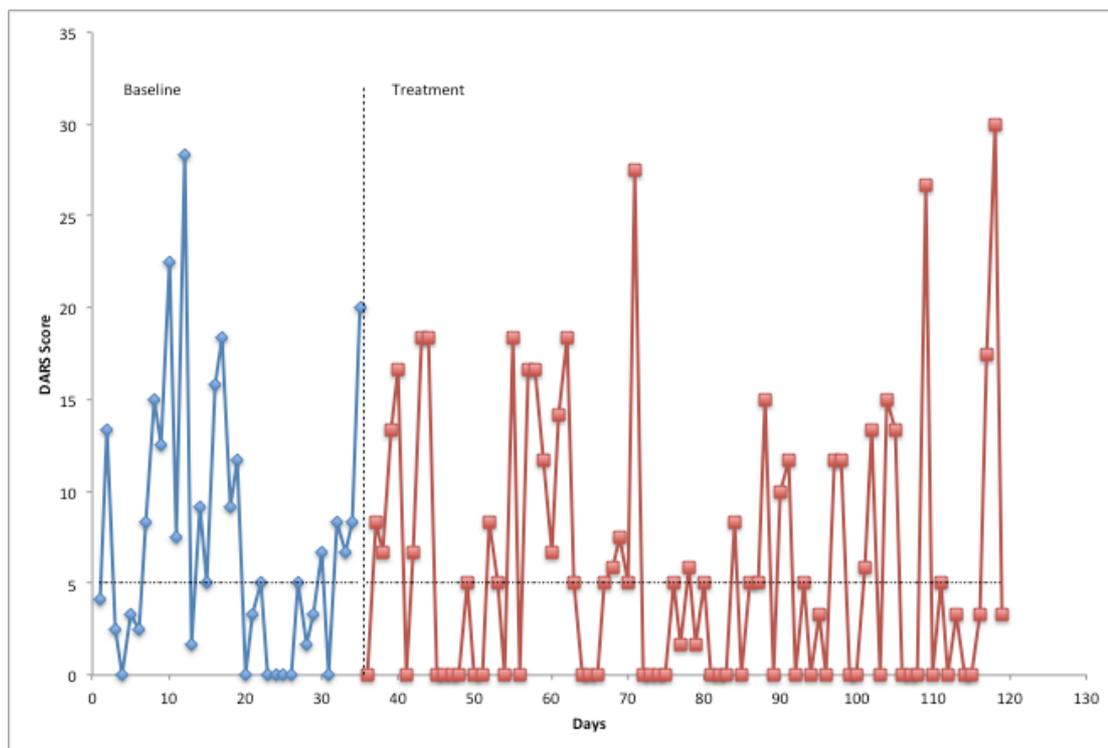


Figure 41. Case 4 Daily Anxiety Rating Scale (DARS) scores across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Stacey's self- and other-care data across baseline and treatment phases are presented in Figure 42. Analysis of the baseline phase revealed evidence of an upward trend within the data, as indicated by the C Statistic ($z = 3.13, p < .01$). Compared to baseline, there was a significant increase during the treatment phase as indicated by two out of three of the statistical tests applied: While Tau-U did not detect a significant change, ($z = 0.88, p > .05$), both the C Statistic ($z = 5.05, p << .01$) and the split middle binomial test ($z = 3.24, p << .01$) showed significant change in the treatment phase as compared to the baseline phase. The difference in phase medians showed an increase of 60 minutes per day.

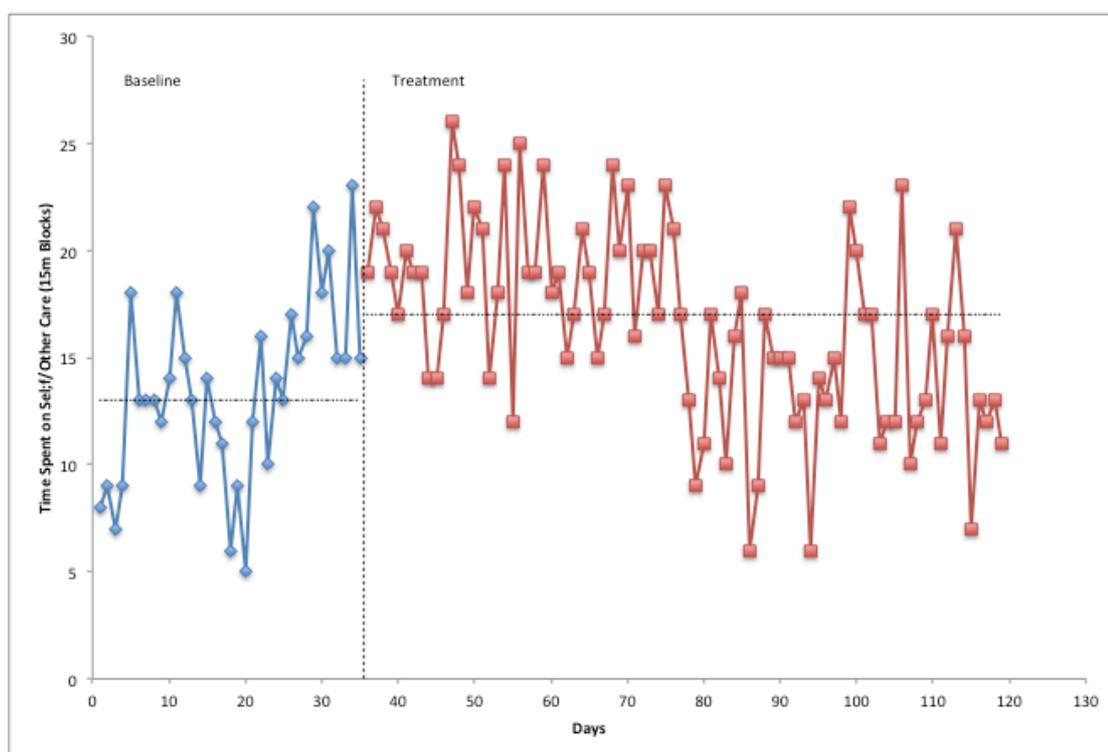


Figure 42. Case 4 Minutes spent per day on Self- and Other- Care baseline and treatment phases.

Stacey described that she had been busier with activities at Week 6 of the treatment phase (beginning from Day 78), beginning with building an aviary with her family, reflected in a reduction of time spent on self care and other-care, and an increase in activities, shown in activities data for Housework and Errands (described in sections below).

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Stacey's Housework and Errands data across baseline and treatment phases are presented in Figure 43. Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = 0.59, p > .05$). Compared to baseline, two of the three statistical tests showed significant increase in the amount of time Stacey spent on housework and errands, with the split middle binomial test ($z = 2.30, p < .05$) and Tau-U ($z = 3.15, p < .01$) showing a significant change in the treatment phase compared to baseline phase, and the C Statistic ($z = 0.77, p > .05$) not showing a significant trend across phases. The change in phase medians showed an increase of 30 minutes per day spent on housework and errands.

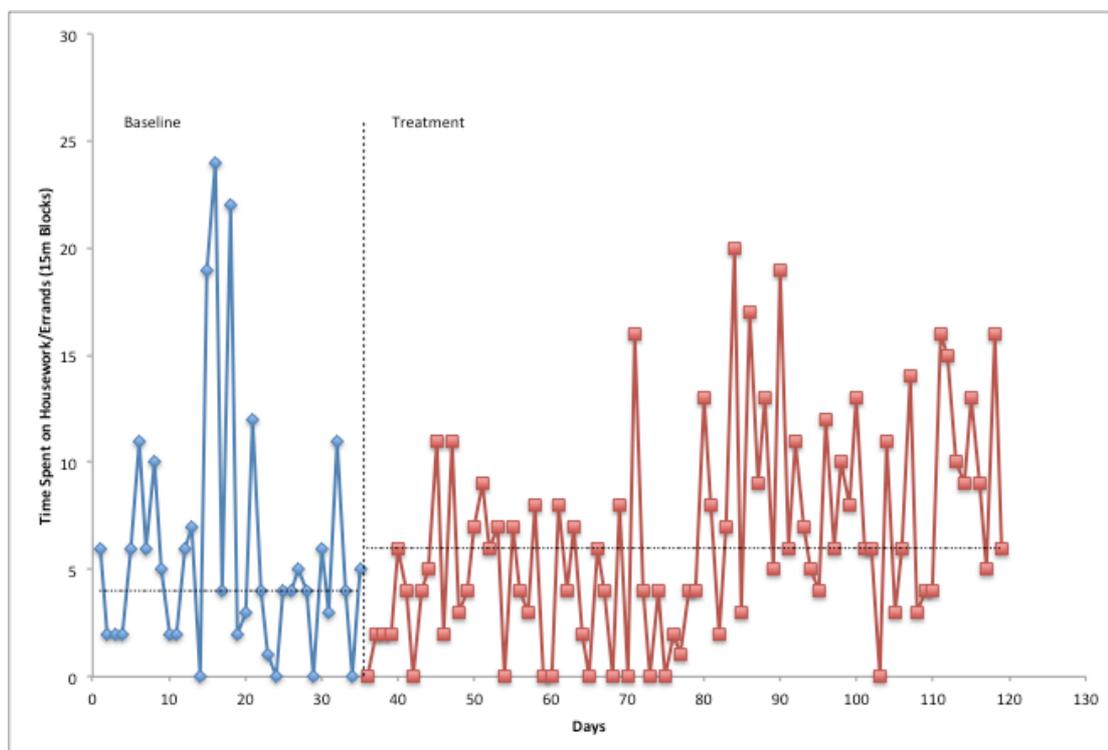


Figure 43. Case 4 Minutes spent per day on Housework and Errands across baseline and treatment phases.

Visual inspection shows supportive evidence of a behavioural cusp beginning at Day 77 that shows an increase in her Household and Errands activities, which has previously been described as beginning with building an aviary with her family.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Stacey's Paid and Unpaid Work data across baseline and treatment phases are presented in Figure 44. Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = 0.63, p > .05$). Compared to baseline, all three statistical tests showing a significant decrease during the treatment phase in the amount of time Stacey spent on paid or unpaid work: C Statistic ($z = 3.90, p \ll .01$), split middle binomial test ($z = 2.33, p < .01$), and Tau-U ($z = 3.43, p \ll .01$). The difference in phase medians indicates a 2 hours per day decrease in time spent on paid or unpaid work.

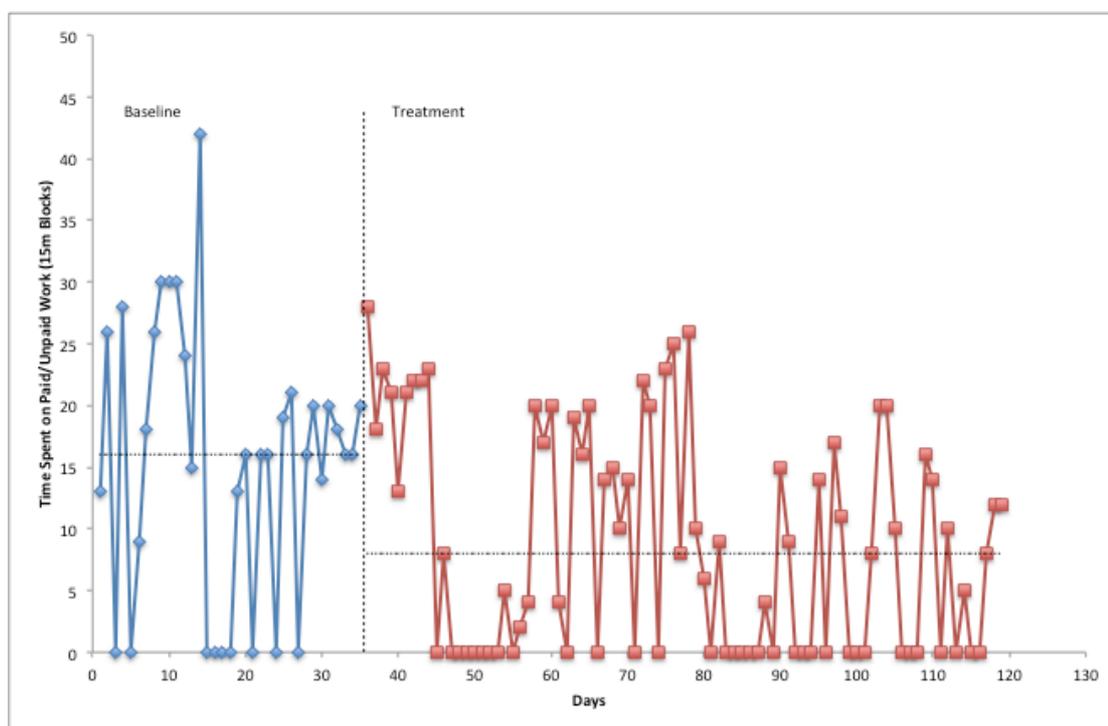


Figure 44. Case 4 Minutes spent per day on Paid and Unpaid Work across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Stacey's Interests, Hobbies, and Recreation data are presented in Figure 45. Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = 0.30, p > .05$). All three statistical tests showed a significant change comparing baseline and treatment phases: C Statistic ($z = 1.85, p < .05$), split middle binomial test ($z = 1.98, p < .05$), and Tau-U ($z = 2.07, p < .05$). The difference between phase medians indicates an increase of 90 minutes per day spent on interests, hobbies and recreation.

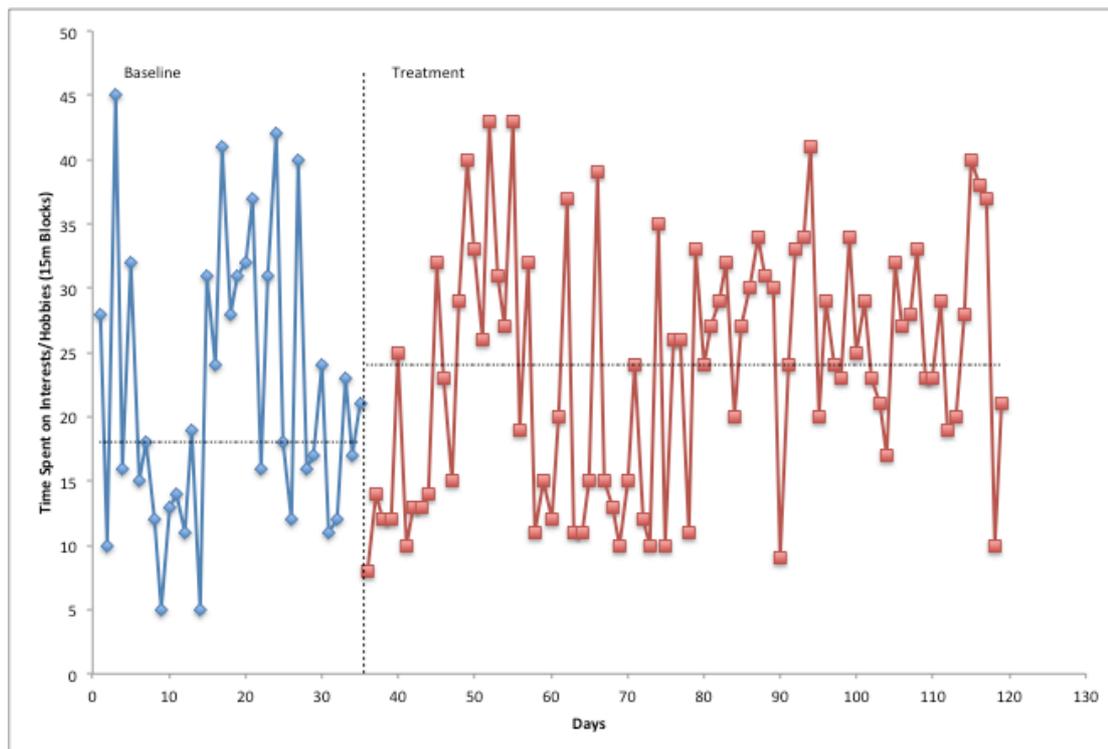


Figure 45. Case 4 Minutes spent per day on Interests, Hobbies, and Recreation across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Stacey's data representing time spent with other people (as opposed to alone) across baseline and treatment phases are presented in Figure 46. Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = -0.53, p > .05$). Compared to baseline, there was a significant increase during the treatment phase as indicated by all three of the statistical tests applied: C Statistic ($z = 2.42, p < .01$), split middle binomial test ($z = 2.52, p < .01$), and Tau-U ($z = 3.22, p < .01$). The difference in phase medians showed an increase of over 3 hours per day.

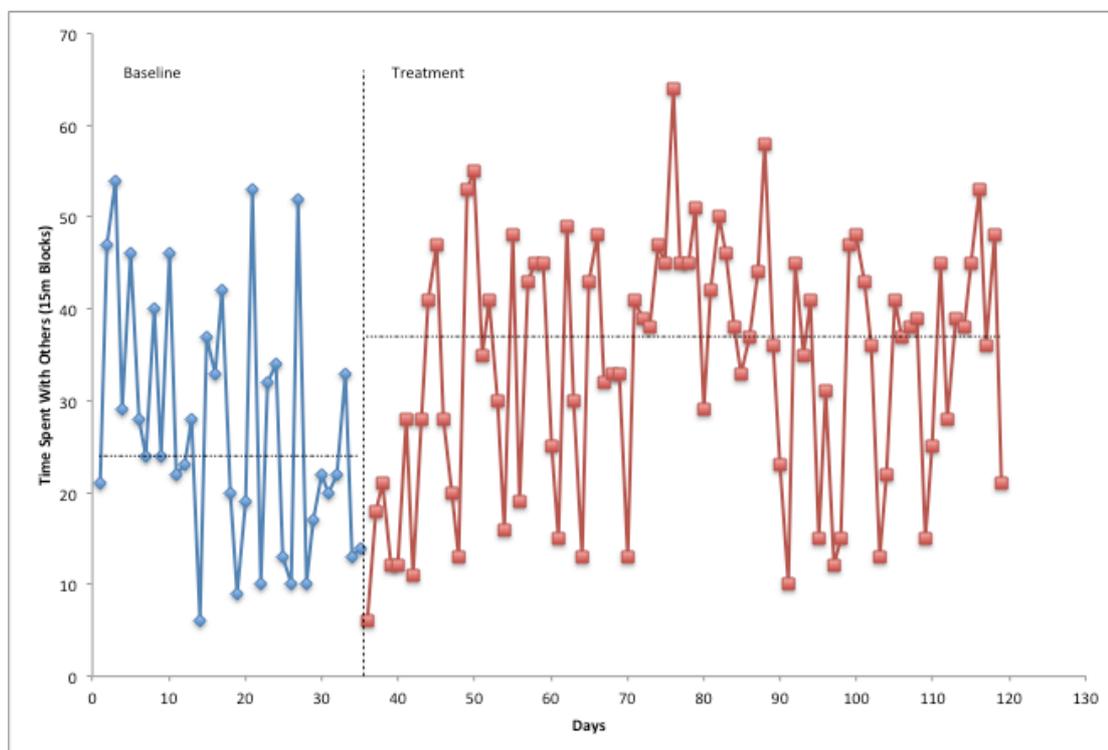


Figure 46. Case 4 Minutes spent per day spent with other people across baseline and treatment phases.

Visual inspection shows supportive evidence of a behavioural cusp beginning at Day 77, where time spent with others seemed to increase. This has been previously described as Stacey making efforts to increase her activities. In addition to building an aviary with her family, she spent more time with her family and her boyfriend, including undertaking more driving practice with her boyfriend to practice her driving, and picking up her sister using the car. She began going out more with her family members and explored options for jobs at a shop.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Stacey's Out of Home data across baseline and treatment phases are presented in Figure 47. Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = -0.87, p > .05$). Compared to baseline, one of the three statistical tests showed significant increase in the amount of time Stacey spent out of home, with Tau-U ($z = 4.05, p \ll .01$) showing a significant change in the treatment phase compared to baseline phase, but the C Statistic ($z = 1.44, p > .05$) and the split middle binomial test ($z = 1.45, p > .05$) not showing a significant change across phases. The change in phase medians showed an increase of 90 minutes per day spent on housework and errands.

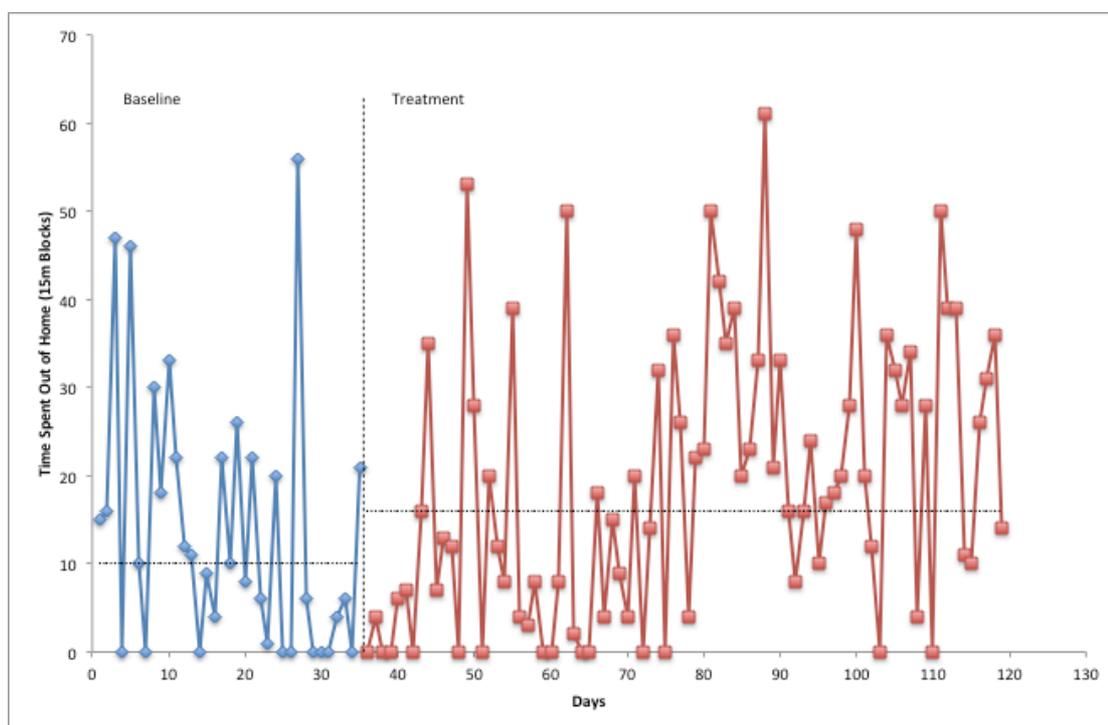


Figure 47. Case 4 Minutes spent per day spent out of home across baseline and treatment phases.

Visual inspection shows supportive evidence of a behavioural cusp beginning at Day 77 where reported time spent out of home increased. Stacey reported that she had been more active, getting out of home, including driving around more, and spending time with other people (see previous section). She described feeling more confident about her driving. She stated that she had also been going to a shop to check with the manager about potential work.

6.1.5 Therapist/Client Relationship

Stacey's total scale scores across the treatment phase from the Barrett-Lennard Relationship Inventory: Observer Form (OS-64) are presented in Figure 48. The OS-64 was administered at 4, 8, and 12 week periods during treatment.

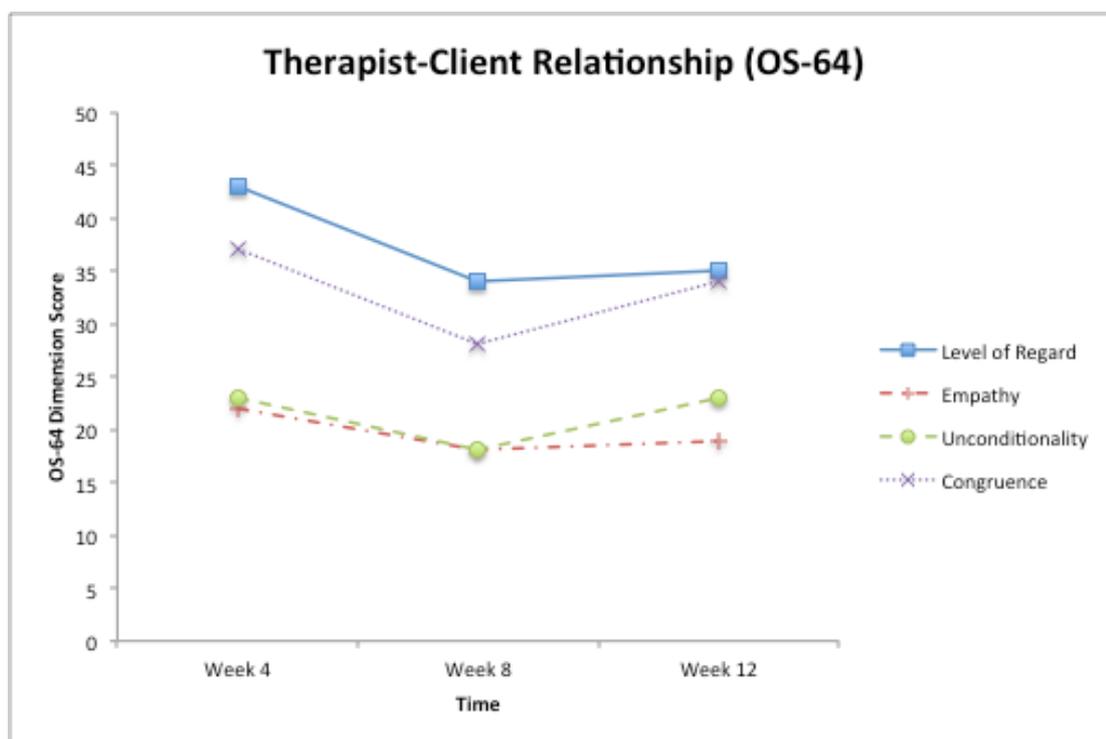


Figure 48. Case 4 OS-64 Assessment of Therapy Relationship Variables across the treatment phases.

Inspection shows that the level of regard and congruence dropped between Week 4 and Week 8, but stabilised thereafter, while unconditionality and empathy scores remained relatively stable across the repeated measurements with an absence of any definitive trends. All dimension scores were above the threshold of 0 for “adequate level for a constructive relationship” (Barrett-Lennard, 1986).

6.1.6 Behavioural Cusps

Formal activity scheduling commenced on Week 3 of the treatment phase, and though it is difficult to quantify, Stacey did seem to engage in activities that could qualify as behavioural cusps. Stacey's results show a significant decrease in standardised anxiety measures. Activities scheduled for Stacey included, looking for job advertisements, sending applications for advertised jobs, taking up a musical

instrument that she had been procrastinating about, increased exercise, better regular attendance at classes, organising and exchange programme to a European country for herself through university, and going out with family members. It is noted that there was an increase of time spent on interests, hobbies and recreation that included playing her piano, and exercise. There is an increase of time that she spent with others, outside home including her family members and her relationships, undertaking activities such as building an aviary and doing sports (sailing), reflected by changes in her activity graphs presented in previous sections.

When asked at 2-month follow-up to identify the behaviour change that was most important to her during treatment, Stacey indicated that she felt that attending most of her university tutorial classes and successfully organising the exchange programme stood as being most important to her.

6.1.7 Treatment Integrity

All of Stacey's treatment sessions were audio-recorded and two sessions were randomly selected and independently scored for treatment integrity. Inter-observer agreement averaged 95.7% across scored sessions with 99.7% of therapist in-session behaviour compatible with the treatment modality (BATA).

6.1.8 Post-Treatment Diagnosis

At the end of the treatment phase, Stacey reported a significant and consistent decrease in her everyday stress and anxiety levels, across settings and social contexts. She reported that she was more engaged in class activities and had commenced trying to contribute in class rather than avoiding tutorial classes. She reported feeling more confident. Post-treatment, Stacey no longer met DSM-IV criteria for Social Anxiety and maintained this 2 months post-treatment, indicating that the changes in behaviour were robust and maintained without contact with therapy.

6.2 Case 5: “Clara”

6.2.1 Characteristics

“Clara” was 28 years old at the time she was assessed for participation in this study. She lived at home with her husband and housemates. She described a generally good relationship with her husband. She resided in an inner suburb of the Perth metropolitan area in Western Australia.

Clara described that she felt anxious most of the time and worried about her future, including her job. She reported that her anxiety was accompanied by physiological sensations, and that she found her anxiety distressing to the level that it affected her day to day functioning. She stated that she was shy, did not like people looking at her, and that she had low self-confidence. She described that she worked in a local shop and undertook volunteer research work.

By way of background history, Clara stated that she was from South America. She recalled that her parents separated when she was young. She stated that she graduated with a postgraduate degree in Environmental Management and Conservation.

Medically, Clara described a Psoriasis skin condition that bothered her at times. Clara reported occasional use of cannabis, dating back to 2005, sometimes using up to two to three “cones” in a day, however, at the time of assessment, she did not meet the criteria for a substance related dependency and stated that she would avoid cannabis use during the course of her participation in the study.

6.2.2 Intake Assessment.

Based on her responses to the MINI International Neuropsychiatric Interview MINI-V, Clara fulfilled DSM-IV criteria for General Anxiety Disorder (GAD). At intake, Clara scored 8 on the BAI which was in the mild range, 4 on the DASS-21 Depression Scale which is in the normal range, 2 on the DASS-21 Anxiety Scale which is in the normal range, and 16 on the DASS-21 Stress Scale, which is in the mild range.

6.2.3 Standardised Anxiety-Related Outcomes

Clara's BAI scores are presented graphically in Figure 49. All three statistical analyses revealed no evidence of change across phases: C Statistic ($z = 0.783, p > .05$), split-middle binomial test ($z = 0.814, p > .05$) and Tau-U ($z = 1.92, p > .05$) (although Tau-U would have been statistically significant at the $\alpha = .06$ significance level). Clara's BAI scores moved from the high normal to low normal range across the three phases.

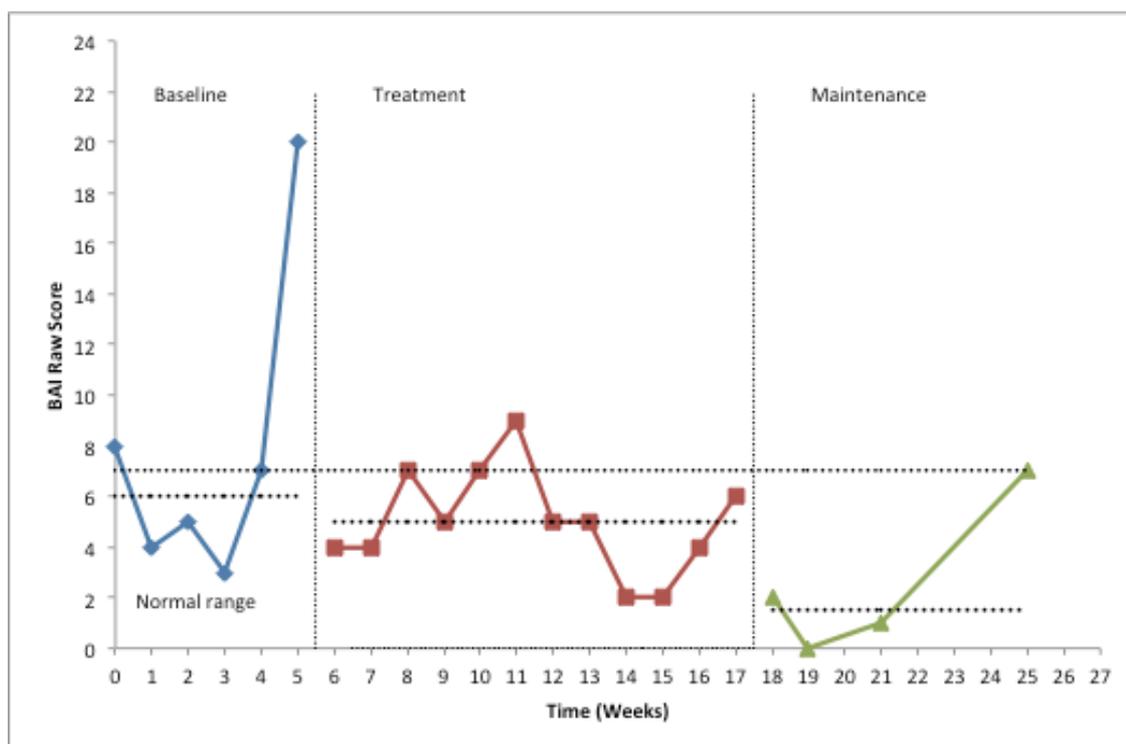


Figure 49. Case 5 BAI raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 7 : minimal, 8-15: mild, 16-25: moderate, and ≥ 26 : severe.

Inspection of the graph above shows a significant but transient spike in reported anxiety symptoms during the baseline phase at Week 5, related to Clara attending an interview for a job and challenges she was having with a housemate. At Week 8 of the follow up phase (Week 25 overall) there was an increase in her reported anxiety symptoms related to a missed flight connection and lack of sleep during overseas travel. Around that time, a family member was also going through a divorce.

Retrospective review of Clara's scores indicates that her anxiety symptoms began at the boundary between normal and mild ranges and progressed over time into the normal range.

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Similarly, all three statistical analyses of Clara's raw scores for DASS-21 Anxiety Scale, which are shown graphically in Figure 50, showed no statistically significant change across phases: C Statistic ($z = 0.254, p > .05$), split-middle binomial test ($z = 1.246, p > .01$), and Tau-U ($z = 1.16, p > .05$). Clara's DASS Anxiety scale scores remained within the normal range across phases.

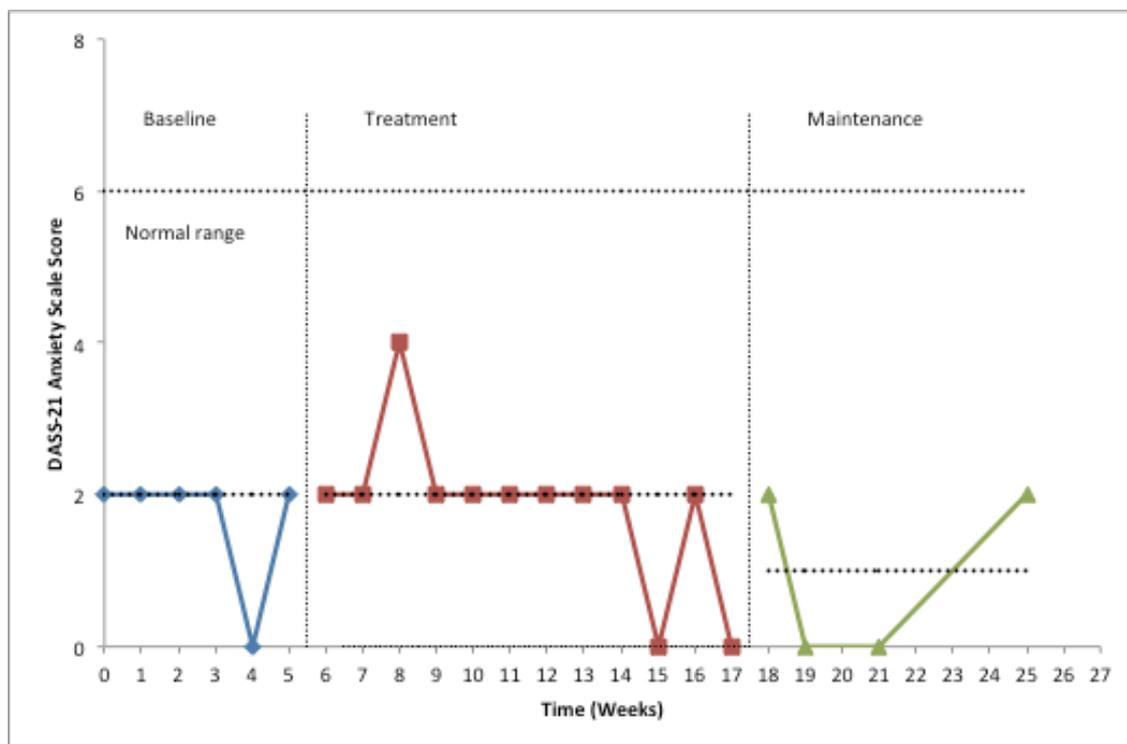


Figure 50. Case 5 DASS-21 Anxiety raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 6 : normal, 7-10: mild, 11-14: moderate, 15-19: severe, and ≥ 20 : extremely severe.

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One of the three statistical tests performed on DASS-21 Stress Scale raw scores for Clara, which are shown graphically in Figure 51, showed statistically significant downward change across phases, with Tau-U ($z = 2.17, p < .05$) showing statistically significant downward trend, while the C Statistic ($z = 0.22, p > .05$) and the split-middle binomial test ($z = 1.47, p > .05$) did not detect statistically significant change. Clinically, Clara's DASS-21 Stress Scale scores moved from the high normal (boundary of mild range) into well within the normal range over the course of treatment.

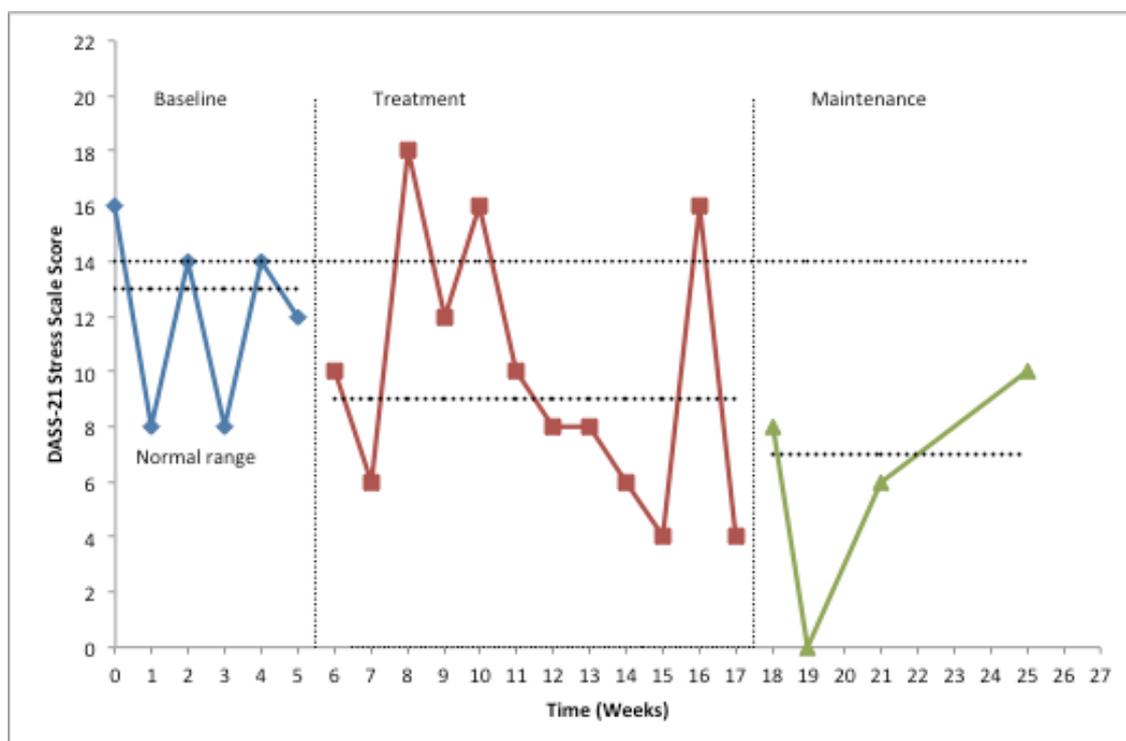


Figure 51. Case 5 DASS-21 Stress raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 14 : normal, 15-18: mild, 19-24: moderate, 25-33: severe, ≥ 34 : extremely severe.

The increase at Week 8 follow up (Week 25 overall) visible in the graph above was related to her overseas travel and finding out that a family member was going through divorce proceedings.

6.2.4 Self-Monitored Anxiety and Activity Related Outcomes

Clara's DARS scores are presented graphically in Figure 53. Clara completed a 40 day baseline. Analysis of the baseline phase data showed a downward trend in Clara's self-reported anxiety levels using the C Statistic ($z = 2.78, p < .05$). Across the phases, a downward trend was shown by all three statistical tests applied: C Statistic ($z = 6.11, p < .05$), split middle binomial test ($z = 4.15, p < .01$), and Tau-U ($z = 7.55, p < .01$). The difference between phase medians was 3 points.

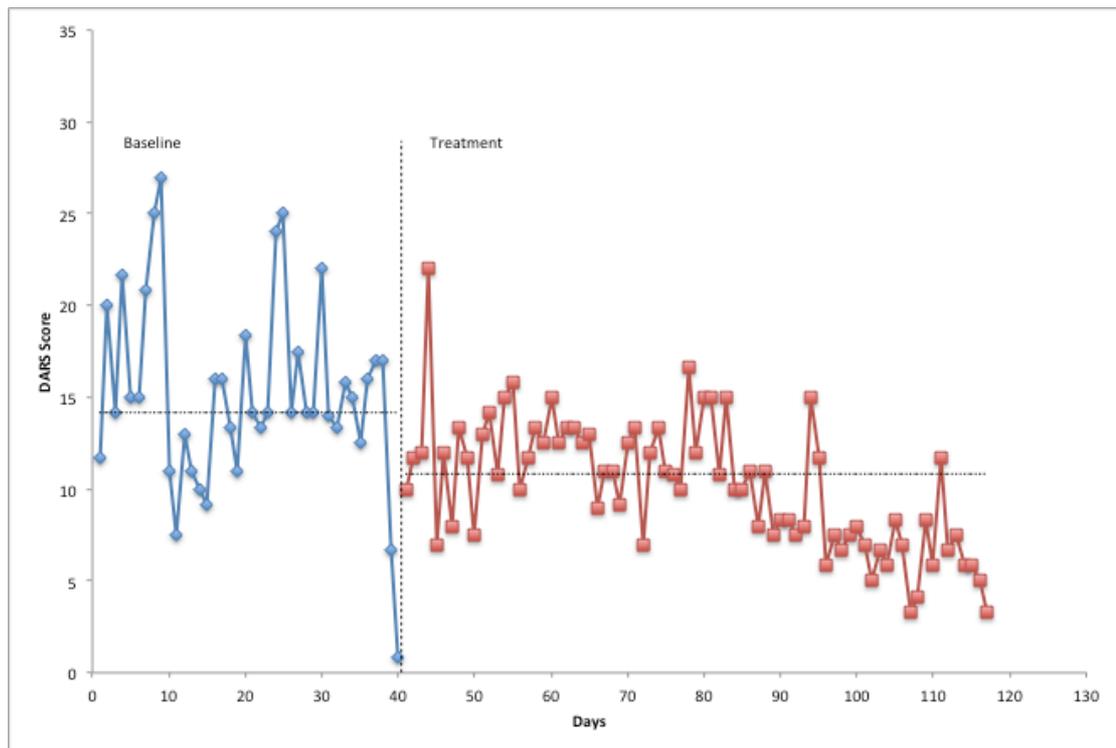


Figure 53. Case 5 Daily Anxiety Rating Scale (DARS) scores across baseline and treatment phases.

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Clara's self- and other-care data across baseline and treatment phases are presented in Figure 54. Analysis of the baseline phase revealed no evidence of trend as indicated by the C Statistic ($z = 0.028, p > .05$). Compared to baseline, there was a significant increase during the treatment phase indicated by one out of three of the statistical tests applied. While both the C Statistic ($z = 1.23, p > .05$) and Tau-U ($z = 1.75, p > .05$) did not show a significant difference between phases, the split middle binomial test ($z = 1.74, p < .05$) showed significant change in the treatment phase as compared to the baseline phase. However, there was no difference in phase medians.

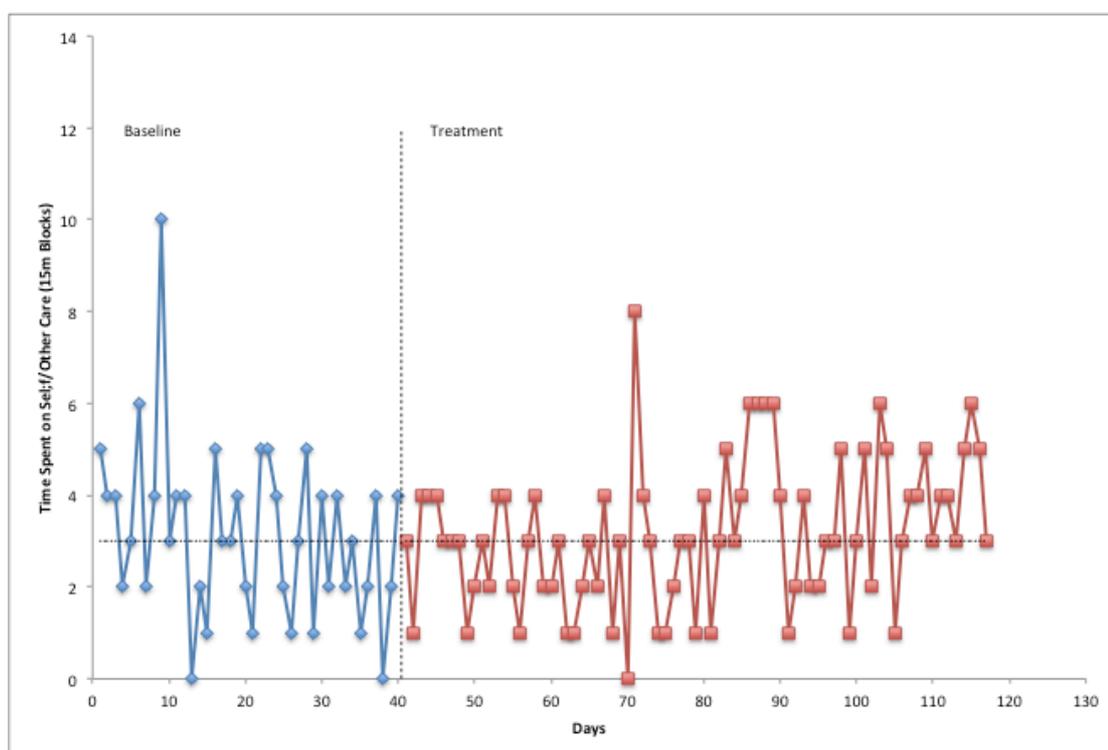


Figure 54. Case 5 Minutes spent per day on Self- and Other- Care baseline and treatment phases.

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Clara's Housework and Errands data across baseline and treatment phases are presented in Figure 55. Analysis of the baseline phase revealed an absence of trend within the data using the C Statistic ($z = 1.25, p > .05$). Compared to baseline, one of the three statistical tests showed significant increase in the amount of time Clara spent on housework and errands, with the C Statistic ($z = 2.24, p < .05$) showing a significant change in the treatment phase compared to baseline phase, while the split middle binomial test ($z = 0.88, p > .05$) and Tau-U ($z = 0.42, p > .05$) did not show a significant change across phases. The change in phase medians showed an increase of 15 minutes per day spent on housework and errands.

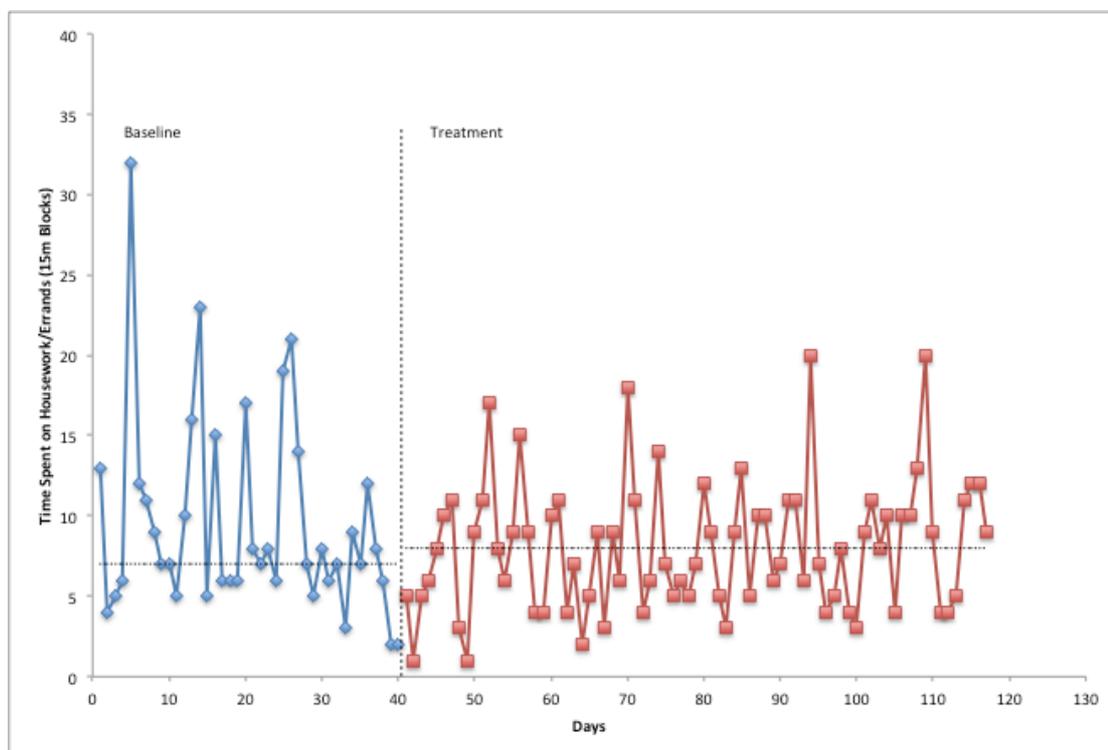


Figure 55. Case 5 Minutes spent per day on Housework and Errands across baseline and treatment phases.

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Clara's Paid and Unpaid Work data across baseline and treatment phases are presented in Figure 56. Analysis of the baseline phase revealed an absence of trend within the data using the C Statistic ($z = 1.12, p > .05$). Compared to baseline, all three statistical tests did not detect significant changes across phases in the amount of time Clara spent on paid or unpaid work: C Statistic ($z = 0.30, p > .05$), split middle binomial test ($z = 1.58, p > .05$), and Tau-U ($z = 0.84, p > .05$). There was no difference in phase medians.

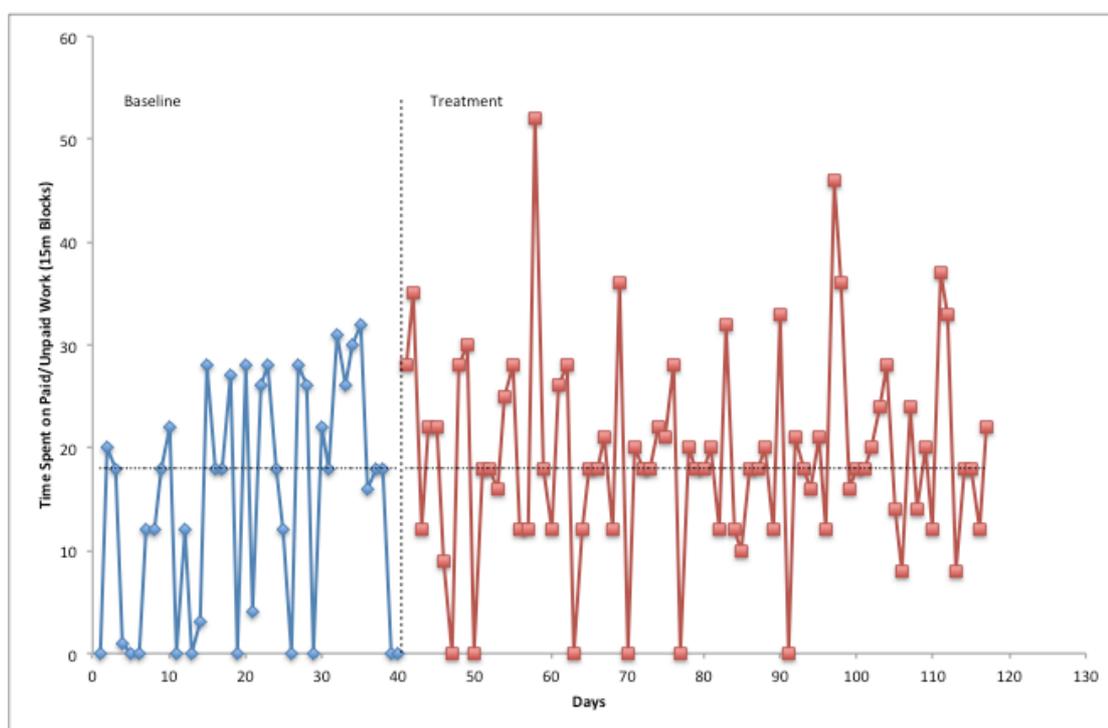


Figure 56. Case 5 Minutes spent per day on Paid and Unpaid Work across baseline and treatment phases.

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Clara's Interests, Hobbies, and Recreation data are presented in Figure 57.

Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = -0.309, p > .05$). All three statistical tests applied did not detect significant change comparing baseline and treatment phases: C Statistic ($z = -0.31, p > .05$), split middle binomial test ($z = 0.07, p > .05$), and Tau-U ($z = 1.85, p > .05$). The difference in phase medians indicated a decrease of 15 minutes per day in time spent on Interests, Hobbies and Recreation.

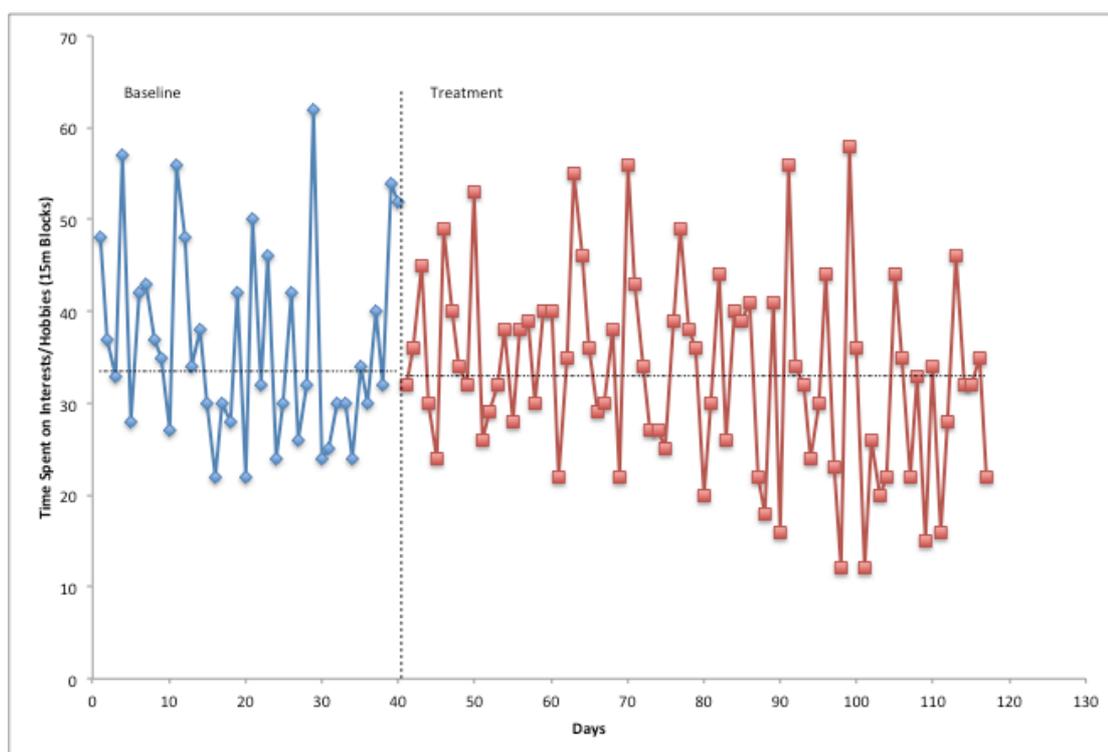


Figure 57. Case 5 Minutes spent per day on Interests, Hobbies, and Recreation across baseline and treatment phases.

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Clara's data representing time spent with other people (as opposed to alone) across baseline and treatment phases are presented in Figure 58. Analysis of the baseline phase revealed an absence of trend within the data using the C Statistic ($z = 0.415, p > .05$). None of the three statistical tests applied detected significant change across phases: C Statistic ($z = 0.43, p > .05$), split middle binomial test ($z = 0.60, p > .05$), and Tau-U ($z = 0.78, p > .01$). The difference in phase medians showed a decrease of 45 minutes per day spent with other people.

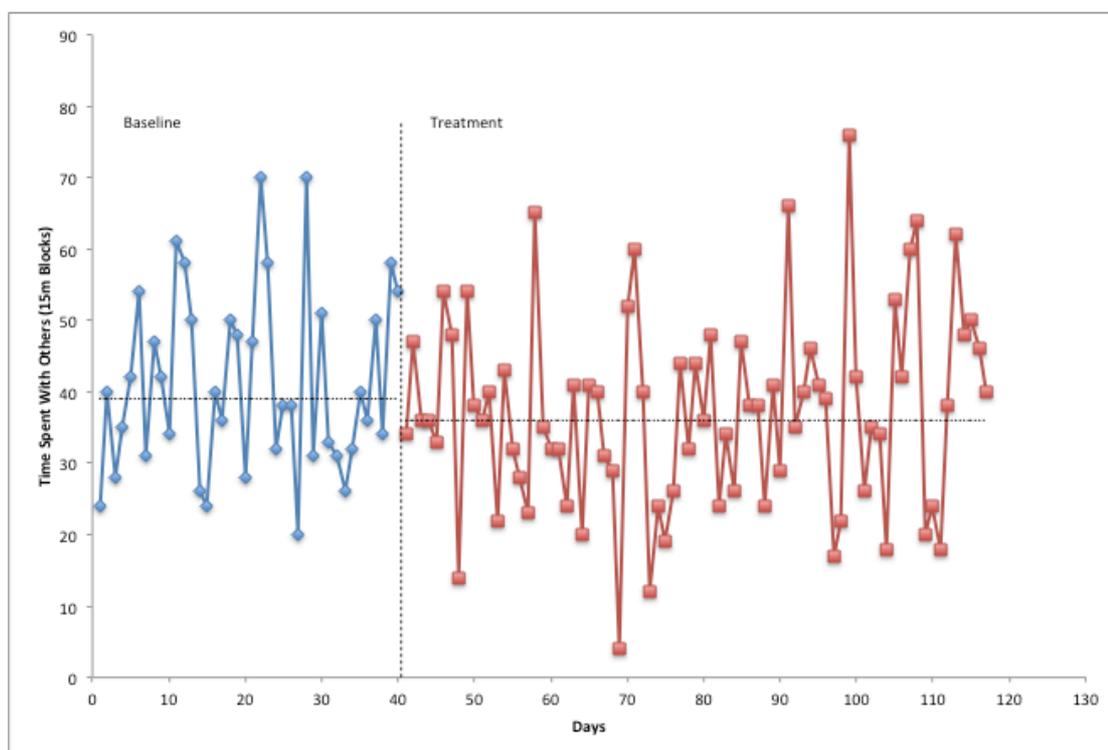


Figure 58. Case 5 Minutes spent per day spent with other people across baseline and treatment phases.

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Clara's Out of Home data across baseline and treatment phases are presented in Figure 59. Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = 1.59, p > .05$). None of the three statistical tests applied detected significant change in the amount of time Clara spent out of home: C Statistic ($z = 0.83, p > .05$), the split middle binomial test ($z = 0.60, p > .05$), and Tau-U ($z = 0.26, p > .05$). The difference in phase medians showed a decrease of 15 minutes per day spent on housework and errands.

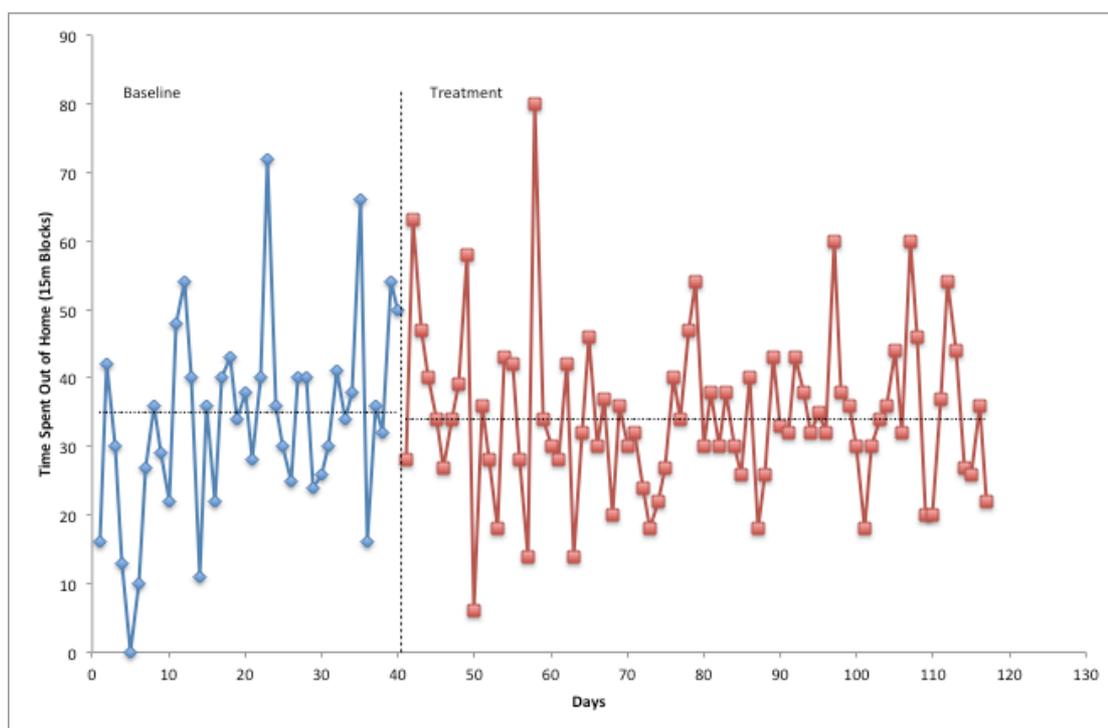


Figure 59. Case 5 Minutes spent per day spent out of home across baseline and treatment phases.

6.2.5 Therapist/Client Relationship

Clara's total scale scores across the treatment phase from the Barrett-Lennard Relationship Inventory: Observer Form (OS-64) are presented in Figure 60. The OS-64 was administered at 4, 8, and 12 week periods during treatment.

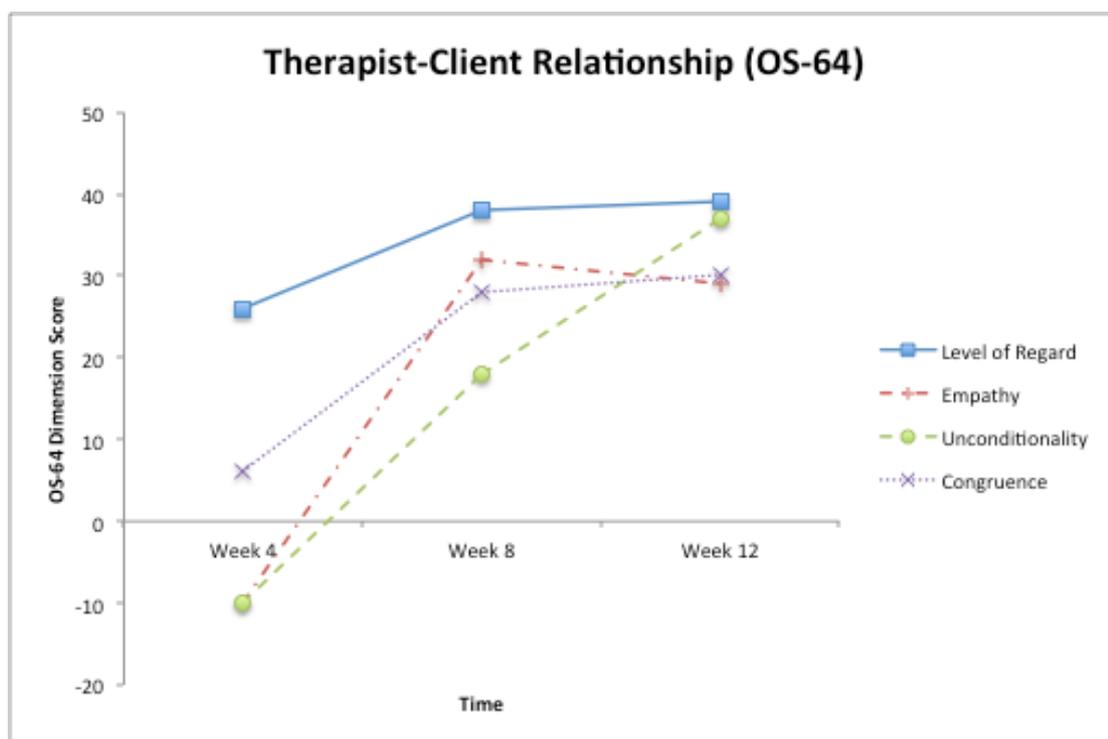


Figure 60. Case 5 OS-64 Assessment of Therapy Relationship Variables across the treatment phases.

Inspection shows that the all four dimensions (level of regard, empathy, unconditionality and congruence) increased between Week 4 and Week 8, but stabilised thereafter. The dimension scores for empathy and unconditionality commenced below the threshold of 0 required for a “level adequate for a constructive relationship” (Barrett-Lennard, 1986) but thereafter increased to and stabilised well above the 0 threshold.

6.2.6 Behavioural Cusps

Formal activity scheduling commenced on Week 3, and though it is difficult to quantify, Clara did seem to engage in activities that could qualify as behavioural cusps. Clara reported becoming more active through the sessions and noticed a reduction in her anxiety level, reflected in her DARS and DASS Stress scale scores. She reported

that she prioritised tasks and achieved the goals that she set herself during her participation in the study. Activities scheduled for Clara included, researching ways to improve her skin condition, drawing and painting, attending gym, getting the relevant paperwork for a Visa application, and contacting family in South America. Besides working in her part time job, Clara stated that she was seeking more volunteer work, had contacted relevant organisations in the field, and gained a position more related to her field of expertise.

She reported that she was more able to notice her avoidance and procrastinating behaviour. She described that she had been feeling good and more motivated, and stated that the more she did, the less anxious she felt. When asked at the follow up, Clara reported that she was continuing with her hobbies, including drawing, gym and had been working as a cleaner. She stated that she had noticed a reduction in her worrying.

6.2.7 Treatment Integrity

All of Clara's treatment sessions were audio-recorded and two sessions were randomly selected and independently scored for treatment integrity. Inter-observer agreement averaged 95.2% across scored sessions with 95.4% of therapist in-session behaviour compatible with the treatment modality (BATA).

6.2.8 Post-Treatment Diagnosis

At the end of the treatment phase, Clara reported a consistent decrease in her everyday stress and anxiety levels, across settings and social contexts. There was a noted increase in anxiety and stress level at Week 8 follow up related to a holiday trip during which she flew to Asia, and was feeling anxious about it. She described feeling busy and having trouble sleeping. Her response was to prioritise and plan who she was going to meet and when, which she executed to relieve her worry.

At Week 8 follow up, Clara reported feeling more confident despite the challenges that she faced during her holiday period which include missing her flights, and personal situation challenges like knowing that a family member was getting divorced. She indicated that she is not so worried about things and that she continued to schedule her social activities, and was more organised, despite new stressors. She stated that she generally felt that her anxiety had reduced.

Clara did not demonstrate statistically significant change in either change in her self-reported anxiety measures or activity levels across phases of the study, although the Tau-U statistic on Clara's BAI scores would have been significant at the $\alpha=0.06$

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significance level, and there was significant reduction in the self-monitored DARS ratings indicated by all three statistical tests applied. Clara's DASS-21 Stress scale scores also decreased significantly according to the Tau-U test. Post review of her results shows that her level of anxiety at the beginning of her participation in the study straddled the boundary between mild and normal for BAI. As treatment progressed, her self-reported anxiety levels dropped slightly to within the (high-) normal range, but both statistically and clinically, little improvement was achieved. However, her DASS Stress scale showed a significant reduction of self-reported symptoms of stress (stress symptoms are often associated with GAD). Significant change was not noted in daily activity levels across key areas but Clara did report that she had observed a marked reduction in her procrastination and "avoiding things", which qualifies as a positive behavioural change. She did not meet the diagnostic criteria for GAD at 2 month follow-up, showing that the behavioural change encouraged by BATA had been maintained without contact with treatment.

6.3 Case 6: “Summer”

6.3.1 Characteristics

"Summer", at the time of the study, was a 44 year old mother of two (high school and university students) and part time psychology student. Summer was also a carer for her mother. She reported that her brother passed away due to cancer a year before the study, which was a shock to the family. She stated that her anxiety worsened after her brother's death. Summer presented with social anxiety, especially when presenting to an audience, for example, at church and in class. Summer reported that she suffered from migraine, usually related to her stress levels, and this affected her day to day functioning. She reported that she felt anxious when driving her car in congested traffic, and avoided crowded and “cramped” places, where she would feel the need “to get out”. She described that she would hyperventilate, along with other physiological responses including increased heart rate, shaking, and general discomfort, accompanied by feelings of desperation and loss of control. She stated that she suffered through social and crowd situations. There was no evidence of panic disorder.

By way of background history, Summer had been married for 20 years at the time of the study. She reported that she had a sister with whom she had a good relationship. She recalled that she resided in a boarding school whilst growing up. Summer stated that she had worked as a physiotherapist in Asia in the past. She reported that her father passed away due to heart attack 6 years prior to her participation in the study. She stated that she migrated to Australia in 2004.

6.3.2 Intake Assessment.

Based on her responses to the MINI, Summer fulfilled DSM-IV criteria for Social Anxiety and Agoraphobia current without a history of panic disorder. At intake, Summer scored 4 on the BAI which was in the normal range, 0 on the DASS-21 Depression Scale which is in the normal range, 20 on the DASS-21 Anxiety Scale which is in the extremely severe range, and 20 on the DASS-21 Stress Scale, which is in the moderate range.

6.3.3 Standardised Anxiety-Related Outcomes

Summer's BAI scores are presented graphically in Figure 61. Two of the three statistical analyses of Summer's BAI scores across the phases revealed evidence of a downward change across phases: split-middle binomial test ($z = 2.00, p < .05$), and Tau-U ($z = 2.73, p < .01$). The C Statistic ($z = 0.43, p > .05$) did not detect statistically significant trend across phases. Summer's scores remained in the normal range but did shift to the lower part of the range over time.

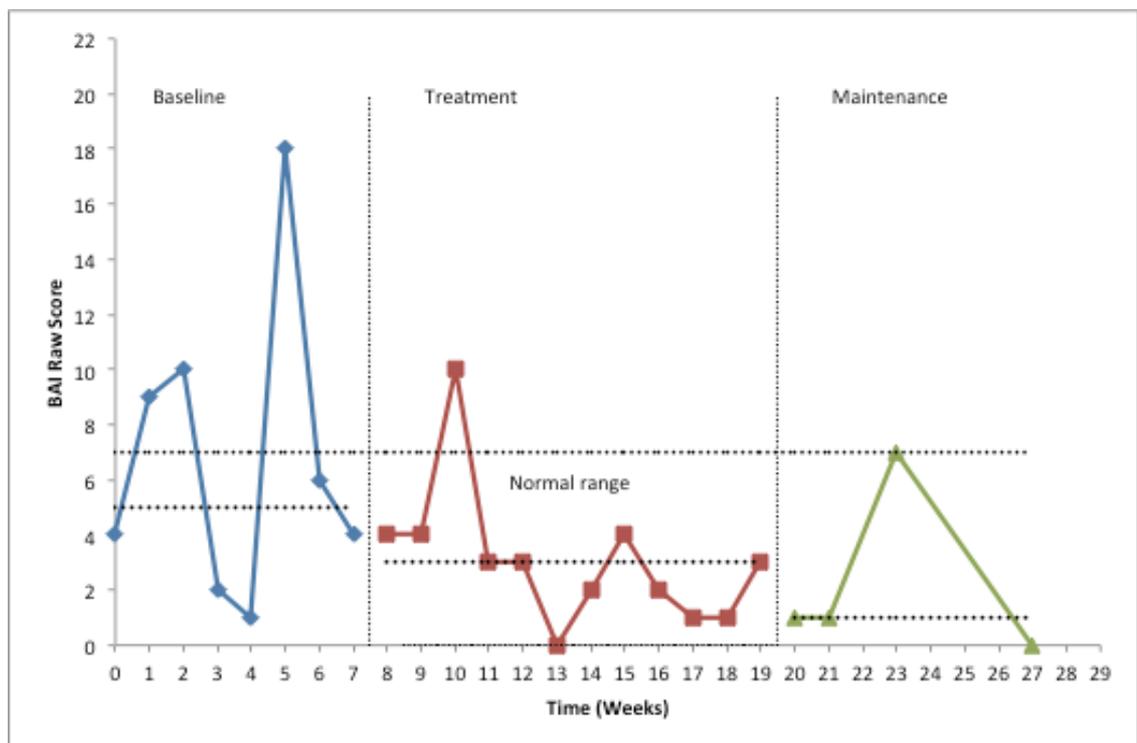


Figure 61. Case 6 BAI raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 7 : minimal, 8-15: mild, 16-25: moderate, and ≥ 26 : severe.

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One of the three statistical analyses applied to Summer's scores for the DASS-21 Anxiety Scale, which are shown graphically in Figure 62, showed statistically significant downward change across phases: the split middle binomial test ($z = 1.91, p < .05$). The C Statistic ($z = 0.687, p > .05$) and Tau-U ($z = 1.58, p > .05$) did not detect statistically significant change across phases. Summer's scores remained in the normal range but dropped significantly towards effectively 0 during the course of treatment, and maintained in the follow-up phase.

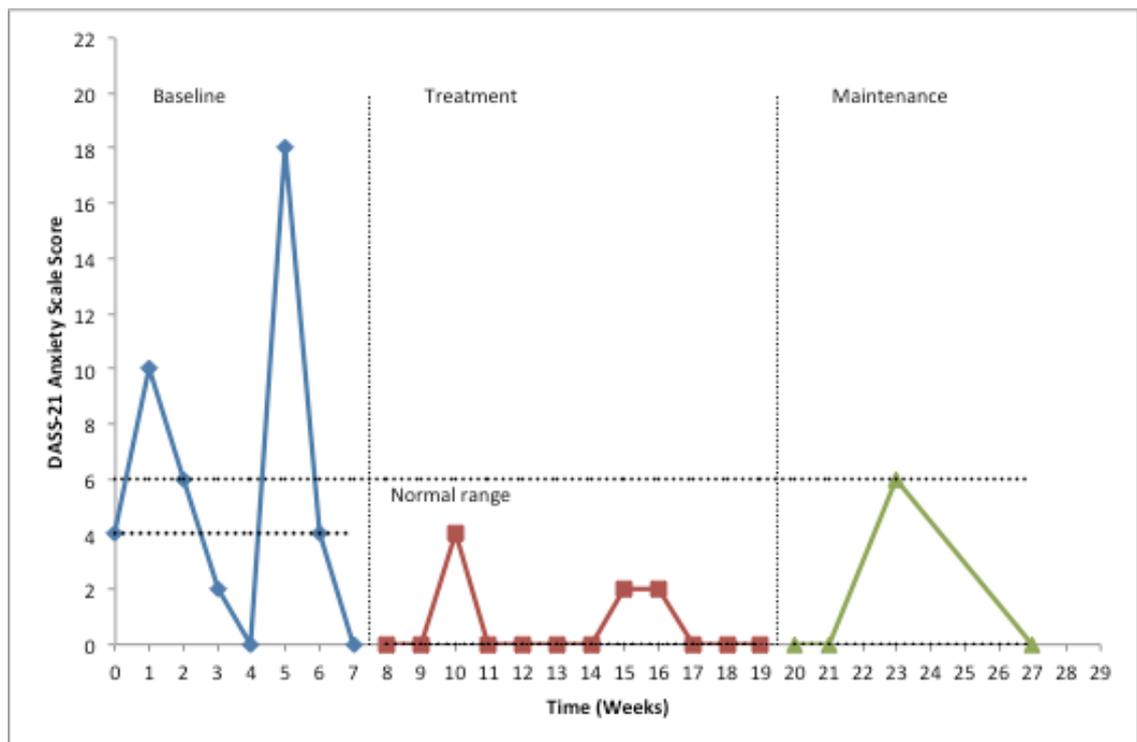


Figure 62. Case 6 DASS-21 Anxiety raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 6 : normal, 7-10: mild, 11-14: moderate, 15-19: severe, and ≥ 20 : extremely severe.

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One of the three statistical analyses applied to Summer's scores for the DASS-21 Stress Scale, which are shown graphically in Figure 63, showed statistically significant downward trend within the data: Tau-U ($z = 2.78, p < .01$). The C Statistic ($z = 1.52, p > .05$) and split-middle binomial test ($z = 1.53, p > .05$) did not detect statistically significant change across phases. Summer's scores remained in the normal range but decreased significantly over the course of treatment, maintained into the follow-up phase.

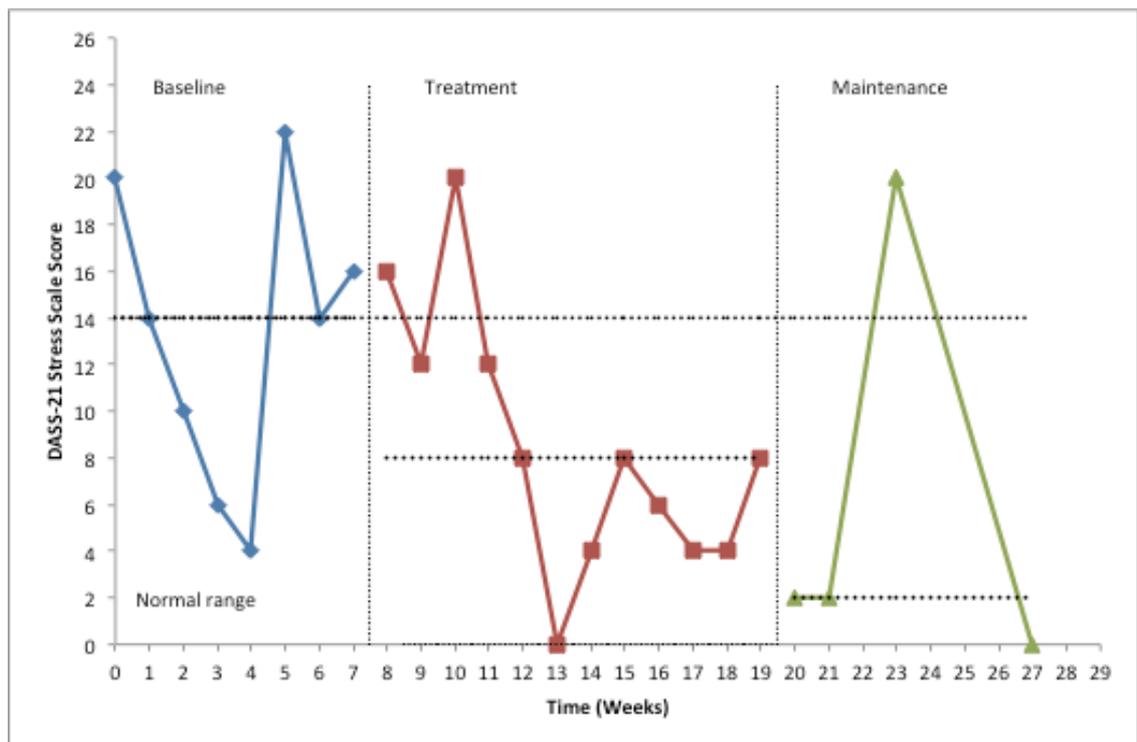


Figure 63. Case 6 DASS-21 Stress raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 14 : normal, 15-18: mild, 19-24: moderate, 25-33: severe, ≥ 34 : extremely severe.

Visual inspection of the graph shows a “spike” in Summer's stress levels at Week 4 follow up. She reported that she had been experiencing migraine headache for four of the previous 10 days, possibly associated with relatives staying with her while visiting her mother. She stated that despite an increase in her stress levels, she still managed to schedule her yoga exercise.

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None of the three statistical tests performed on Summer's DASS-21 Depression Scale raw scores, which are depicted in Figure 64, showed a statistically significant trend at the $\alpha=.05$ level of significance: the C Statistic ($z = 0.22, p > .05$), the split middle binomial test could not be calculated because phase medians were the same and there were no points below the baseline median during the treatment phase, and Tau-U ($z = 0.02, p > .05$) was not statistically significant.

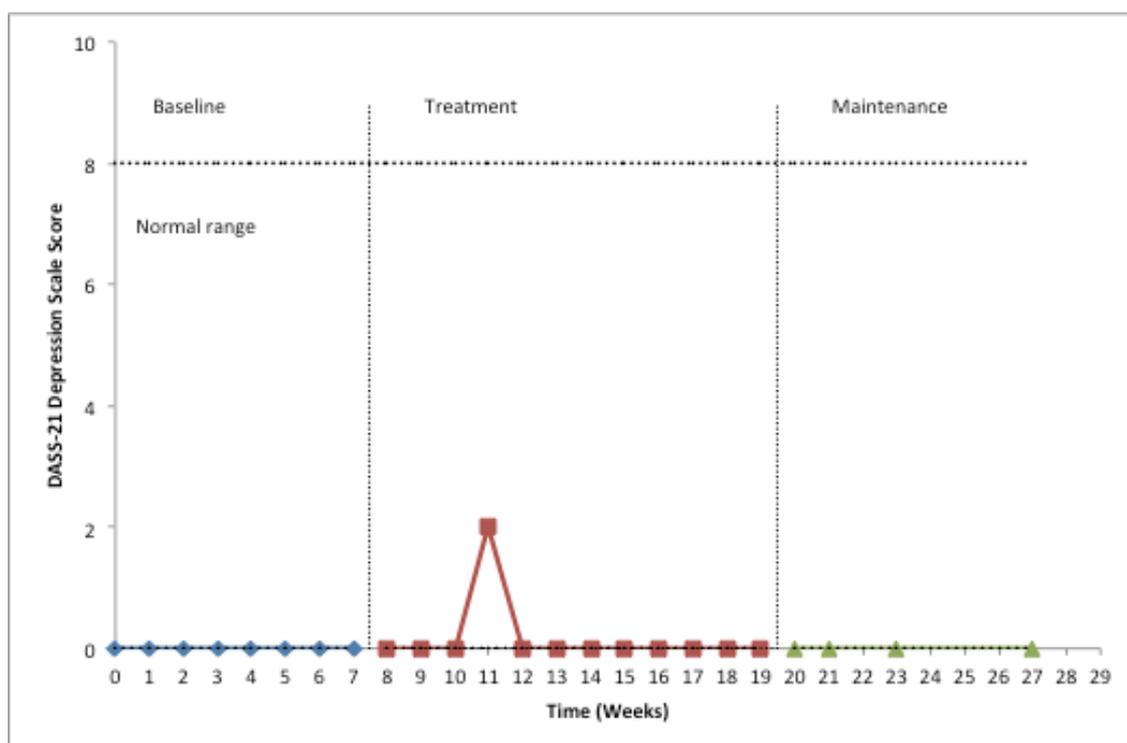


Figure 64. Case 6 DASS-21 Depression raw scores at baseline, treatment and maintenance phases.

Note: Scores ≤ 8 : normal, 9-12: mild, 13-20: moderate, 21-27: severe, and ≥ 28 : extremely severe.

6.3.4 Self- Monitored Anxiety and Activity Outcomes

Summer's DARS scores are presented graphically in Figure 65. Summer completed a 46 day baseline. Analysis of the baseline phase data showed an absence of trend as indicated by the C Statistic ($z = 0.736, p > .05$). Across the phases, all three statistical tests detected change across phases: C Statistic ($z = 4.48, p \ll .01$), split middle binomial test ($z = 2.94, p < .001$), and Tau-U ($z = 4.76, p \ll .01$). The difference in phase medians showed a decrease of 9 points in DARS scores between phases.

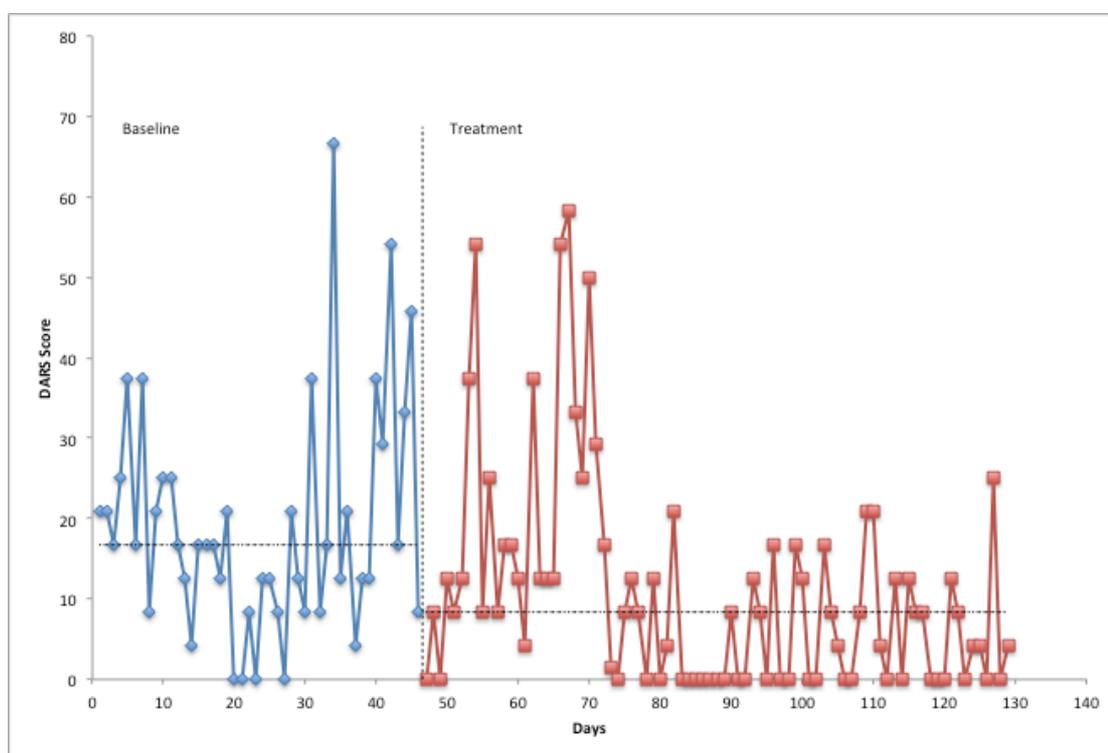


Figure 65. Case 6 Daily Anxiety Rating Scale (DARS) scores across baseline and treatment phases.

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Summer's self- and other-care data across baseline and treatment phases are presented in Figure 66. Analysis of the baseline phase revealed absence of trend using the C Statistic ($z = 1.47, p > .05$). Compared to baseline, one out of three of the statistical tests applied showed statistically significant change across phases: C Statistic ($z = 4.81, p \ll .01$). The split middle binomial test ($z = 1.27, p > .05$) and Tau-U tests ($z = 0.92, p > .05$) did not detect a significant change across phases. The difference in phase medians showed an increase of 60 minutes per day.

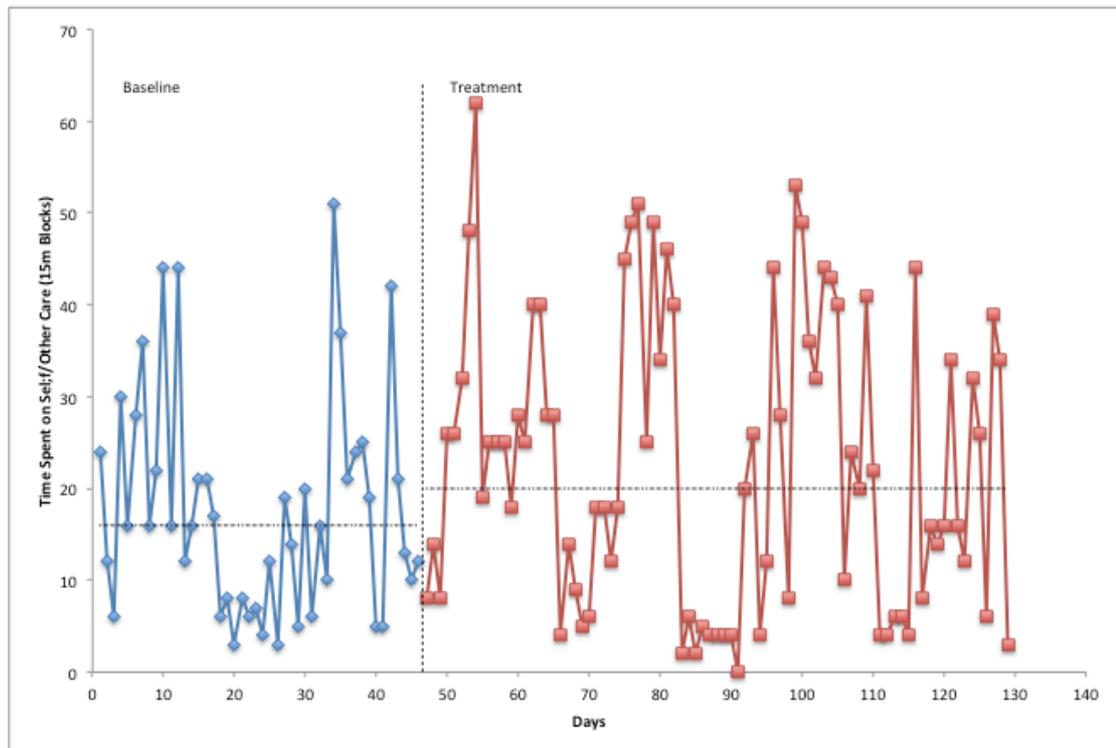


Figure 66. Case 6 Minutes spent per day on Self- and Other- Care baseline and treatment phases.

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Summer's Housework and Errands data across baseline and treatment phases are presented in Figure 67. Analysis of the baseline phase revealed an absence of trend within the data as indicated by the C Statistic ($z = 1.22, p > .05$). Compared to baseline, one of the three statistical tests showed significant increase in the amount of time Stacey spent on housework and errands: the C Statistic ($z = 3.42, p < .01$). The split middle binomial test ($z = 0.86, p > .05$) and Tau-U ($z = 1.03, p > .05$) did not detect significant change across phases. The difference in phase medians showed a decrease of 15 minutes per day spent on housework and errands.

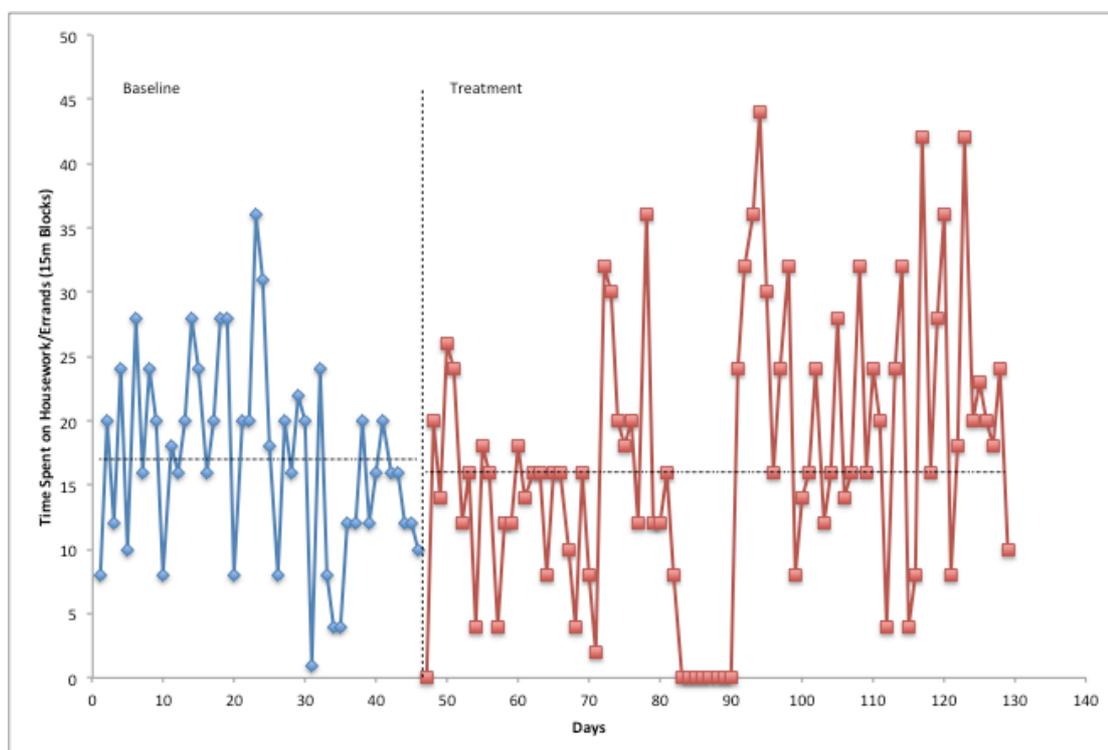


Figure 67. Case 6 Minutes spent per day on Housework and Errands across baseline and treatment phases.

There was a short period from Week 5 to Week 6 of the treatment phase when Summer's housework and errands activities dropped to “effectively zero” due to her studying and sitting for examinations.

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Summer's Paid and Unpaid Work data across baseline and treatment phases are presented in Figure 68. Analysis of the baseline phase revealed an absence of trend within the data as indicated by the C Statistic ($z = 1.225, p > .05$.) Compared to baseline, all three statistical tests detected a significant decrease during the treatment phase in the amount of time Summer spent on paid or unpaid work: C Statistic ($z = 4.46, p \ll .01$), split middle binomial test ($z = 3.81, p \ll .01$), and Tau-U ($z = 5.52, p \ll .01$). The difference in phase medians indicates a 5 hours per day decrease in time spent on paid or unpaid work.

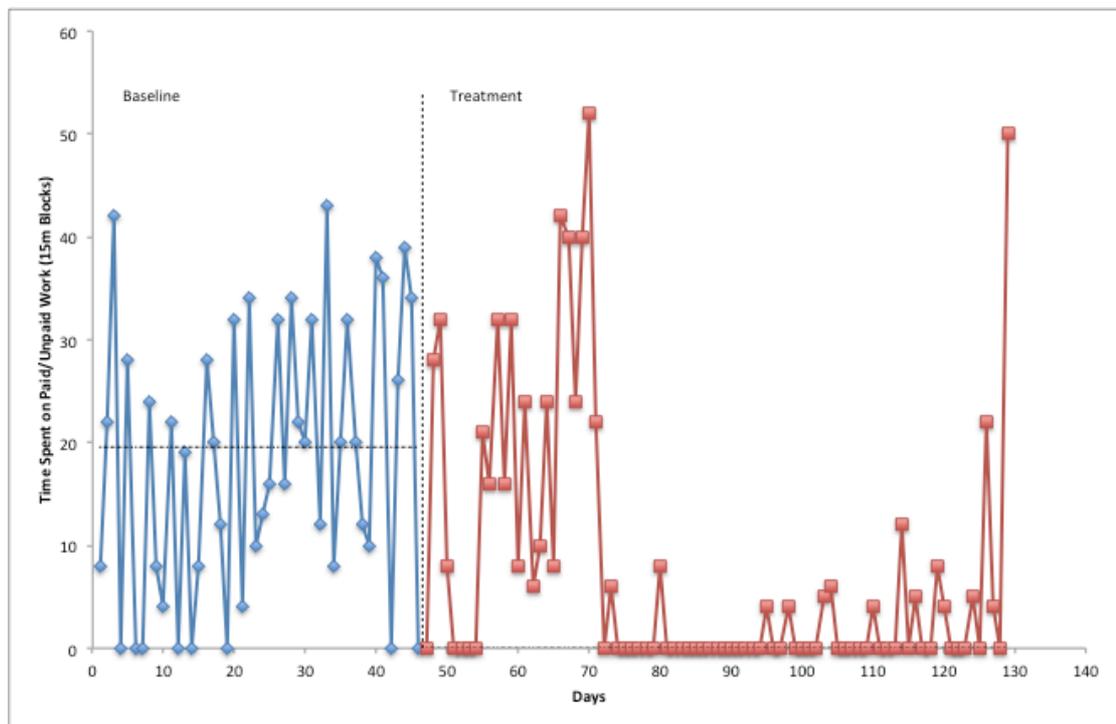


Figure 68. Case 6 Minutes spent per day on Paid and Unpaid Work across baseline and treatment phases.

There was a marked drop in Summer's paid and unpaid work activities from Day 70 onwards, related to firstly her preparation and sitting for university exams, and then a subsequent holiday. As Summer was a carer for her mother, it is unclear whether she categorised/coded her carer activities differently on her return from holiday.

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Summer's Interests, Hobbies, and Recreation data are presented in Figure 69. Analysis of the baseline phase revealed an upward trend within the data using the C Statistic ($z = 2.35, p < .05$). Two of the three statistical tests showed a significant change across phases: C Statistic ($z = 6.63, p < .01$) and Tau-U ($z = 2.02, p < .05$). The split middle binomial test ($z = 0.20, p > .05$) did not detect a significant change between phases. There was no difference between phase medians.

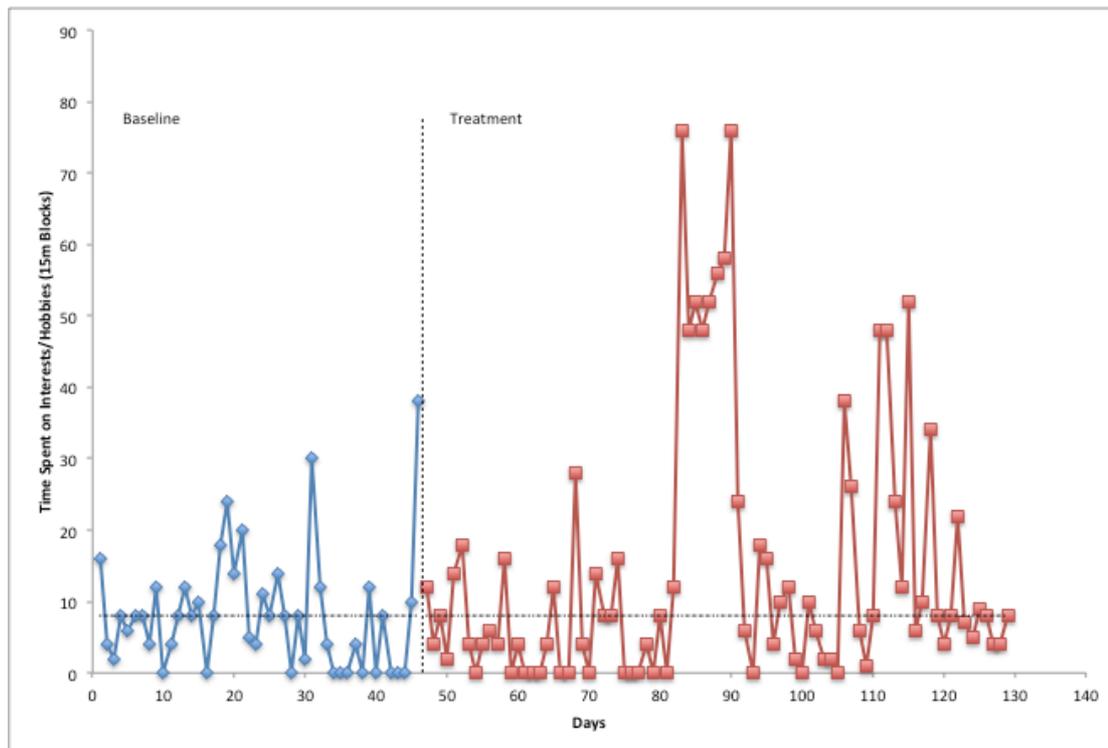


Figure 69. Case 5 Minutes spent per day on Interests, Hobbies, and Recreation across baseline and treatment phases.

The peak noted in the graph above between Day 80 and Day 90 was related to her holiday overseas.

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Summer's "With Others" data across baseline and treatment phases are presented in Figure 70. Analysis of the baseline phase revealed an upward trend within the data indicated by the C Statistic ($z = 1.94, p < .05$). Compared to baseline, two of the three statistical tests showed significant increase in the amount of time Stacey spent out of home in the treatment phase: C Statistic ($z = 2.56, p < .01$) and the split middle binomial test ($z = 3.35, p < .01$) detected significant change in the treatment phase compared to baseline phase. The Tau-U test ($z = 1.26, p > .05$) did not detect significant change across phases. The change in phase medians showed an increase of 105 minutes per day spent with others.

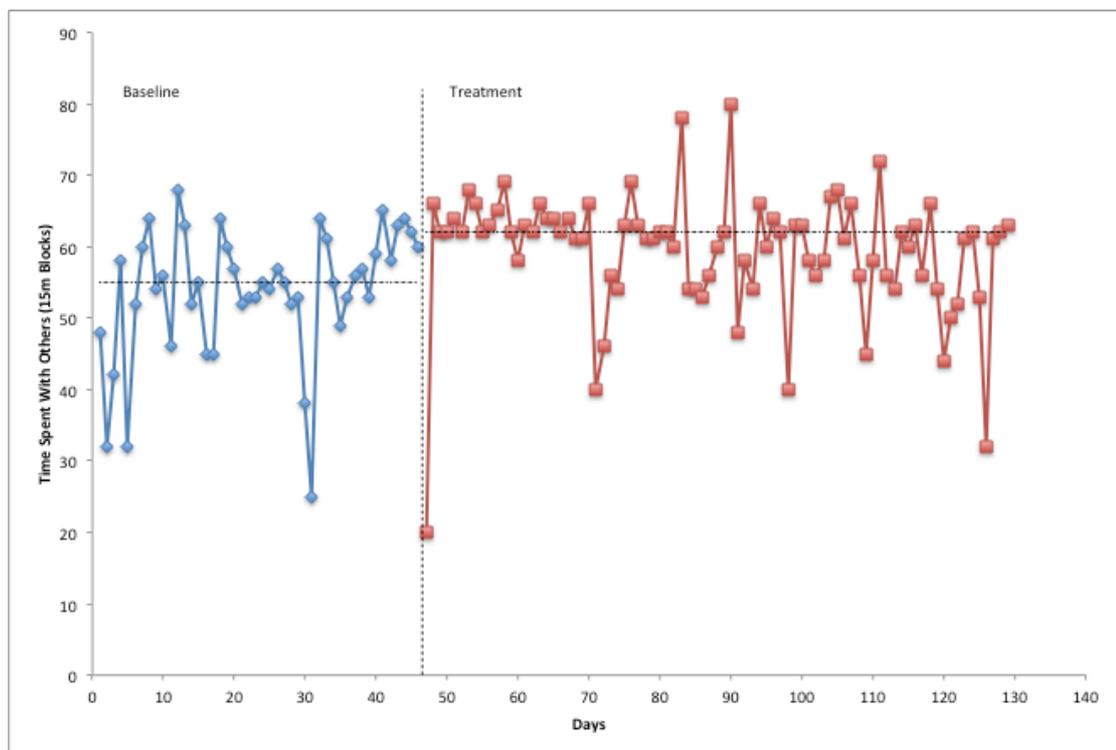


Figure 70. Case 6 Minutes spent per day spent with other people across baseline and treatment phases.

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Summer's Out of Home data across baseline and treatment phases are presented in Figure 71. Analyses of the baseline phase revealed an absence of trend within the data using the C Statistic ($z = 1.52, p > .05$). Compared to baseline, all three statistical tests applied showed significant increase in the amount of time Summer spent out of home during the treatment phase: C Statistic ($z = 4.05, p \ll .01$), the split middle binomial test ($z = 3.15, p \ll .01$), and Tau-U ($z = 3.62, p \ll .01$) showed significant change across phases. The difference in phase medians showed an increase of over 3 hours per day spent out of home.

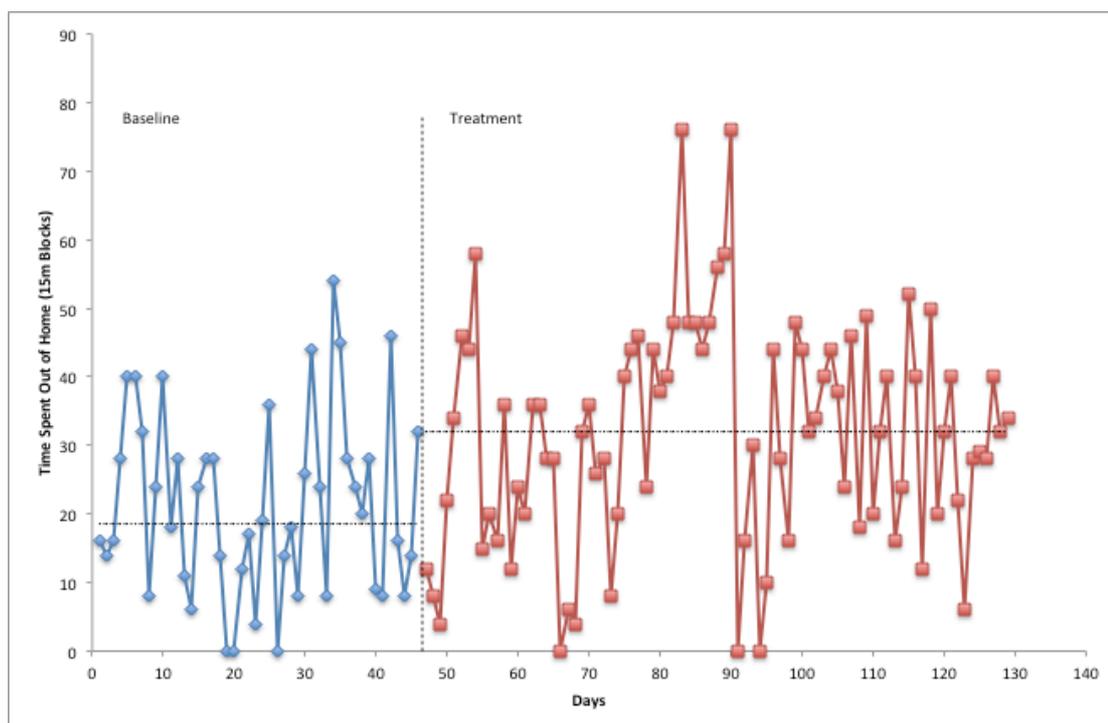


Figure 71. Case 6 Minutes spent per day spent out of home across baseline and treatment phases.

6.3.5 Therapist/Client Relationship

Summer's scale scores across the treatment phase from the Barrett-Lennard Relationship Inventory: Observer Form (OS-64) are presented in Figure 72. The OS-64 was administered at 4, 8, and 12 week periods during treatment.

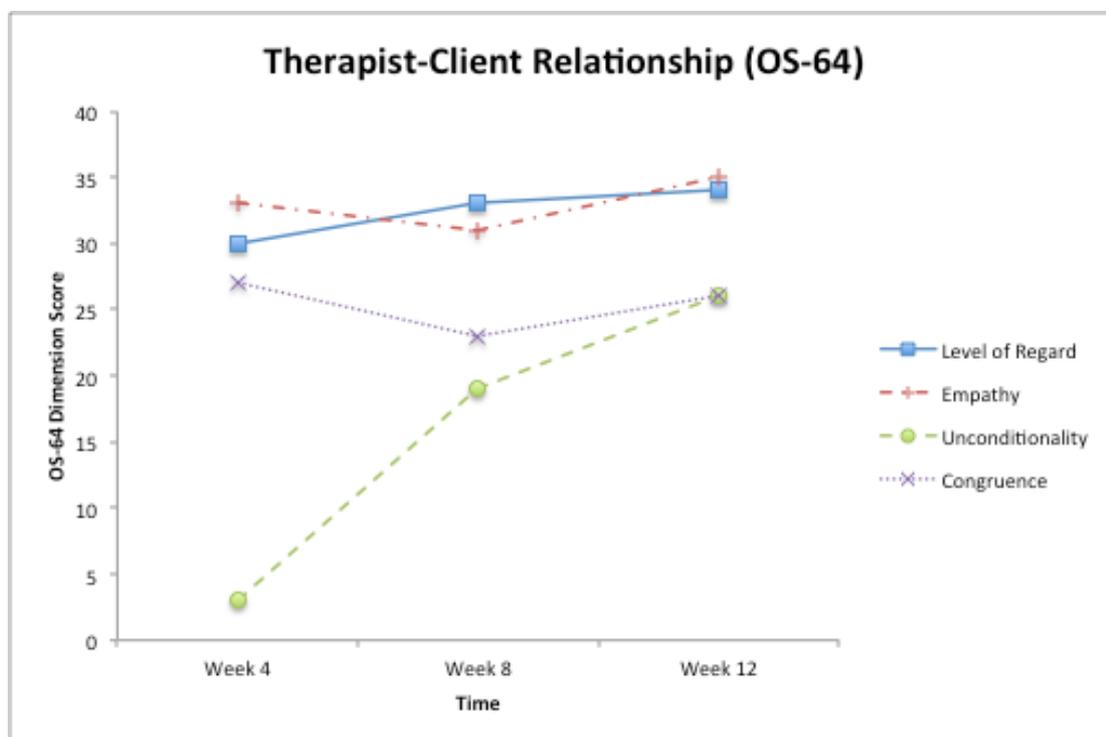


Figure 72. Case 6 OS-64 Assessment of Therapy Relationship Variables across the treatment phases.

Inspection shows that the empathy, level of regard and congruence scales were consistent across the treatment phase, while the unconditionality scale rose during the course of treatment. While Summer's score for the unconditionality scale began close to the threshold of 0 for "a level adequate for a constructive relationship", all scale scores thereafter significantly exceeded the threshold.

6.3.6 Behavioural Cusps

Formal activity scheduling commenced at Week 3, and though it is difficult to quantify, Summer did seem to engage in activities that could qualify as behavioural cusps. Summer's results show a significant decrease in standardised anxiety measures after the third treatment session. Activities scheduled for Summer included, maintaining her walking, doing yoga almost daily, eating more healthily, organising activities better, including scheduling time for her university studies. Summer stated at

follow-up that she still had a busy life, but was able to plan better, able to cope better and she was very pleased with her progress. She mentioned that her migraine headaches were less frequent and less severe. Summer was also organising and conducting car boot sales for charity at a local market that she had wanted to do for some time. Summer described that activation focussed on organising a charity “car-boot” sale made her realise that she could deal with stressful situations by organising and planning better, which increased her confidence to deal with situations that usually caused her anxiety.

6.3.7 Treatment Integrity

All of Summer’s treatment sessions were audio-recorded and two sessions were randomly selected and independently scored for treatment integrity. Inter-observer agreement averaged 93.5% across scored sessions with 98.9% of therapist in-session behaviour compatible with the treatment modality (BATA).

6.3.8 Post-Treatment Diagnosis

At the end of the treatment phase, Summer reported a significant and consistent decrease in her everyday stress and anxiety levels, across settings and social contexts. There is a noted a peak in the third week in her anxiety, and stress level. Summer reported that elderly relatives were visiting her and she was helping to take care of them (one suffered from dementia), temporarily increasing her stress and anxiety. However, she also indicated that she believed that she was able to manage the situation well, maintaining her own walking and exercise. Summer stated that she was planning and organising more activities.

In terms of her agoraphobia, she reported at the sixth treatment session that she was able to do a cope during a holiday when she was able to sit through bad traffic congestion in a tunnel.

At the 8 weeks follow up, Summer described that generally, she was able to see the positive changes in herself, and was more able to manage her fear in university and social settings.

Post-treatment, Summer no longer met DSM-IV criteria for Social Anxiety and Agoraphobia and maintained this 2 months post-treatment, indicating that the changes in behaviour were robust and maintained without contact with therapy.

6.4 Summary

Two of the three participants in the Metropolitan Videoconferencing (MV) group (Stacey and Summer) showed reduction in self-reported anxiety symptoms indicated by statistically significant reduction indicated on at least two of the three statistical tests applied on either one or both of the standardised anxiety measures (BAI and DASS Anxiety scale).

Chapter 7: Single Case Results for Regional/Remote Videoconferencing Group

This chapter contains the final set of three single case analyses for participants in the Regional/Remote Videoconferencing group.

7.1 Case 7: “John”

7.1.1 Characteristics

"John" was a 52-year-old male dance therapist at the time of the study. He reported that he had received Cognitive Behavioural Therapy for anxiety 6 to 7 years before his participation in this study. John stated that his anxiety was mainly related to the fear of urinating. He described that the urge to urinate comes on suddenly, and at times, he could not hold his bladder. He stated that a physiological cause for his “incontinence” had been ruled out by his doctors. He indicated that his anxiety began 5 to 10 years before his participation in the study and he had experiences in which his incontinence left him feeling humiliated and embarrassed.

John described that certain situations cause him stress, and when things did not progress in line with his expectations, he would get anxious. He indicated that he could not wear seatbelts in motor vehicles and was fearful of “being trapped”. He stated that his anxiety was often accompanied by physiological sensations, often “coming out of the blue”. His physiological sensations included trembling, shaking, tightness in the chest, numbness, and hot flushes, that often occurred with a feeling of detachment and a sense that “things were out of control”. His urge to urinate generalised to other stressful situations.

By way of background history, he recalled that he had concerns about his memory 7 years before the time of the study but consultations with his medical practitioner found no significant memory issues. John reported that he moved to the Southwest of Western Australia 5 years before the time of the study. He stated that his mother and father had passed away approximately 18 and 5 years prior to the time of the study. He described there were high expectations of him when he was growing up and a challenging childhood, recalling that Year 12 was stressful, and which he ended up “failing”. He stated that he had a 25 year old son, but their contact was limited.

7.1.2 Intake Assessment.

Based on his responses to the MINI, John fulfilled DSM-IV criteria for Panic Disorder with agoraphobia. At intake, John scored 8 on the BAI which was in the mild range, 14 on the DASS-21 Depression Scale which is in the moderate range, 8 on the DASS-21 Anxiety Scale which is in the mild range, and 10 on the DASS-21 Stress Scale, which is in the normal range.

7.1.3 Standardised Anxiety-Related Outcomes

John's BAI scores are presented graphically in Figure 73. Two of the three statistical analyses of John's BAI raw scores across phases revealed evidence of a downward change across phases indicated by the C Statistic ($z = 3.060, p < .01$) and Tau-U ($z = 3.67, p \ll .01$), while the split-middle binomial test ($z = 1.50, p > .05$) did not detect statistically significant change across phases. The changes in BAI scores are clinically meaningful because John's scores moved from the mild range into normal and low normal range.

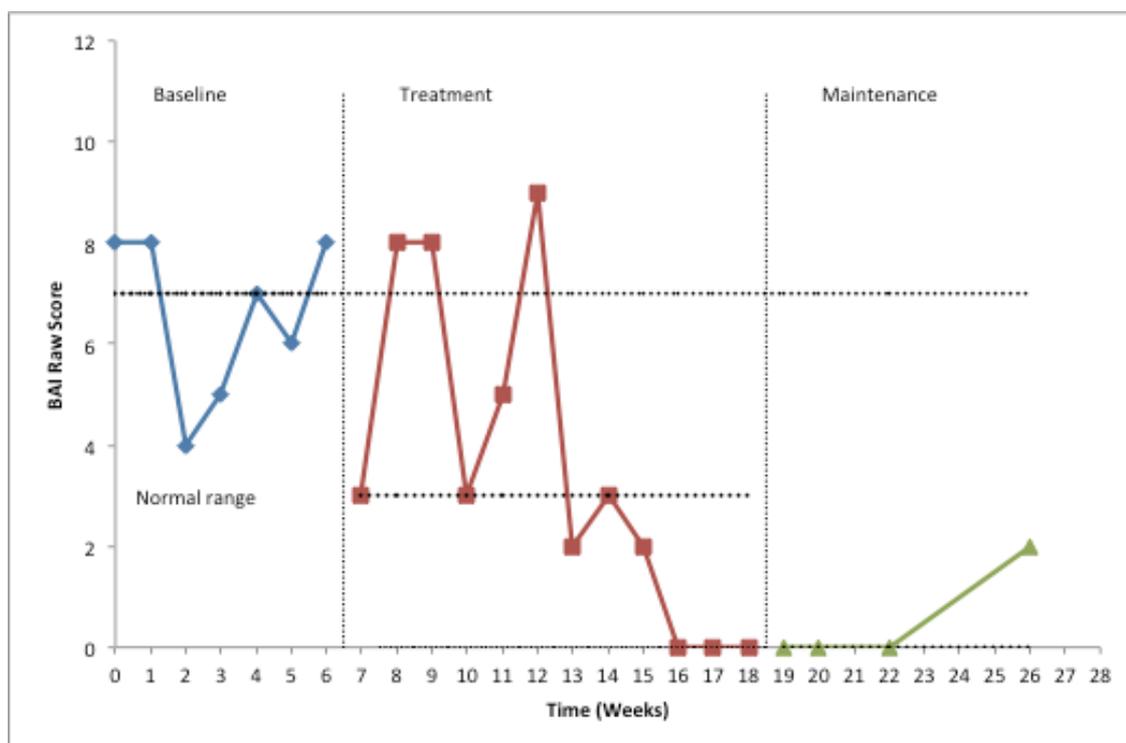


Figure 73. Case 7 BAI raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 7 : minimal, 8-15: mild, 16-25: moderate, and ≥ 26 : severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

All three statistical analysis of John's raw scores for DASS-21 Anxiety Scale, which are shown graphically in Figure 74, showed statistically significant downward change across phases: C Statistic ($z = 3.37, p \ll .01$), split-middle binomial test ($z = 2.098, p < .05$), and Tau-U ($z = 4.41, p \ll .01$). The changes in DASS-21 Anxiety Scale scores are clinically meaningful because John's scores moved from the mild range into the normal and low normal range.

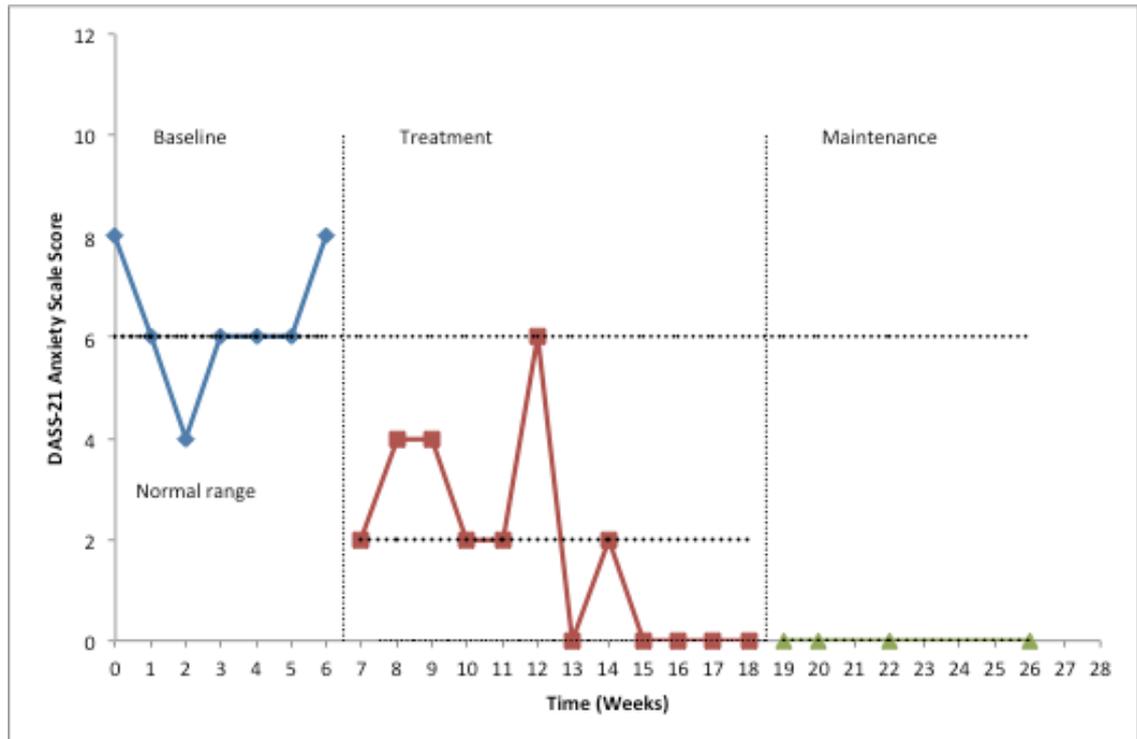


Figure 74. Case 7 DASS-21 Anxiety raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 6 : normal, 7-10: mild, 11-14: moderate, 15-19: severe, and ≥ 20 : extremely severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

DASS-21 Stress Scale raw scores for John are shown graphically in Figure 75. One of the three statistical tests showed statistically significant downward shift in the data across phases: the C Statistic ($z = 2.369, p < .01$). The split-middle binomial test ($z = 0.85, p > .05$) and Tau-U ($z = 0.71, p > .05$) did not detect a statistically significant change across phases. Clinically, John's DASS-21 Stress Scale remained in the normal range over the course of treatment.

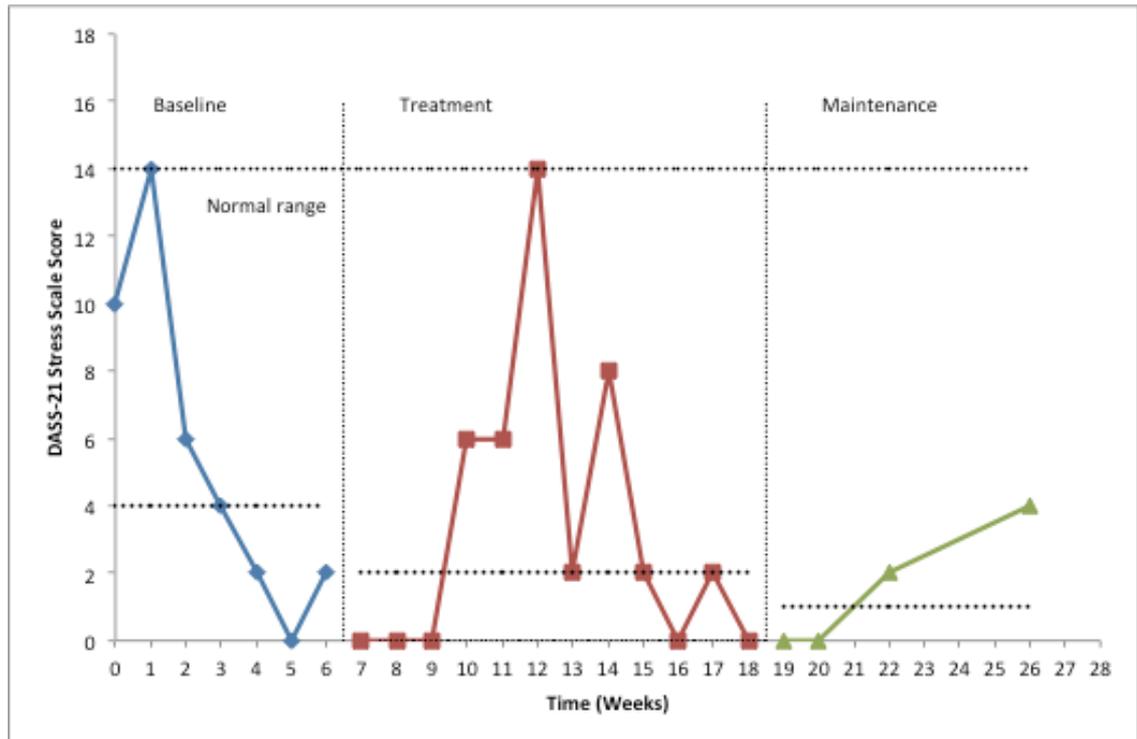


Figure 75. Case 7 DASS-21 Stress raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 14 : normal, 15-18: mild, 19-24: moderate, 25-33: severe, ≥ 34 : extremely severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

All three statistical analysis of John's raw scores for DASS-21 Depression Scale, which are shown graphically in Figure 76, showed statistically significant downward change across phases: C Statistic ($z = 4.36, p \ll .01$), split-middle binomial test ($z = 2.91, p < .01$), and Tau-U ($z = 2.72, p < .01$). The changes in DASS-21 Depression Scale scores are clinically meaningful because John's scores moved from the mild range into the normal range.

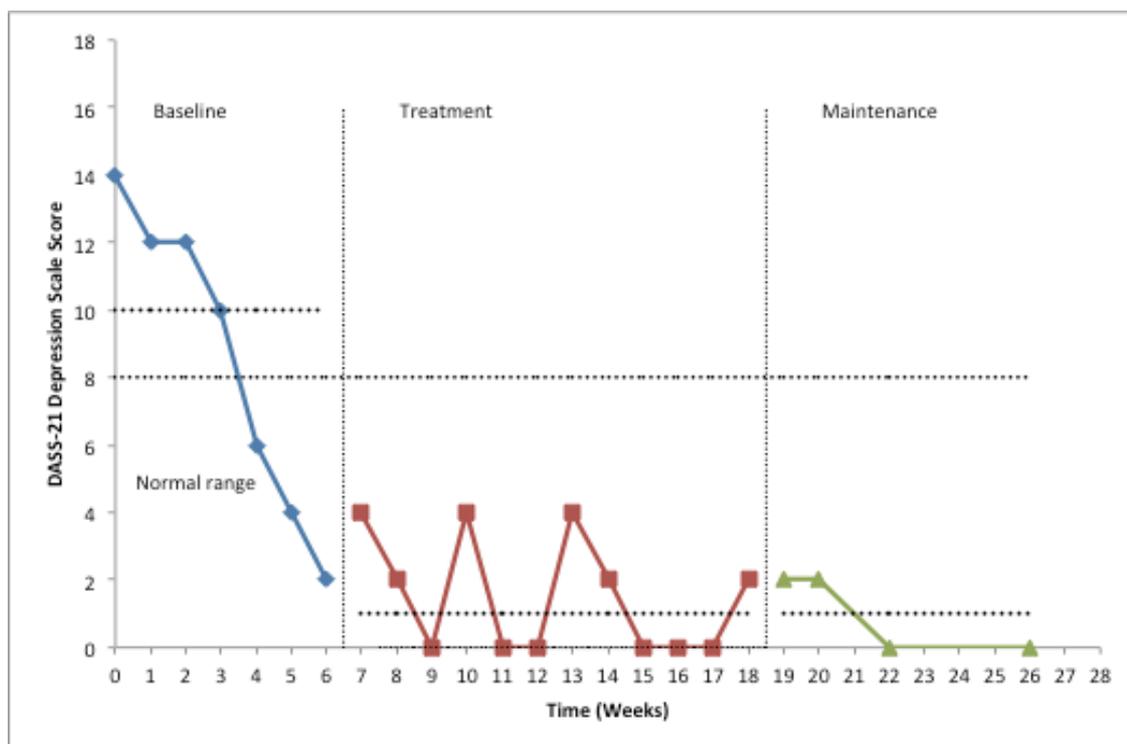


Figure 76. Case 7 DASS-21 Depression raw scores at baseline, treatment and maintenance phases.

Note: Scores ≤ 8 : normal, 9-12: mild, 13-20: moderate, 21-27: severe, and ≥ 28 : extremely severe.

7.1.4 Self- Monitored Anxiety and Activity Outcomes

John's DARS scores are presented graphically in Figure 77. John completed a 50 day baseline. Analysis of the baseline phase data using the C Statistic ($z = 0.213, p > .05$) did not detect significant trend. Across phases, a downward change was shown by two of the three statistical tests applied: split middle binomial test ($z = 3.10, p < .01$), and Tau-U ($z = 2.52, p < .05$). The C Statistic ($z = 1.43, p > .05$) did not detect any trend across phases. There was a drop of 2 points across phases indicated by the difference between phase medians.

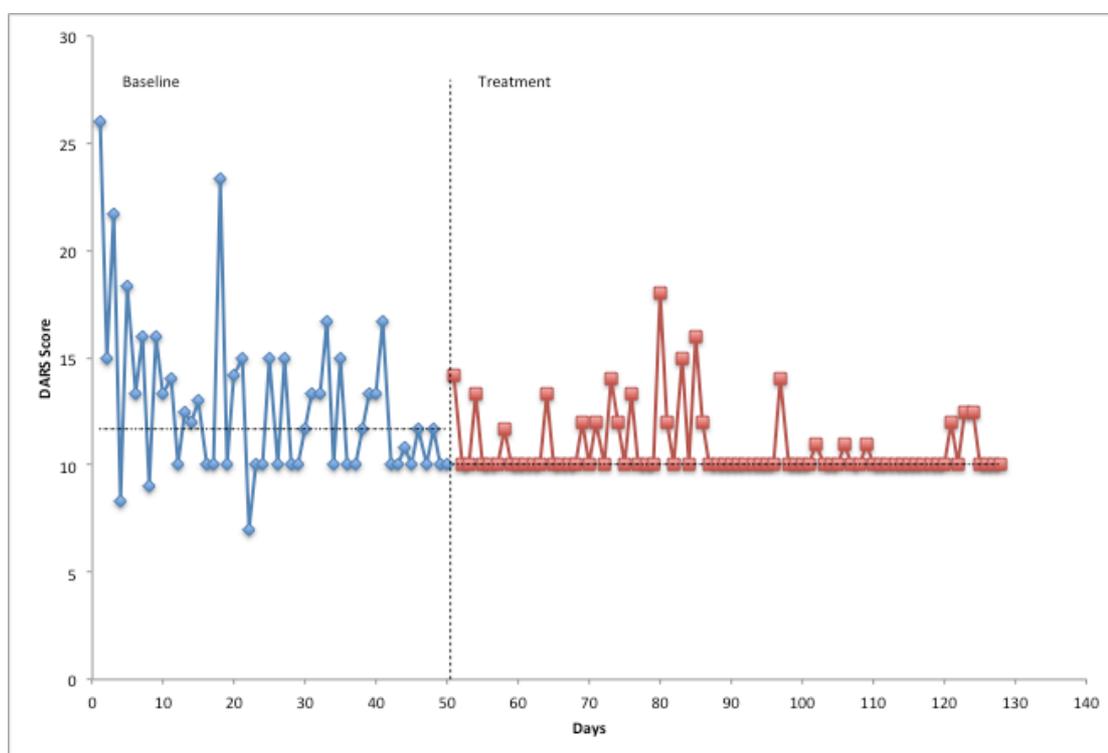


Figure 77. Case 7 Daily Anxiety Rating Scale (DARS) scores across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

John's self/other care raw scores are presented graphically in Figure 78. Analysis of the baseline phase data using the C Statistic ($z = 1.87, p > .05$) detected an upward trend. Across the phases, no change was detected by any of the three statistical tests applied: C Statistic ($z = 1.06, p > .05$), split middle binomial test ($z = 0.85, p > .05$), and Tau-U ($z = 0.76, p > .05$).

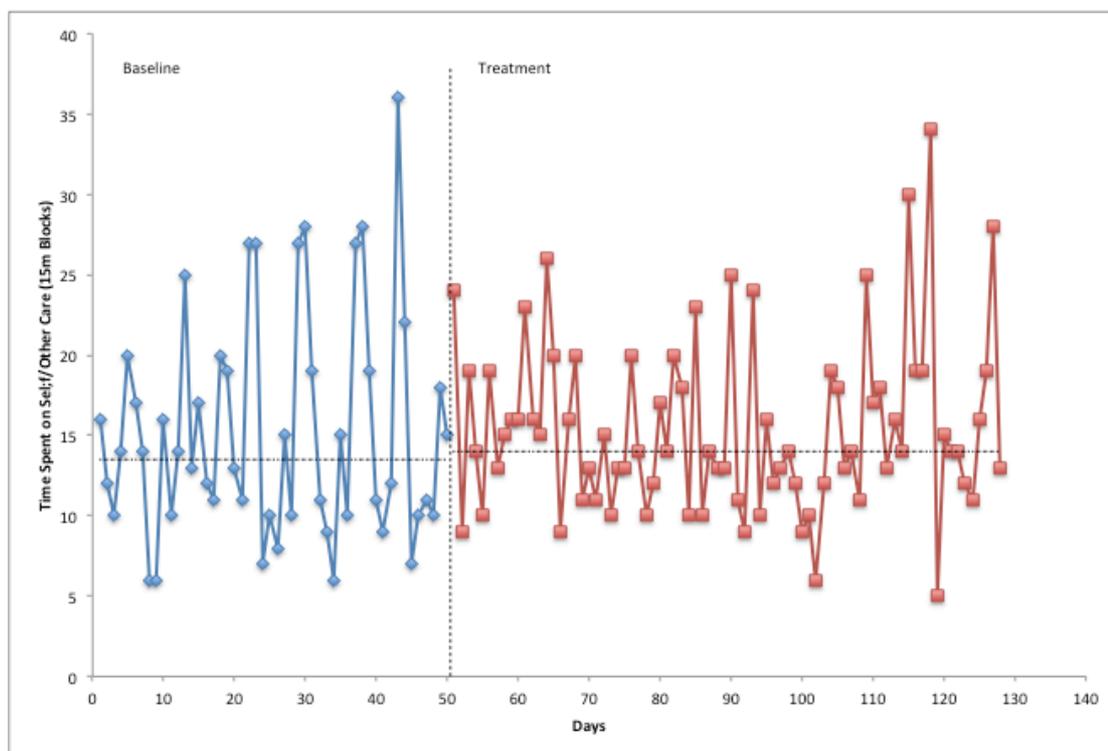


Figure 78. Case 7 Minutes spent per day on Self- and Other- Care baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

John's Housework and Errands data across baseline and treatment phases are presented in Figure 79. Analysis of the baseline phase revealed an absence of trend as indicated by the C Statistic ($z = 0.067, p > .05$). Compared to baseline, none of the statistical tests showed significant change across phases in the amount of time John spent on housework and errands: the C Statistic ($z = 0.46, p > .05$), split middle binomial test ($z = 1.43, p > .05$), and Tau-U ($z = 0.11, p > .05$).

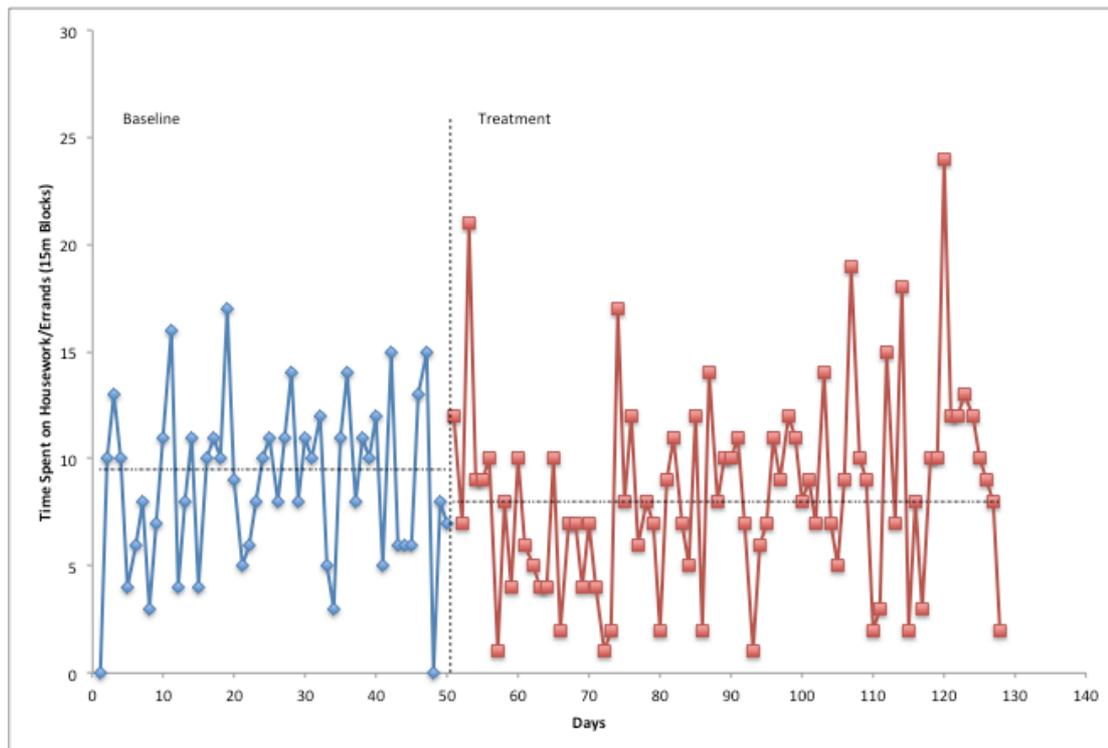


Figure 79. Case 7 Minutes spent per day on Housework and Errands across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

John's Paid and Unpaid Work data across baseline and treatment phases are presented in Figure 80. Analysis of the baseline phase using the C Statistic ($z = 1.61, p > .05$), revealed an absence of trend. Compared to baseline, one of the three statistical tests showed a significant increase during the treatment phase in the amount of time John spent on paid or unpaid work: C Statistic ($z = 4.43, p \ll .01$). The split middle binomial test ($z = 0.86, p > .01$) and (Tau-U $z = 0.45, p > .05$) did not detect statistically significant change across phases. The difference in phase medians indicates a 30 minutes per day increase in time spent on paid or unpaid work.

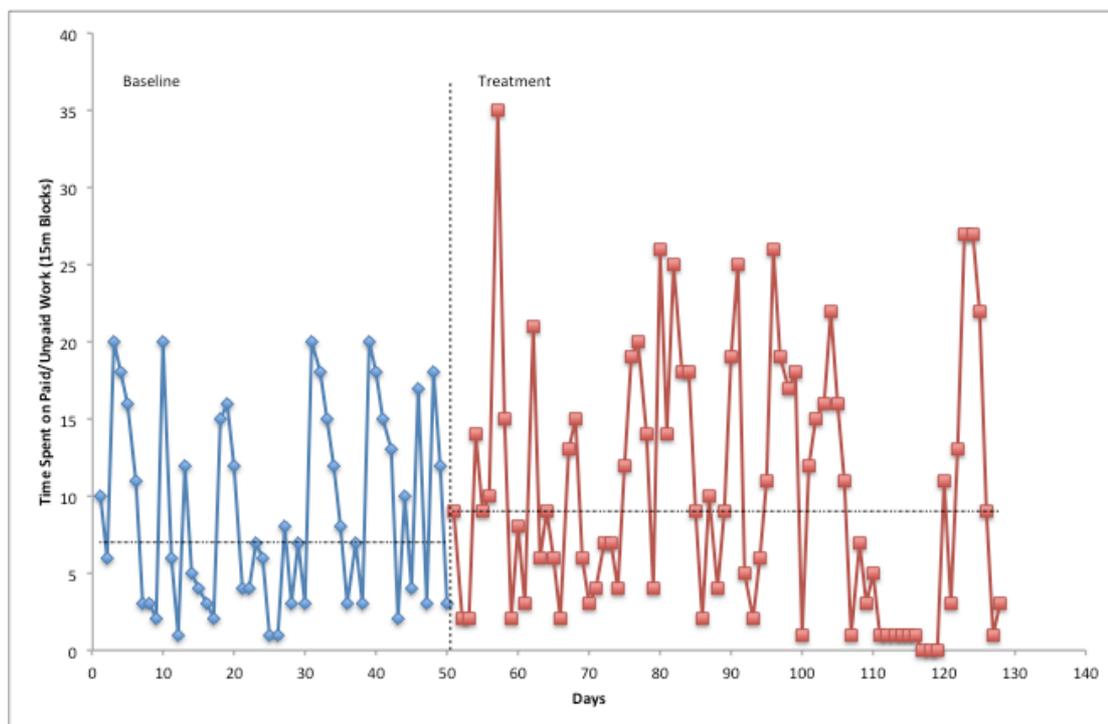


Figure 80. Case 7 Minutes spent per day on Paid and Unpaid Work across baseline and treatment phases.

John was generally working more from the beginning of the treatment phase, not related to formal activity scheduling, but rather just an increase in general work availability. John worked less between Day 110 and Day 120 to prepare and distribute an advertising flyer for his work.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

John's Interests, Hobbies, and Recreation data are presented in Figure 81. Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = 1.09, p > .05$). One of the three statistical tests applied showed a significant decrease comparing baseline and treatment phases: C Statistic ($z = 2.15, p < .05$). The split middle binomial test ($z = 0.567, p > .05$), and Tau-U ($z = 0.574, p > .05$) did not detect statistically significant change across phases. The difference between phase medians indicated a decrease of 30 minutes per day spent on interests, hobbies and recreation.

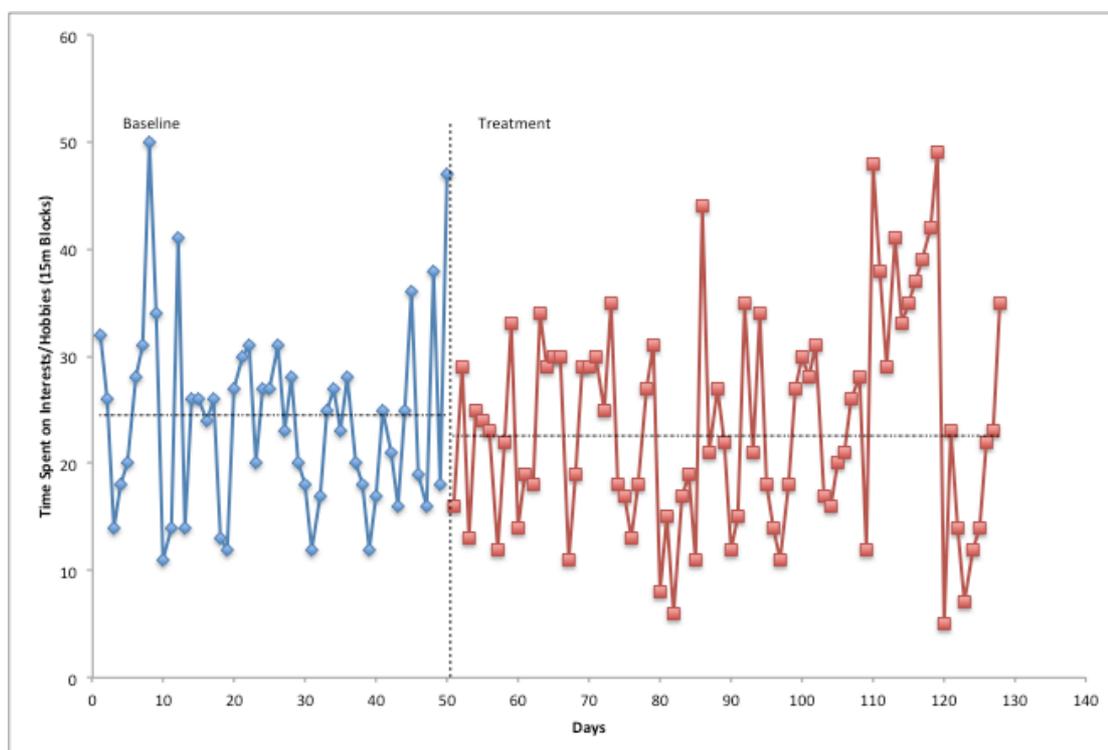


Figure 81. Case 7 Minutes spent per day on Interests, Hobbies, and Recreation across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

John's scores showing time spent with other people (as opposed to alone) across baseline and treatment phases are presented graphically in Figure 82. Analysis of the baseline phase revealed an absence of trend within the data as indicated by the C Statistic ($z = 0.342, p > .05$). Compared to baseline, there was a significant increase during the treatment phase detected by all three of the statistical tests applied: C Statistic ($z = 6.43, p << .01$), split middle binomial test ($z = 1.89, p < .05$), and Tau-U ($z = 2.48, p < .05$). The difference in phase medians showed an increase of 75 minutes per day.

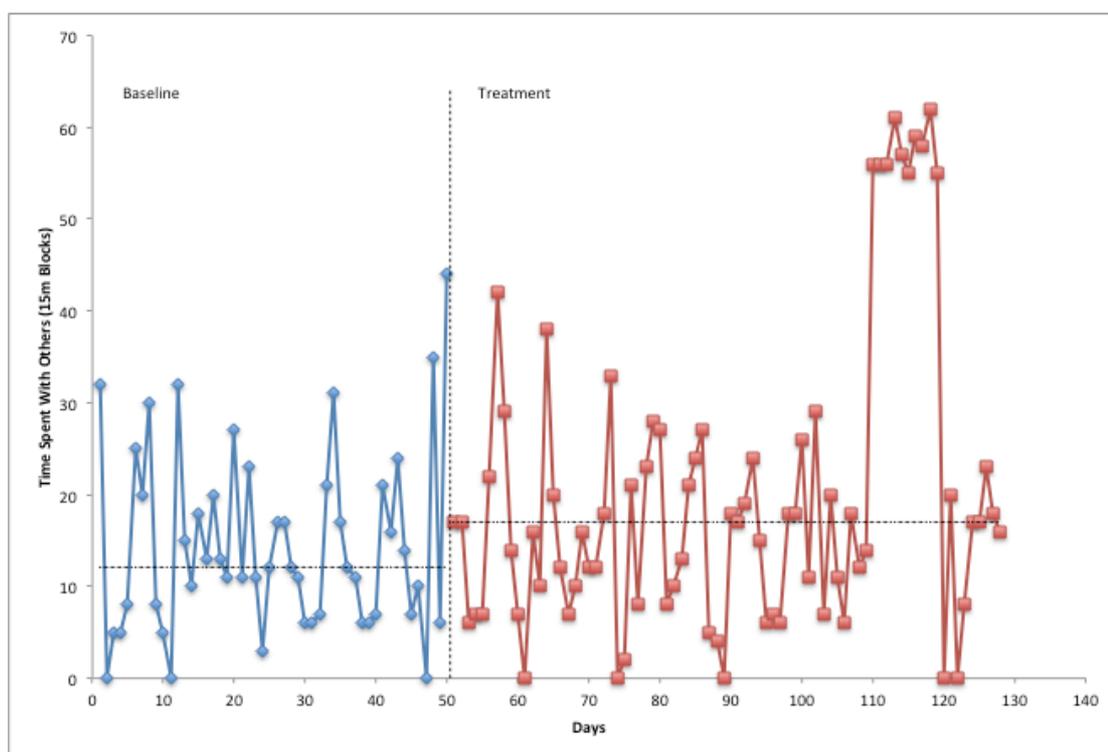


Figure 82. Case 7 Minutes spent per day spent with other people across baseline and treatment phases.

The “spike” in time with others visible in the graph above at Week 7 of the treatment phase was associated with the preparation and distribution of advertising flyers as described in the previous section. Nonetheless, even excluding that spike, there was a discernable increase in time spent with others related to activity scheduling.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

John's Out of Home data across baseline and treatment phases are presented in Figure 83. Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = 1.37, p > .05$). Compared to baseline, all three statistical tests applied detected a statistically significant increase in the amount of time John spent out of home: C Statistic ($z = 5.94, p << .01$), split middle binomial test ($z = 2.03, p < .05$) and Tau-U ($z = 3.23, p < .01$). The change in phase medians showed an increase of 90 minutes per day spent out of home.

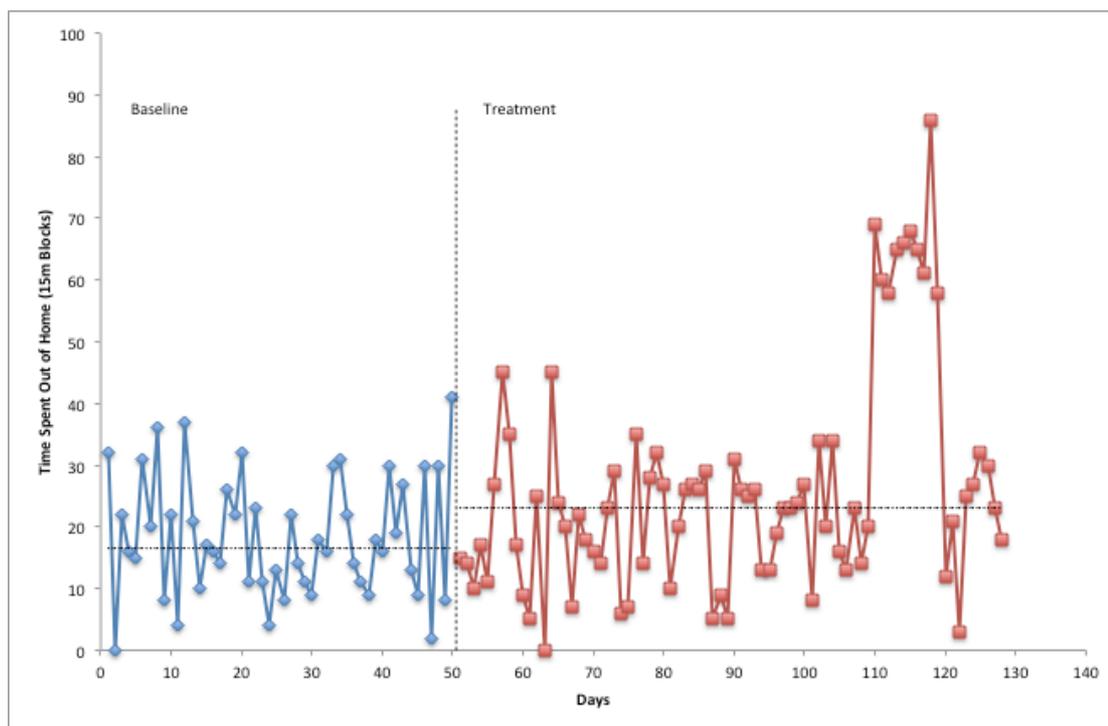


Figure 83. Case 7 Minutes spent per day spent out of home across baseline and treatment phases.

The spike in time out of home at Week 7 of the treatment phase was associated with the preparation and distribution of advertising flyers as described in the previous section. Nonetheless, even excluding that spike, there was a discernable increase in time spent out of home related to activity scheduling.

7.1.5 Therapist/Client Relationship

John's scale scores from the Barrett-Lennard Relationship Inventory: Observer Form (OS-64) across the treatment phase are presented in Figure 84. The OS-64 was administered at 4, 8, and 12 week periods during treatment.

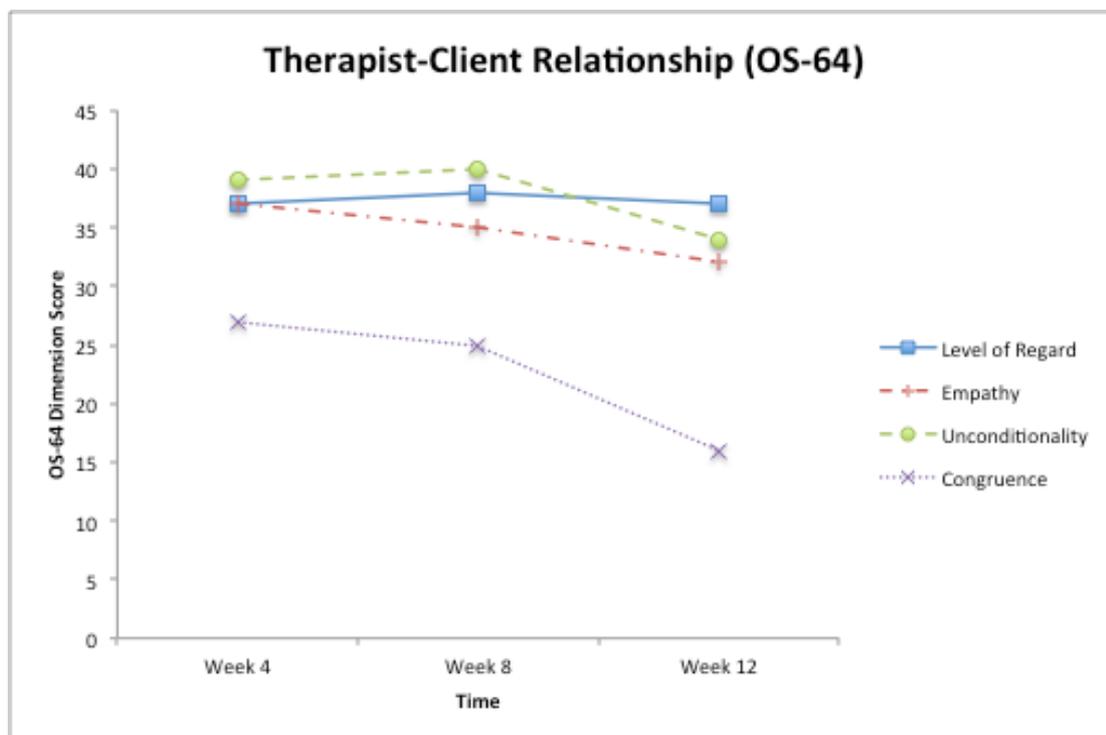


Figure 84. Case 7 OS-64 Assessment of Therapy Relationship Variables across the treatment phases.

Inspection shows that the unconditionality, empathy and level of regard scales were relatively consistent across the treatment phase, while the congruence scale dropped towards the end of the treatment phase. All dimension scores commenced and remained above the threshold of 0 for a “level adequate for a constructive relationship” (Barrett-Lennard, 1986).

7.1.6 Behavioural Cusps

Formal activity scheduling commenced at Week 3, and though it is difficult to quantify, John did seem to engage in activities that could qualify as behavioural cusps. John's results show a significant decrease in standardised anxiety measures (BAI and DASS-21 Anxiety Scale). Activities scheduled for John included, doing exercise, stretching, walking, email and contacting his sisters via email, going shopping in town, participating in community gardening, and scheduling tasks to work through a lost

relationship, writing a card and a sending a present to his son (with whom he had a challenging relationship), and cleaning up his residence which he had been avoiding for some time.

When asked at 2-month follow-up about his activities and behaviours, John reported that he had been working more, and was more active in social activities. He described that life had been progressing well and that he was more able to manage stressful situations, and had noticed that he had more energy to engage in activities. He related that he had been spending more time with friends and “avoiding things less”. He reported a reduction in his anxiety in social settings and reported an overall reduction in anxiety, including the need to go to the toilet.

7.1.7 Treatment Integrity

All of John’s treatment sessions were audio-recorded and two sessions were randomly selected and independently scored for treatment integrity. Inter-observer agreement averaged 90.6% across scored sessions with 96.5% of therapist in-session behaviour compatible with the treatment modality (BATA).

7.1.8 Post-Treatment Diagnosis

At the end of the treatment phase, John reported a significant and consistent decrease in his everyday stress and anxiety levels reflected by his BAI scores, and the stress and anxiety scales in the DASS-21. John stated that he had been more active in working through things that he previously avoided, including cleaning. He stated that he was working more, and coping well, and was more socially active. Post-treatment, John no longer met DSM-IV criteria for Panic Disorder with agoraphobia, and maintained this 2 months post-treatment, indicating that the changes in behaviour were robust and maintained without contact with therapy.

7.2 Case 8: Catherine

7.2.1 Characteristics

"Catherine" was a 48 year old writer at the time of the study, residing in a regional area in the South-West of Western Australia.

She stated that she had received previous counselling, including Jungian work, and psychotherapy for depression and posttraumatic stress symptoms.

By way of background history, Catherine reported that she was one of three siblings and was born on the east coast of Australia and that her parents separated when she was 7 years of age. Catherine described difficult childhood events. She stated that she had two adolescent children. Catherine reported that she was previously married when she was 18 years old. She described that her current husband is 20 years older than her. She reported that her father was living in a nursing home and her mother and that her sisters resided in different states of Australia.

Catherine stated that she was involved in a community garden and that there were high expectations of her, making her feel overwhelmed. She reported that she had a tendency to want to please people, and described that she felt guilty if she did not feel like she had contributed enough to the community garden. She stated that she offered more than she could give and could not cope with her studies.

She stated that she placed significant pressure on herself. Catherine described that she is anxious in social settings, feels that others are judging her, and that she suffered while enduring through social situations. She reported that she worried about things generally, including her children, her work commitments, her father's health, and her studies. Catherine described current symptoms of tenseness, getting tired easily, difficulty with concentration, general irritability, tension in her body, and difficulties with sleep. Catherine stated that she was teaching creative writing and indicated that she thought she had taken on too much, leading to her feeling overwhelmed.

7.2.2 Intake Assessment

Based on her responses to the MINI, Catherine fulfilled DSM-IV criteria for Social Anxiety and General Anxiety Disorder. At intake, Catherine scored 15, in the mild range on the BAI, 8 on the DASS-21 Depression scale (normal range), 8 on the DASS-21 Anxiety Scale (mild range), and 26 on the DASS-21 Stress Scale (severe range).

7.2.3 Standardised Anxiety-Related Outcomes

Catherine's BAI scores are presented graphically in Figure 85. All three statistical analyses of Catherine's BAI raw scores across all phases revealed evidence of downward change across phases: C Statistic: ($z = 2.88, p < .01$), split-middle binomial test ($z = 2.45, p < .01$), and Tau-U ($z = 3.13, p < .01$). The changes in BAI scores are clinically meaningful because Catherine's scores moved from the mild range into the low end of the normal range.

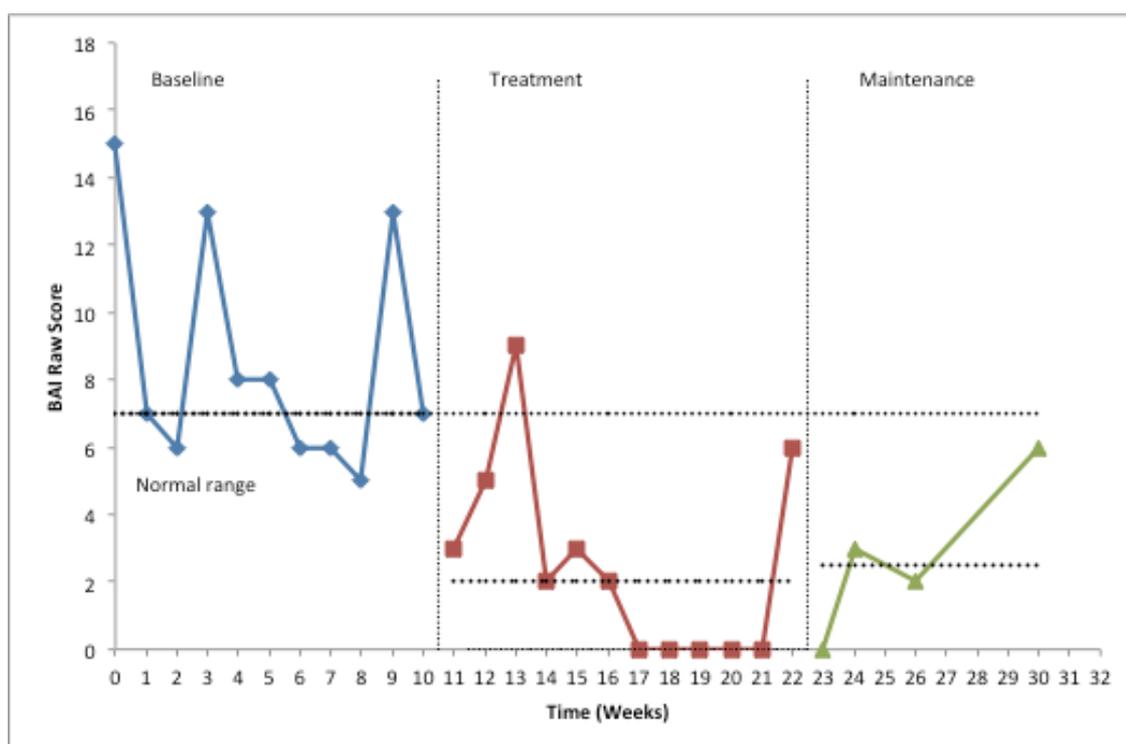


Figure 85. Case 8 BAI raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 7 : minimal, 8-15: mild, 16-25: moderate, and ≥ 26 : severe.

There was an increase of Catherine's stress level at Week 22 (towards the end of the treatment phase). Catherine reported there was some paperwork that she needed to organise and that she was negotiating jobs for her work that may have impacted on her stress levels. She described, however, that everything had worked out well, and she was confident to negotiate a good professional rate with her client. The "spike" at Week 30 (final follow-up session) was, Catherine reported, due to deterioration in her stepmother's health condition.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Two of the three statistical analysis of Catherine’s raw scores for DASS-21 Anxiety Scale, shown graphically in Figure 86, showed statistically significant downward change across phases: split-middle binomial test ($z = 1.95, p < .05$), and Tau-U ($z = 2.89, p < .01$). The C Statistic ($z = 0.891, p > .05$) did not detect a trend in the data. The changes in DASS-21 Anxiety Scale scores are clinically meaningful because Catherine’s scores moved from the moderate range into the normal range.

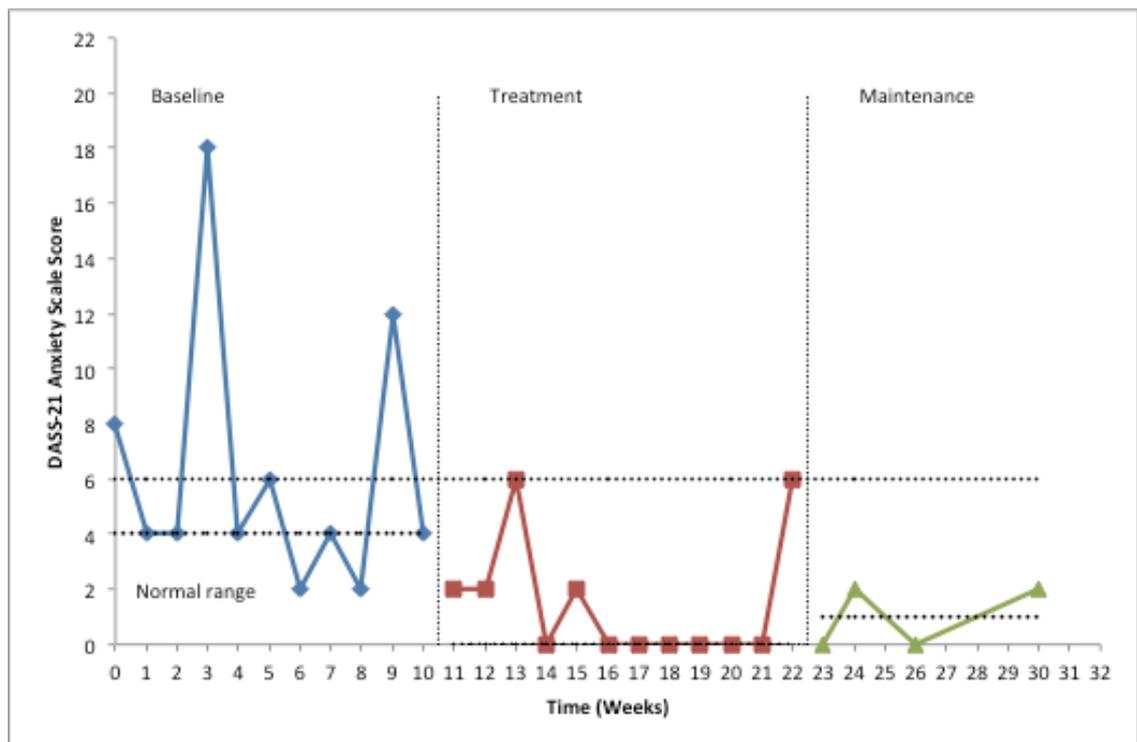


Figure 86. Case 8 DASS-21 Anxiety raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 6 : normal, 7-10: mild, 11-14: moderate, 15-19: severe, and ≥ 20 : extremely severe.

Similar “spikes” at Weeks 21 and 30 are observed in Catherine’s DASS Anxiety scale scores as were observed in her BAI scores.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

All three statistical analysis of Catherine’s raw scores for DASS-21 Stress Scale scores for Catherine, which are shown graphically in Figure 87, showed significant downward change in the data across phases with the C Statistic ($z = 3.014, p < .01$), split-middle binomial test ($z = 2.913, p < .01$) and Tau-U ($z = 3.27, p < .01$). Clinically, Catherine’s DASS-21 Stress Scale scores moved from the border between the mild range into the normal range over the course of treatment.

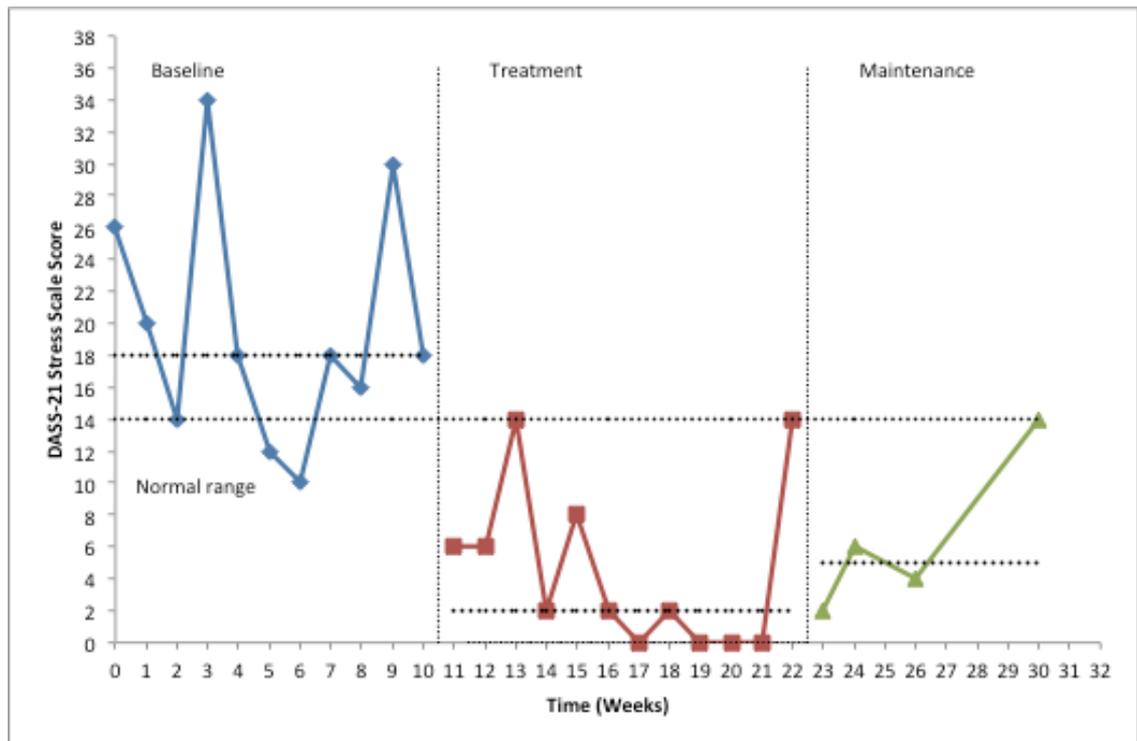


Figure 87. Case 8 DASS-21 Stress raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 14 : normal, 15-18: mild, 19-24: moderate, 25-33: severe, ≥ 34 : extremely severe.

Similar “spikes” at Weeks 21 and 30 are observed in Catherine’s DASS Stress scale scores as were observed in her BAI and DASS Anxiety scale scores.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

None of the statistical tests performed on Catherine's DASS-21 Depression Scale raw scores depicted in Figure 88, were statistically significant at the $\alpha=.05$ level of significance: the C Statistic ($z = 0.61, p > .05$), the split-middle binomial ($z = 0.00, p > .05$), and Tau-U ($z = -0.77, p > .05$) were all not statistically significant. Catherine's DASS-21 Depression Scale raw scores remained in the normal range across baseline, treatment and maintain phases.

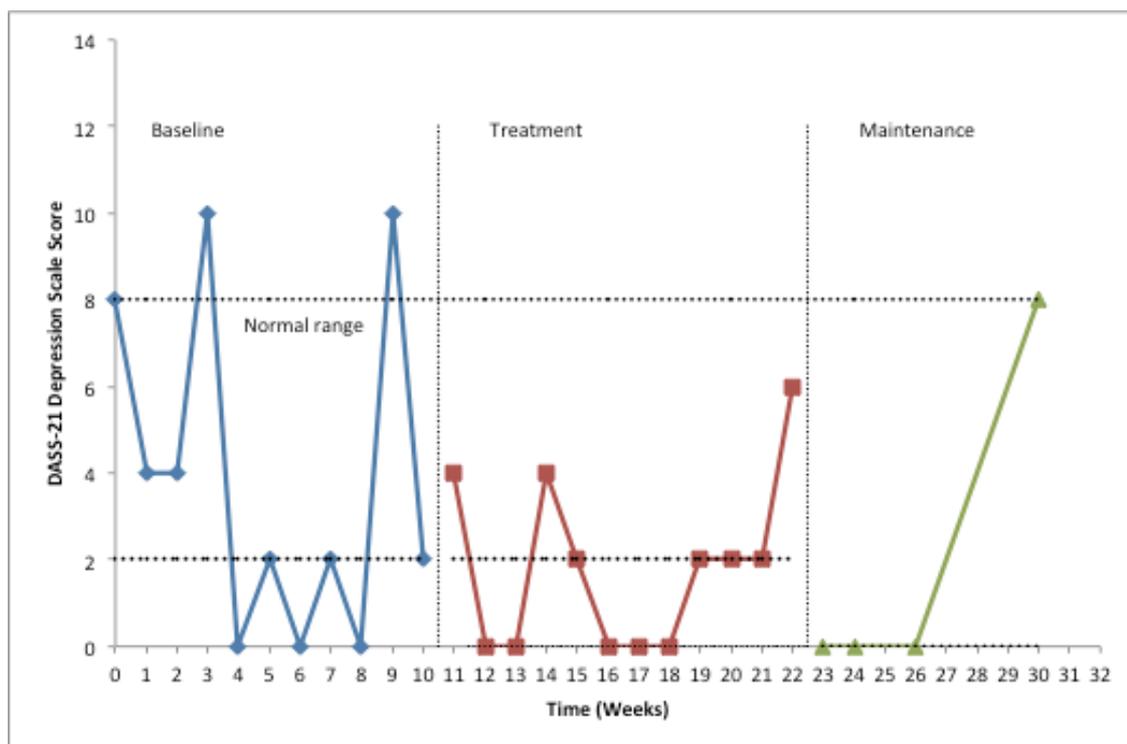


Figure 88. Case 8 DASS-21 Depression raw scores at baseline, treatment and maintenance phases.

Note: Scores ≤ 8 : normal, 9-12: mild, 13-20: moderate, 21-27: severe, and ≥ 28 : extremely severe.

Similar factors to those for Catherine's anxiety and stress levels were associated with "spikes" in her reported level of depressive symptoms at Weeks 22 and 30.

7.2.4 Self-Monitored Anxiety and Activity Outcomes

Catherine's DARS scores are presented in Figure 89. Catherine completed a 77 day baseline phase. Analysis of the baseline phase data showed evidence of an upward trend as indicated by the C Statistic ($z = 5.16, p < .01$). Across the phases, a downward change was shown by all the three statistical tests: C Statistic ($z = 9.33, p \ll .01$), split middle binomial test ($z = 4.47, p \ll .01$), and Tau- U ($z = 8.39, p \ll .01$). The difference in phase medians was 12 points.

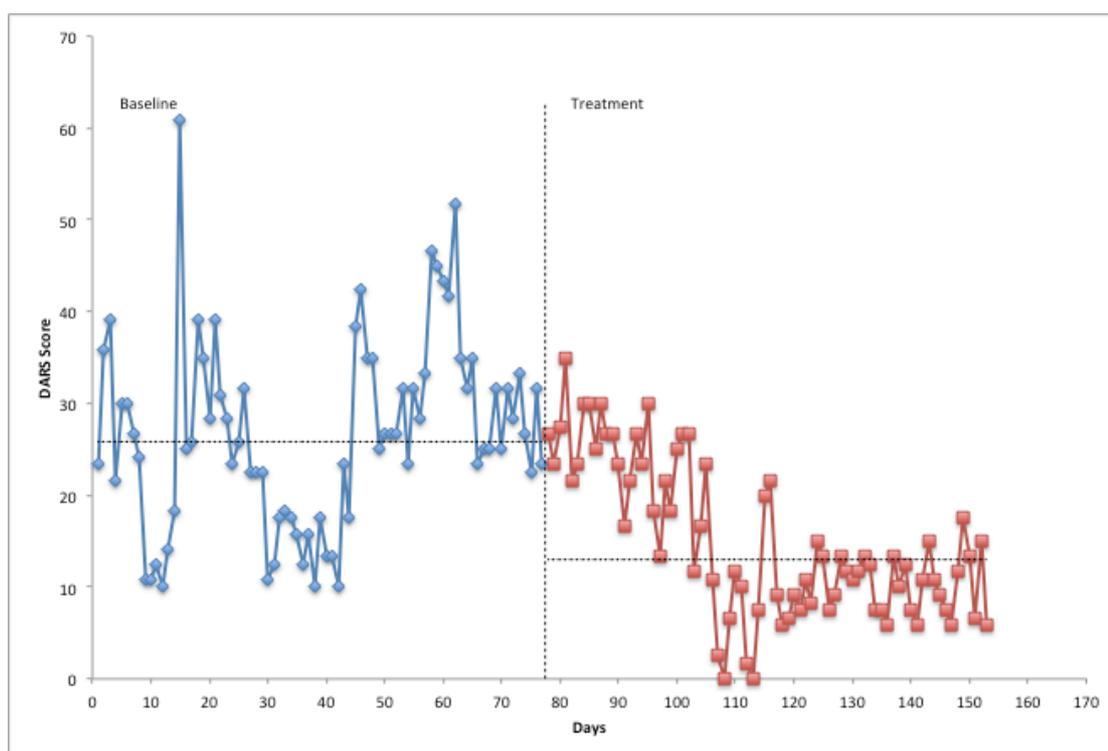


Figure 89. Case 8 Daily Anxiety Rating Scale (DARS) scores across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Catherine's self- and other-care data across baseline and treatment phases are presented in Figure 90. Analysis of the baseline phase revealed an upward trend within the data as indicated by the C Statistic ($z = 2.06, p < .05$). Across the phases, an upward change across phases was detected by all three statistical tests: C Statistic ($z = 6.96, p \ll .01$), split middle binomial test ($z = 6.46, p \ll .01$), and Tau- U ($z = 7.18, p \ll .01$). The increase in phase medians indicated an increase during the treatment phase of 5 hours and 15 minutes per day. The increase in her self and other care reflects her consistent efforts in attending gym, talking regular walks and meditation.

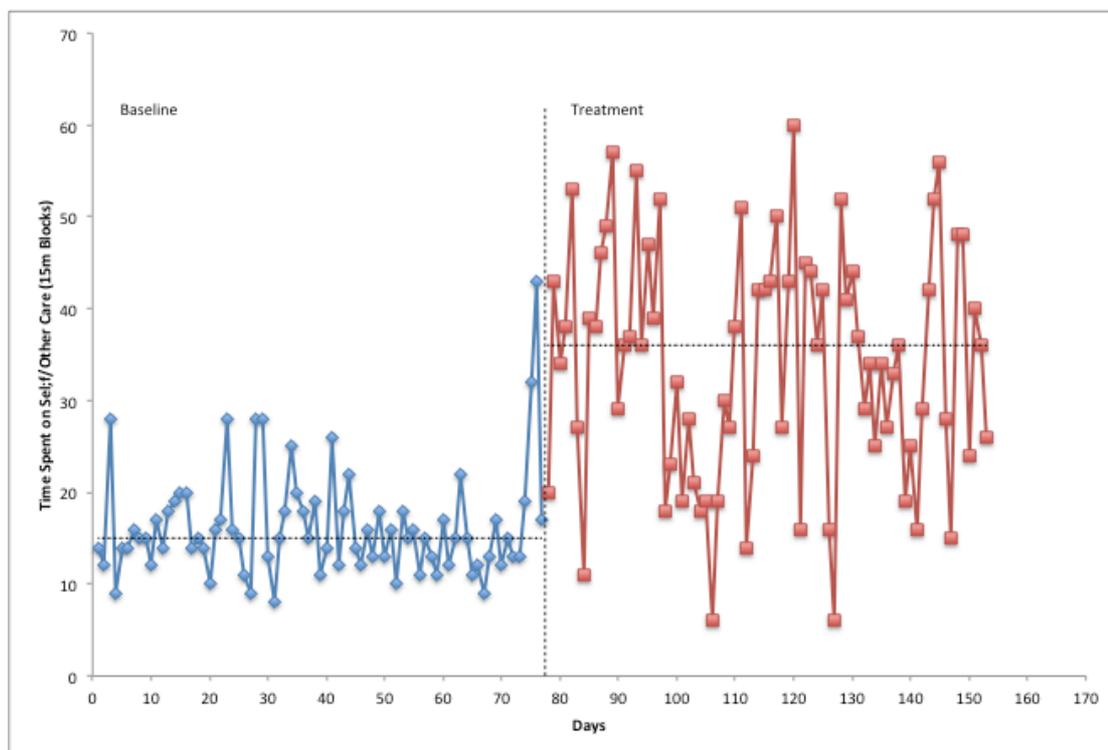


Figure 90. Case 8 Minutes spent per day on Self- and Other- Care baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Catherine's Housework and Errands data across baseline and treatment phases are presented in Figure 91. Statistical analysis of the baseline phase detected an upward trend within the data indicated by the C Statistic ($z = 1.82, p < .05$), but visual inspection of the data does not show a clear upwards or downwards slope. Across all phases, only the C Statistic ($z = 4.03, p < .01$) detected a trend in the data. The split middle binomial test ($z = 1.48, p > .05$) and Tau-U ($z = 0.74, p > .05$) both did not show statistically significant change across phases. The difference in phase medians showed an increase in housework and errands activities of 30 minutes per day.

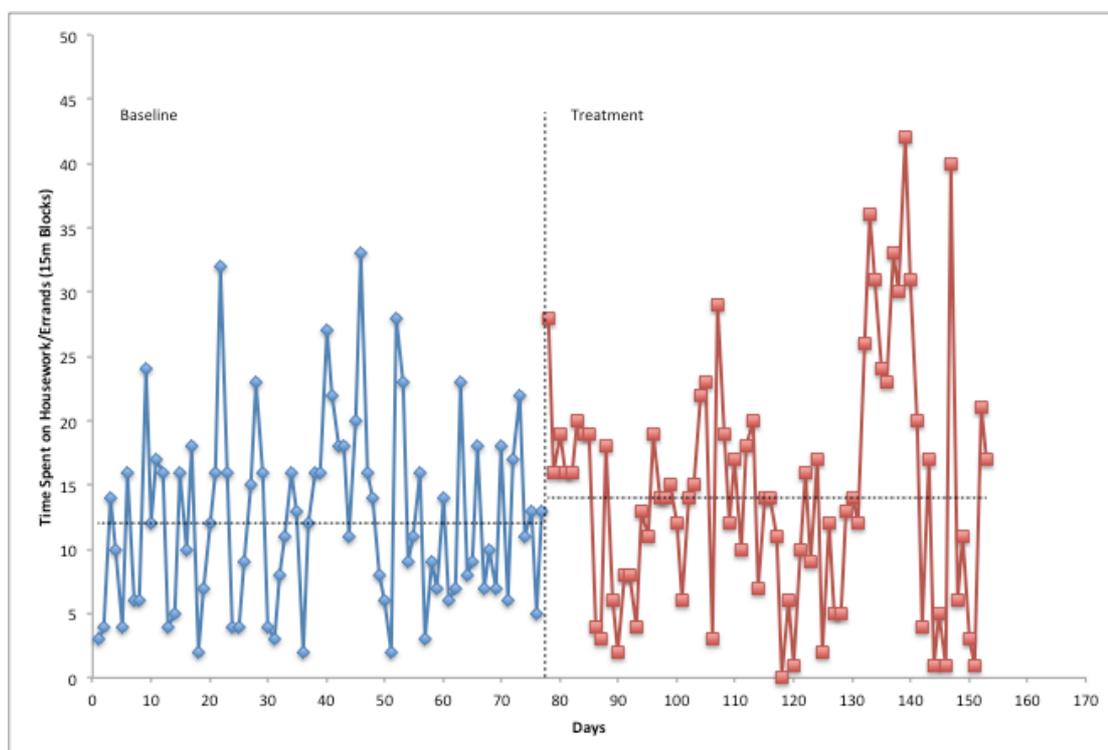


Figure 91. Case 8 Minutes spent per day on Housework and Errands across baseline and treatment phases.

Around the time of Day 130, Catherine reported being generally busy with organising her son's work experience, preparing a text, and booking an appointment with her accountant. She was also helping her friend promotional work and organising errands for her writing project.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Catherine's Paid and Unpaid Work data across baseline and treatment phases are presented in Figure 92. Analysis of the baseline data using the C Statistic ($z = 3.28$, $p < .01$) detected what appeared to be a downward trend during the baseline phase. Statistical analysis of the data across phases using all three tests detected a decrease in Catherine's paid and unpaid work activities: C Statistic ($z = 6.97$, $p < .01$), split middle binomial test ($z = 6.85$, $p < .01$), and Tau-U ($z = 6.32$, $p < .01$). The difference in phase medians shows a decrease in Catherine's work activities of 4 hours and 45 minutes per day.

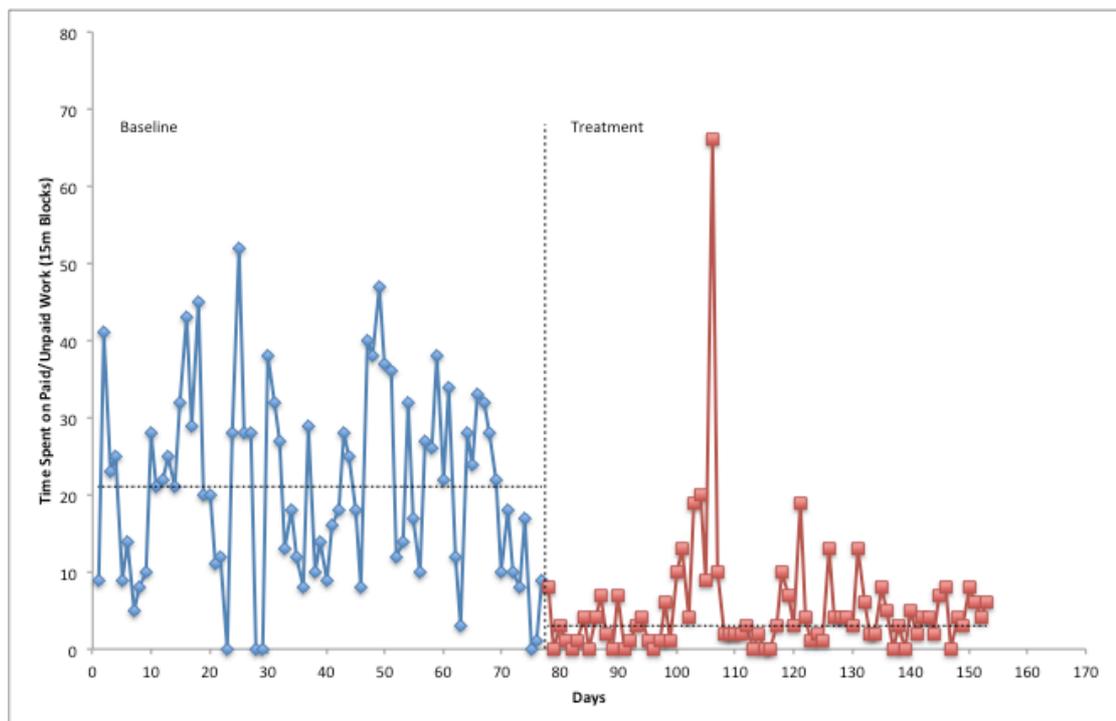


Figure 92. Case 8 Minutes spent per day on Paid and Unpaid Work across baseline and treatment phases.

Visual inspection of the graph above shows a “spike” at Day 106. Catherine travelled to Perth for 3 days for work.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Catherine's Interests, Hobbies, and Recreation data are presented in Figure 93. Analysis of the baseline phase revealed a downward trend within the data, as indicated by the C Statistic ($z = 2.54, p < .05$). Across the phases, a downward change across phases was detected by all of the three statistical tests: C Statistic ($z = 2.44, p < .01$), split middle binomial test ($z = 2.14, p < .05$), and Tau- U ($z = 2.61, p < .01$). Comparison of the phase means showed a decrease in Catherine's activities in interests, hobbies and recreation of 75 minutes per day.

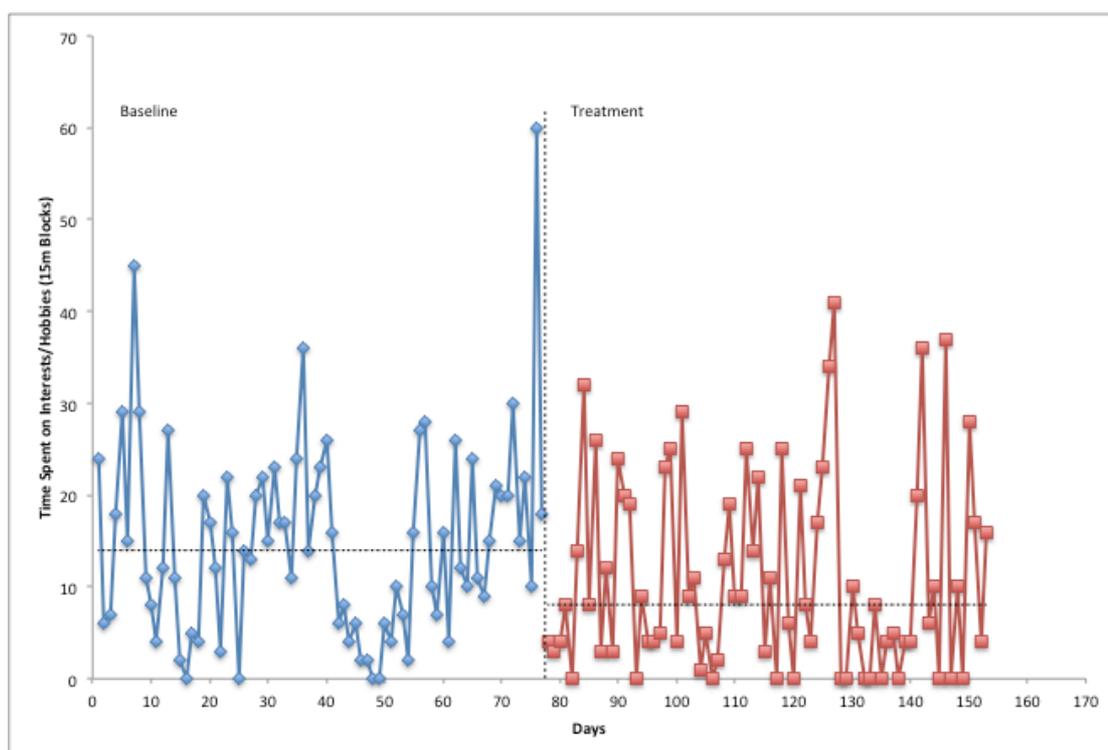


Figure 93. Case 8 Minutes spent per day on Interests, Hobbies, and Recreation across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Catherine's with others data (as opposed to alone) across phases are presented in Figure 94. Analysis of the baseline phase revealed a downward trend within the data as indicated by the C Statistic ($z = 2.26, p < .05$). Across the phases, an upward change was shown by one of the three statistical tests: C Statistic ($z = 3.13, p < .01$), while the split middle binomial test ($z = 0.82, p > .05$) and Tau-U ($z = 1.69, p > .05$) did not detect a change in the data across phases. The difference in phase medians shows an increase of 30 minutes a day in Catherine's time with others.

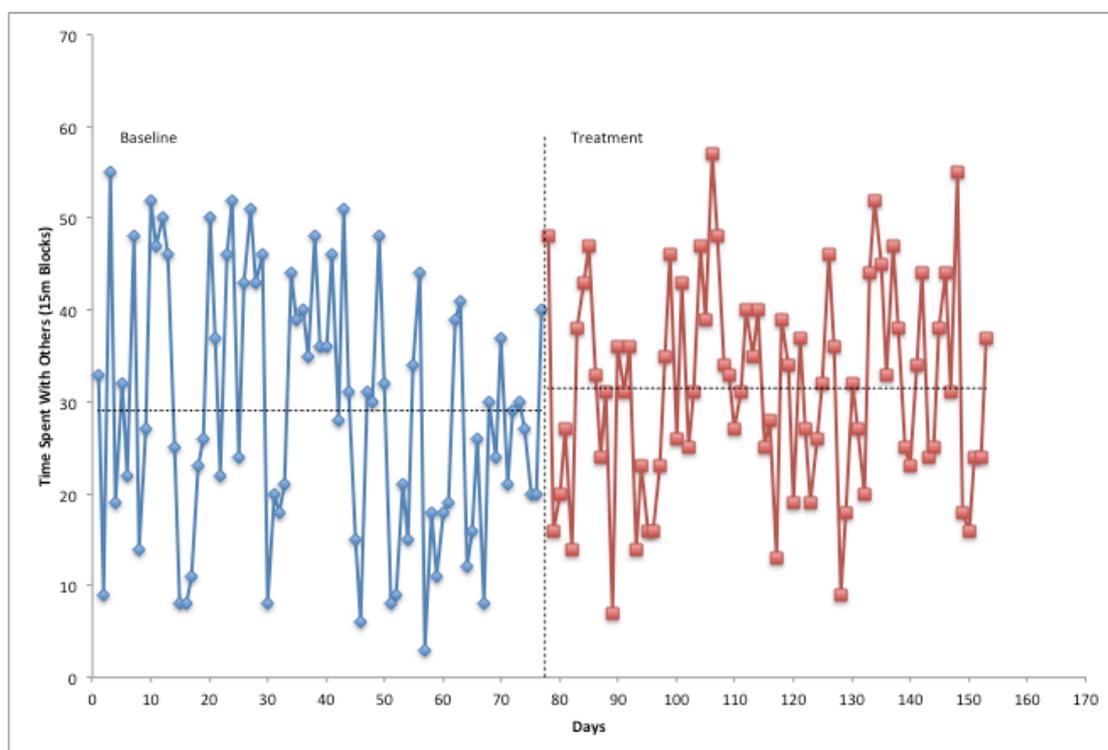


Figure 94. Case 8 Minutes spent per day spent with other people across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Catherine’s “out of home” (as opposed to “at home”) data across baseline and treatment phases are presented in Figure 95. Analysis of the baseline phase revealed an absence of trend as indicated by the C Statistic ($z = 1.53, p > .05$). Across the phases, an upward change across phases was shown by all three statistical tests: C Statistic ($z = 6.14, p \ll .01$), split middle binomial test ($z = 7.16, p < .01$), and Tau-U ($z = 7.05, p \ll .01$). Comparison of phase medians shows an increase in Catherine’s out of home activities of just under 5 hours per day.

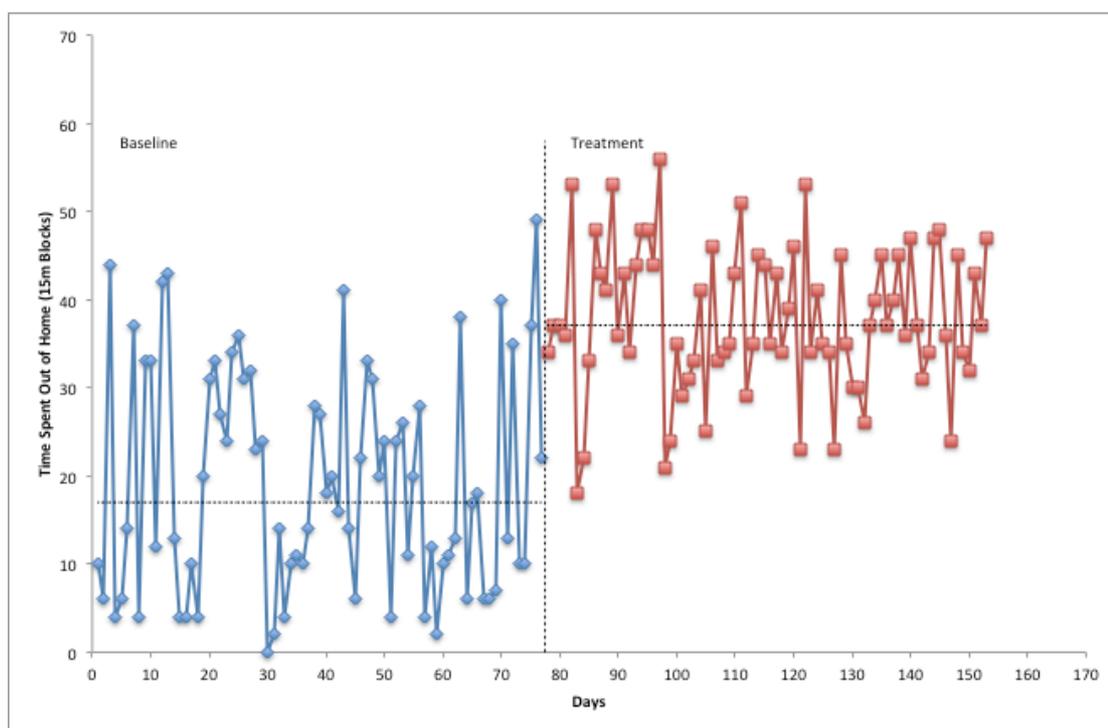


Figure 95. Case 8 Minutes spent per day spent out of home across baseline and treatment phases.

Visual inspection shows a clear change in time spent out of home between the baseline and treatment phases. Catherine was a very enthusiastic participant who embraced the aims and mechanisms of BATA very early, even before formal activity scheduling commenced at Week 3 of the treatment phase.

7.2.5 Therapist/Client Relationship

Catherine's total scale scores across the treatment phase from the Barrett-Lennard Relationship Inventory: Observer Form (OS-64) are presented in Figure 96. The OS-64 was administered at 4, 8, and 12 week periods during treatment.

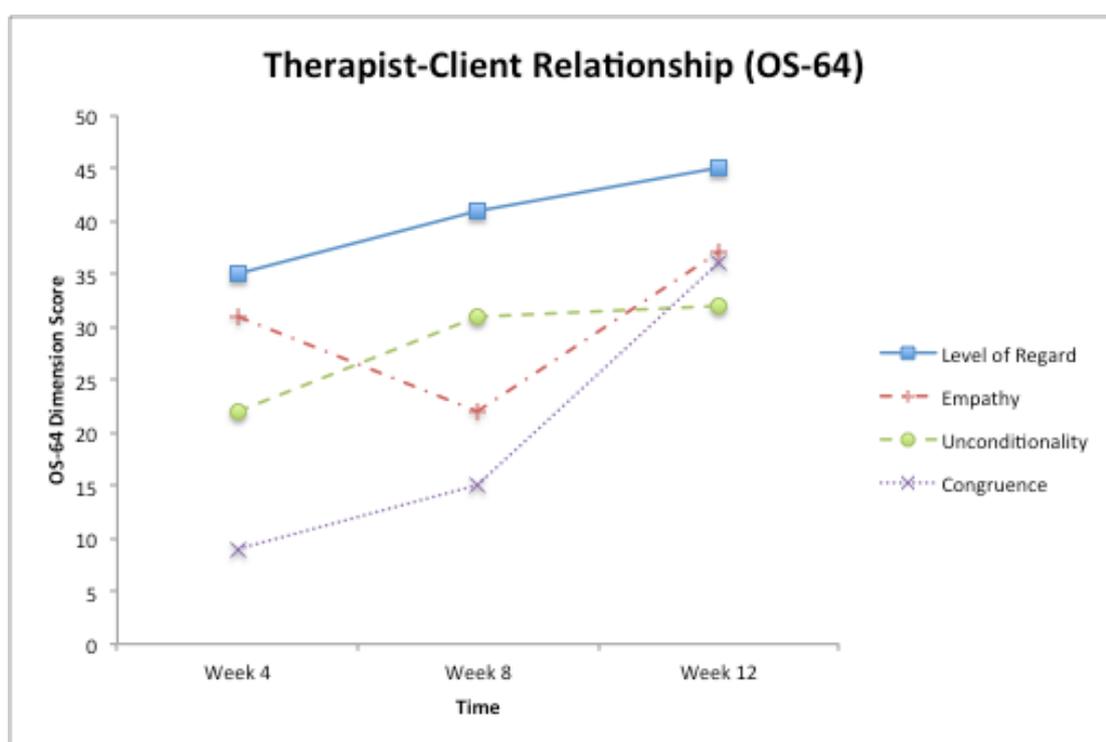


Figure 96. Case 8 OS-64 Assessment of Therapy Relationship Variables across the treatment phases.

Inspection shows that the empathy scale dropped between Week 4 and Week 8 but thereafter recovered, while the level of regard, unconditionality and congruence scores showed an upward trend across the repeated measurements. All dimensions started and remained above the threshold of 0 for “an adequate level for a constructive relationship” (Barrett-Lennard, 1986).

7.2.6 Behavioural Cusps

Catherine engaged in activities that could qualify as behavioural cusps when formal activity scheduling commenced. Formal activity scheduling commenced on Week 3, and visually, this coincides with a drop in Catherine's anxiety. Catherine's results show a significant decrease in standardised anxiety measures. Activities scheduled for Catherine included attending regular gym, meditation, contact with

siblings, lunch with friends, reading, journaling, organising and spending quality time with her children. This is consistent with behavioural change from Catherine's activity reports, for example, there was an increase in self/other care, including taking vitamins, exercise, housework and errand (from Week 8), including organising her son's work experience, her own errands, and an increase in time spent with others, including friends and family.

When asked at a 2 month follow up, Catherine reported that although she was still as busy as before, she was coping well and maintaining the improvements in standardised anxiety scales gained during treatment. Catherine reported that she did not feel overwhelmed and more was able to focus on her projects. Catherine reported that she now addressed the problems she faced in her life and made special effort to take action, which made her feel "more present". She described that she felt that the BA approach was practical, helping her to reduce procrastination.

7.2.7 Treatment Integrity

All of Catherine's treatment sessions were audio-recorded and two sessions were randomly selected and independently scored for treatment integrity. Inter-observer agreement averaged 90.3% across scored sessions with 99.6% of therapist in-session behaviour compatible with the treatment modality (BATA).

7.2.8 Post-Treatment Diagnosis

At the end of the treatment phase, Catherine stated that she was more conscious of her choices in life. Of special note was that there was a sharp increase in her stress and anxiety levels at the 8 week follow up, when Catherine reported that a family member's health condition had deteriorated markedly that had impacted on her stress levels. However, Catherine commented that generally she had been busier and was coping well. Her BAI and DASS-21 scores showed that overall she had maintained the gains achieved during treatment. She stated that she did not feel as overwhelmed in life as before beginning BATA. She also stated that she felt more able to "say no" and focus on her study projects. Post-treatment, Catherine no longer met DSM-IV criteria for Social and General Anxiety and maintained this 2 months post-treatment, indicating that the changes in behaviour were robust and were maintained without contact with therapy.

Catherine contacted the author 18 months after her participation in the study to report on the impact of BATA on her. Catherine stated:

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“The work we did together has had a profound effect on my life, helping me to establish health-supporting habits and completely changing my attitude towards ‘anxiety’.

“I now have a daily habit of journaling at the end of the day where I track any habits I am wanting to reinforce or develop, give a number to my highest anxiety level for the day (which helps me track how I'm going), and set my intentions and MIT (most important things) list for the next day.

“This one habit has supported me to develop a whole series of nourishing lifestyle changes, including regular exercise and meditation, more sleep, more reading, much less procrastination, and overall far less anxiety. My anxiety levels tend to sit around the 10-20 mark (out of a hundred) and rarely go higher. When they do, I take action to tackle any worrisome [sic] issues or reflect on how else I can support myself to stay calm and productive (e.g. by meditating more).

“At present I am studying and working, carrying a big workload [sic] of responsibilities, and yet somehow am managing to stay fairly happy and balanced through it all.

“I look back to my work with you as a significant turning point in my life for which I will be forever grateful.”

7.3 Case 9: “Gemma”

7.3.1 Characteristics

"Gemma", was a 43 year old mature aged female part time university student at the time of the study. During her intake interview, she described that she was a full time mother of three children. She reported that she was born in England and had lived in Australia for 15 years.

Gemma reported that her father had passed away 3 years ago due to lung cancer. She described that she never believed that she was “good enough”. She stated that she had a sister who was similar to her mother and that they were both “very anxious” people. Gemma reported that she was in a generally good relationship and had been married for 20 years. She recalled some relationship challenges from 8 years ago. She stated that she and her husband had sought couple counselling at the time and that she then felt much closer to her husband. She described anxiety symptoms including anxiousness, difficulty relaxing, and trouble containing her emotions.

She reported that she used to operate her own business, but because she was anxious about change and afraid of conflict, she was not operating the business at the time of the study. Gemma reported that had been was prescribed with Xanax medication for her anxiety and that she would take it occasionally, but she was not taking medication at the time of assessment. She did not take medication during the study.

7.3.2 Intake Assessment

Gemma reported that she was anxious in social settings, including at university, group situations, and public speaking, and that she was worried about people's reactions to her. She described that she worried generally, including about her weight (she stated that her weight fluctuates, and that she over-ate at times), her university examinations, and worried about her worrying. Her worries were often accompanied by physiological sensations.

Her first recollection of feeling anxious was during the period that she experienced challenges in her marriage. She reported that she felt inadequate, fearful of people judging her, and generally “inferior”. She described that she felt anxious in different settings including situations in which she perceived her children were being “left out” in social settings.

Based on her responses to the MINI, Gemma fulfilled DSM-IV criteria for Social Anxiety and General Anxiety Disorder. At intake, Gemma scored 13 on the BAI

(mild range), 6 on the DASS-21 Depression scale (normal range), 8 on the DASS-21 Anxiety Scale (mild range), and 12 on the DASS-21 Stress Scale (normal range).

7.3.3 Standardised Anxiety-Related Outcomes

Gemma's BAI scores are presented graphically in Figure 97. Two of the three statistical analyses of Gemma's BAI raw scores revealed evidence of a downward change across phases: the C Statistic ($z = 2.417, p < .01$) and Tau-U ($z = 1.98, p < .05$), while the split middle binomial test ($z = 1.50, p > .05$) did not detect statistically significant change between baseline and subsequent phases. The changes in BAI scores are clinically meaningful because Gemma's scores moved from the high end of the mild range during baseline to the low end of the mild range during treatment, and into the normal range during the follow-up phase.

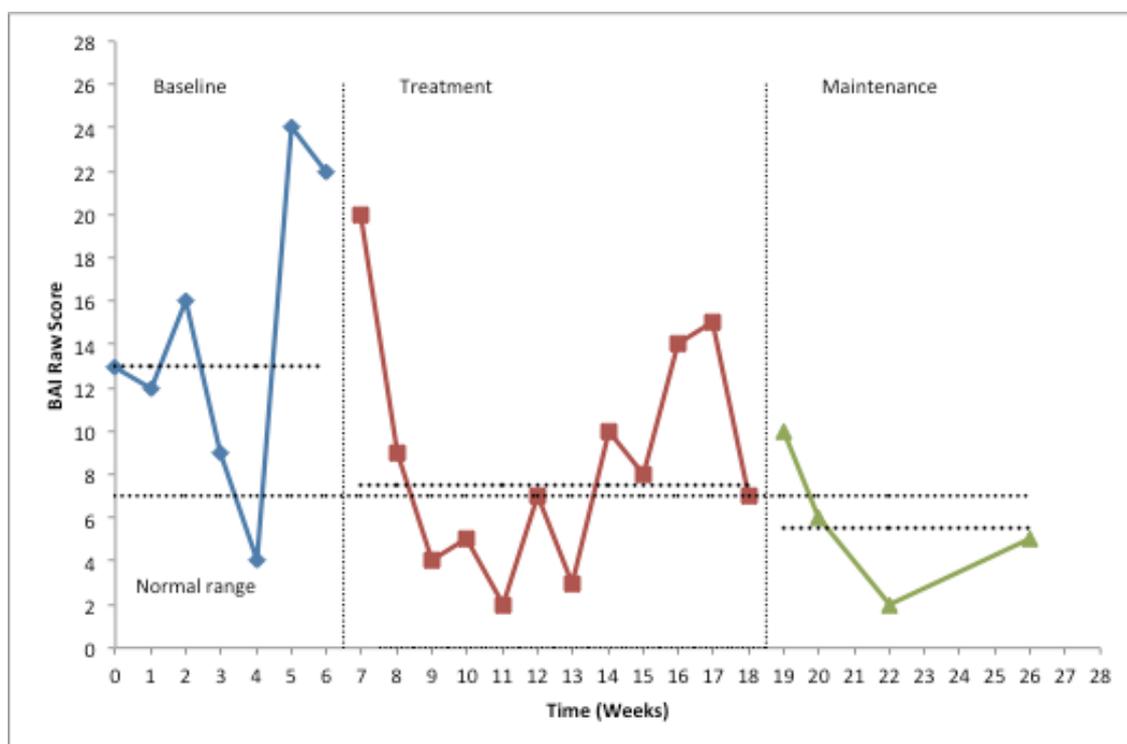


Figure 97. Case 9 BAI raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 7 : minimal, 8-15: mild, 16-25: moderate, and ≥ 26 : severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Gemma's raw scores for DASS-21 Anxiety Scales are shown graphically in Figure 98. One of the three statistical analyses of Gemma's raw scores for DASS-21 Anxiety Scale showed statistically significant downward change across phases: the C Statistic ($z = 2.011, p < .05$). The split middle binomial test ($z = 1.15$, and $p > .05$) and the Tau-U test ($z = 1.19, p > .05$) did not detect statistically significant across-phase change.

The changes in DASS-21 Anxiety Scale scores are clinically meaningful because Gemma's scores moved from the mild range into the normal range.

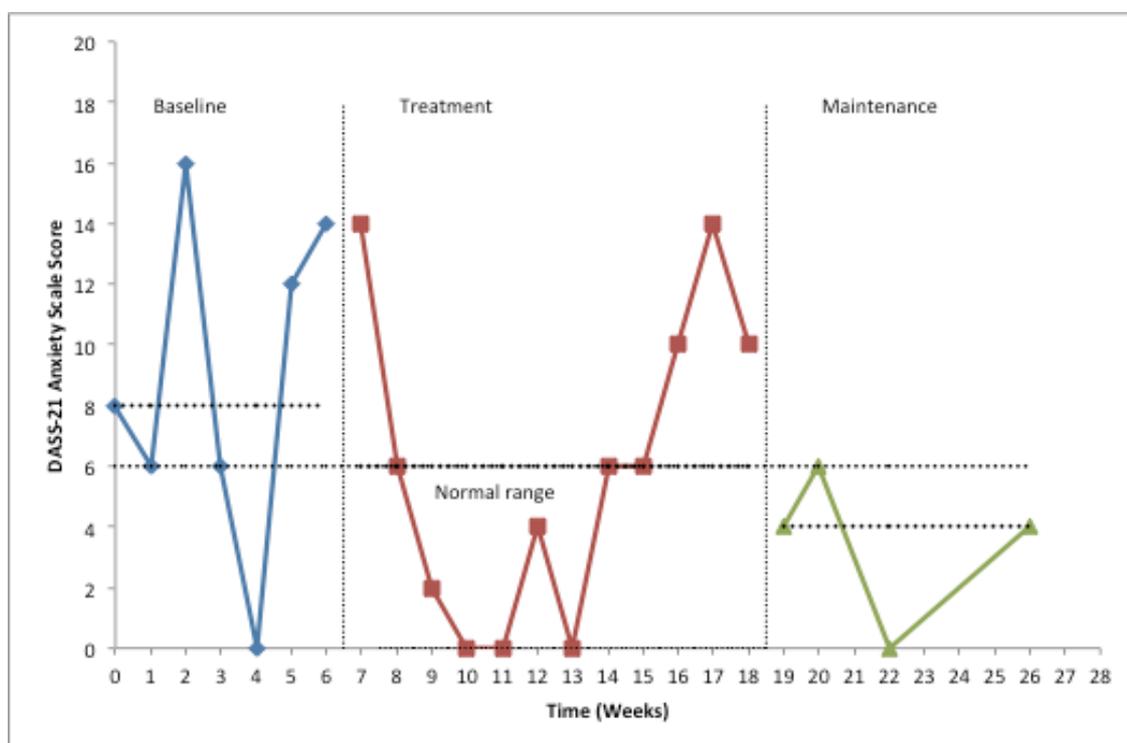


Figure 98. Case 9 DASS-21 Anxiety raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 6 : normal, 7-10: mild, 11-14: moderate, 15-19: severe, and ≥ 20 : extremely severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

All three statistical analysis of Gemma's raw scores for DASS-21 Stress Scale raw scores for Gemma, which are shown graphically in Figure 99, did not detect statistically significant changed in the data across phases: C Statistic ($z = 1.216, p > .05$), split middle binomial test ($z = 0.28, p > .05$), and Tau-U ($z = 1.69, p > .05$).

Clinically, Gemma's DASS-21 Stress Scale scores remained in the normal range across phases.

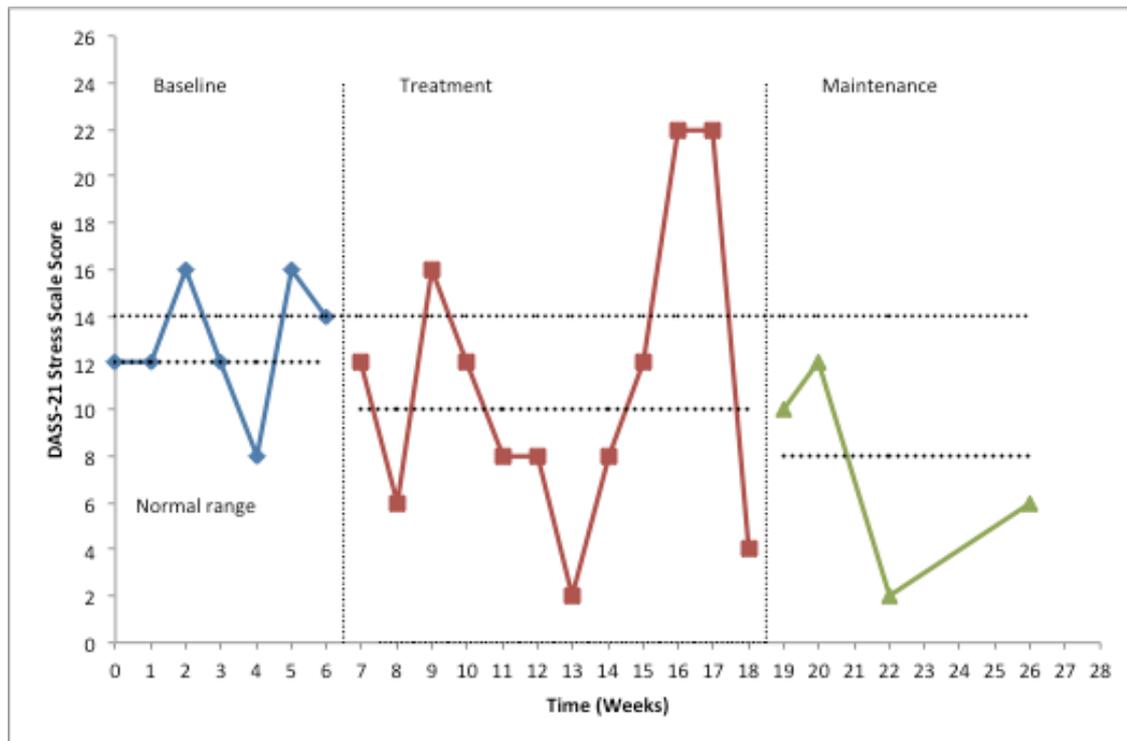


Figure 99. Case 9 DASS-21 Stress raw scores at baseline, treatment, and maintenance phases.

Note: Scores ≤ 14 : normal, 15-18: mild, 19-24: moderate, 25-33: severe, ≥ 34 : extremely severe.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

One of the three statistical tests performed on Gemma's DASS-21 Depression Scale raw scores, depicted graphically in Figure 100, was statistically significant: the C Statistic ($z = 1.944, p < .05$). The split-middle binomial test ($z = 1.26, p > .05$) and the Tau-U test ($z = 0.34, p > .05$) did not detect statistically significant change across phases.

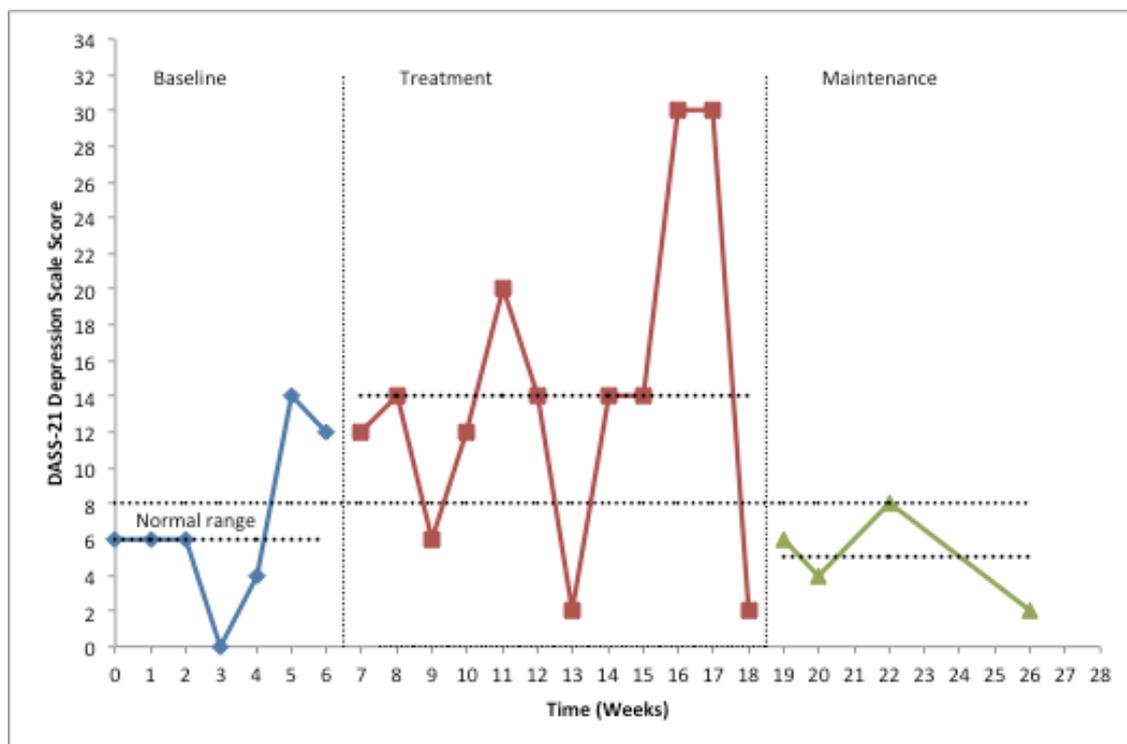


Figure 100. Case 9 DASS-21 Depression raw scores at baseline, treatment and maintenance phase.

Note: Scores ≤ 8 : normal, 9-12: mild, 13-20: moderate, 21-27: severe, and ≥ 28 : extremely severe.

7.3.4 Self- Monitored Anxiety and Activity Outcomes

Gemma's DARS scores are presented in Figure 101. Gemma completed a 41 day baseline phase. Analysis of the baseline data showed an upward trend using the C Statistic ($z = 1.52, p > .05$). Across the phases, an upward change across phases was shown by two statistical tests: C Statistic ($z = 2.90, p < .01$) and the split middle binomial test ($z = 3.31, p < .01$). The Tau-U test ($z = 0.30, p > .05$) did not detect change across phases. The difference between phase medians indicated an increase of 3 points in the DARS scores in the treatment phase.

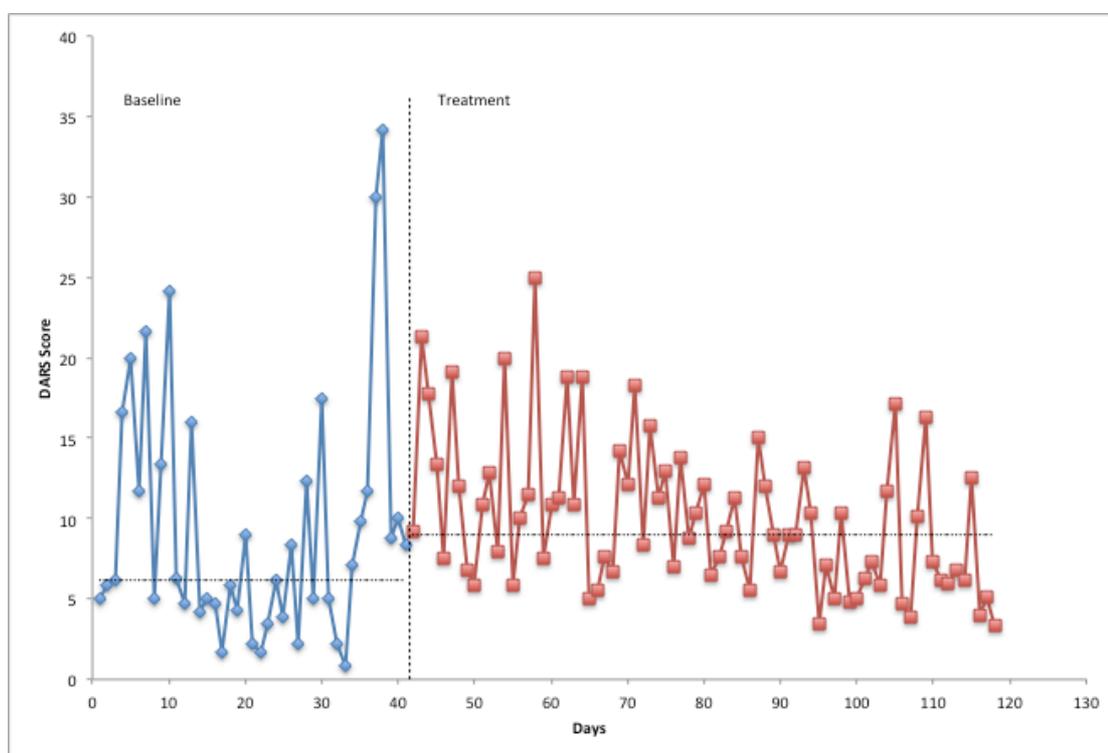


Figure 101. Case 9 Daily Anxiety Rating Scale (DARS) scores across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Gemma's self- and other-care data across baseline and treatment phases are presented in Figure 102. Analysis of the baseline data showed an absence of trend according to the C Statistic ($z = 1.63, p > .05$). Across the phases, there was no statistically significant change detected by the three statistical tests: C Statistic ($z = 0.59, p > .05$), split middle binomial test ($z = 0.07, p > .05$), and Tau- U ($z = 0.46, p > .05$).

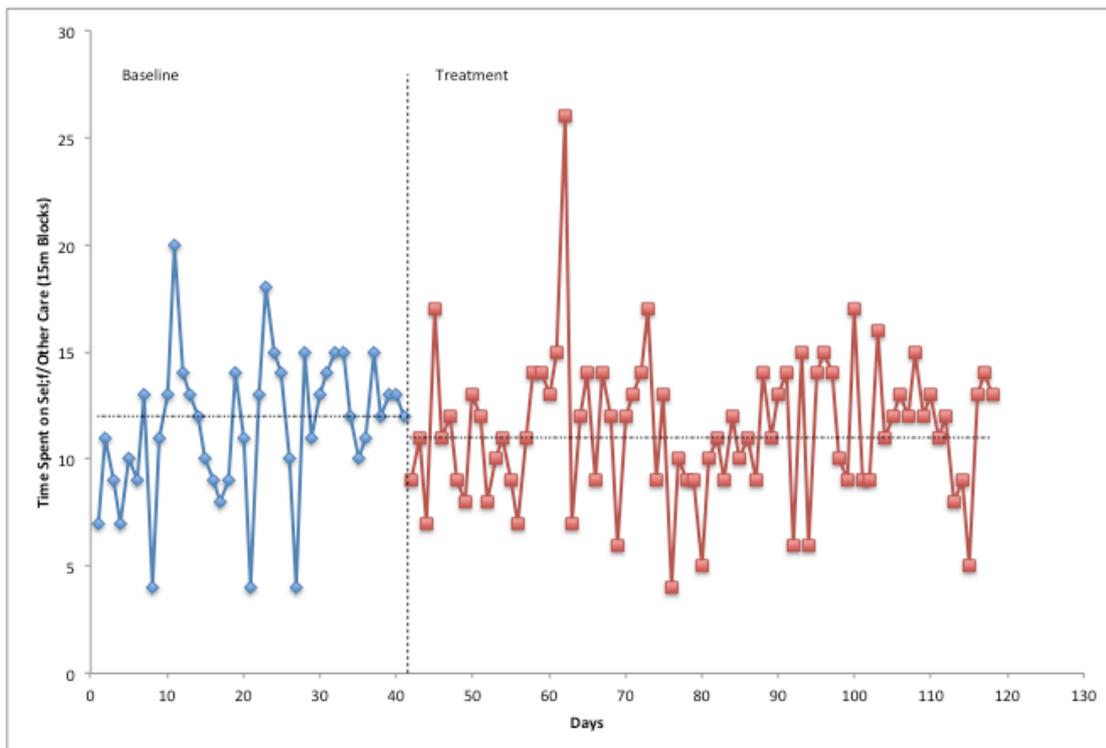


Figure 102. Case 9 Minutes spent per day on Self- and Other- Care baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Gemma's Housework and Errands data across baseline and treatment phases are presented in Figure 103. Analysis of the baseline phase revealed a downward trend within the data, detected by the C Statistic ($z = 2.82, p < .01$). Compared to baseline, one of the three statistical tests showed significant increase in the amount of time Gemma spent on housework and errands: the C Statistic test ($z = 3.69, p < .01$). The split middle binomial test ($z = 0.34, p > .05$) and Tau-U ($z = 1.13, p > .05$) did not detect significant change. There was no difference in phase medians.

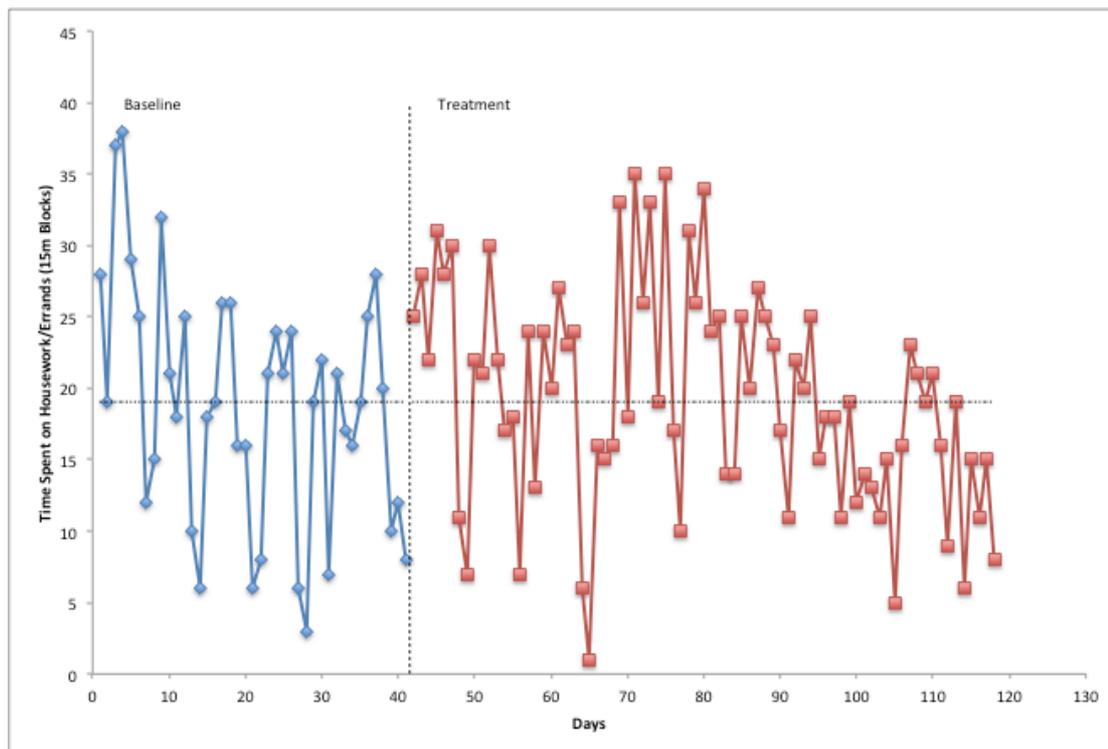


Figure 103. Case 9 Minutes spent per day on Housework and Errands across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Gemma's Paid and Unpaid Work data across baseline and treatment phases are presented in Figure 104. Analysis of the baseline phase using the C Statistic ($z = 3.68, p < .01$) revealed a downward in trend within the data. Compared to baseline, all of the three statistical tests showed a statistically significant change during the treatment phase in the amount of time Gemma spent on paid or unpaid work: C Statistic ($z = 7.22, p < .01$), split middle binomial test ($z = -2.46, p < .01$), and Tau-U ($z = 2.24, p < .05$). The difference in phase medians indicates 105 minutes per day decrease in time spent on paid or unpaid work.

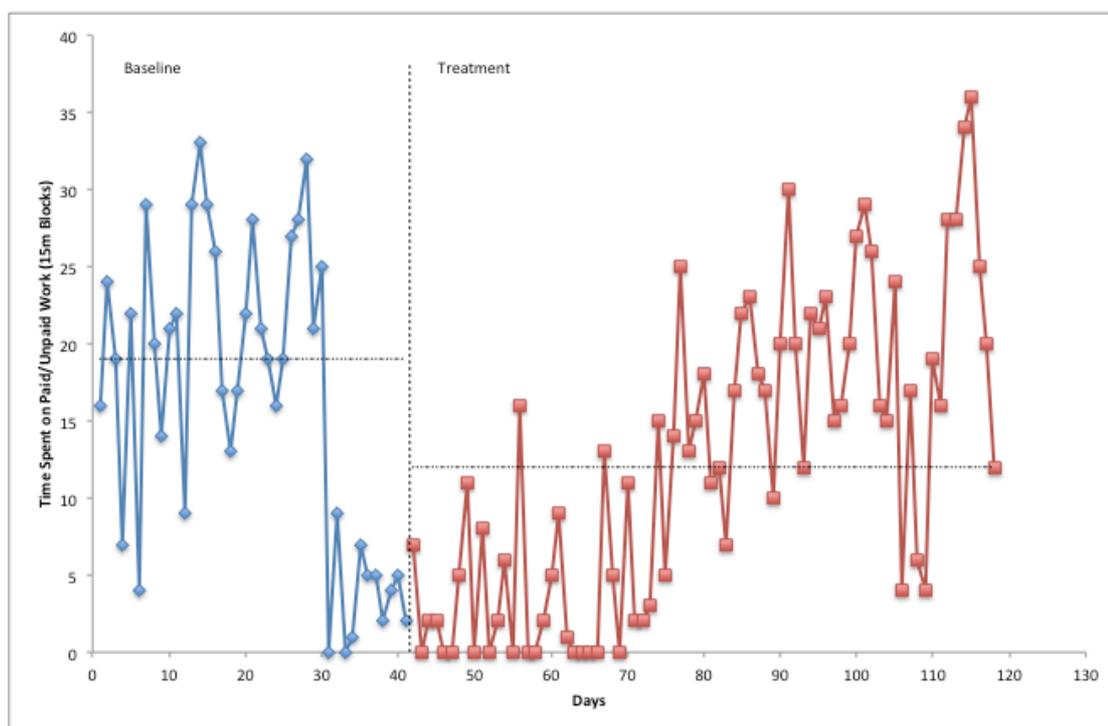


Figure 104. Case 9 Minutes spent per day on Paid and Unpaid Work across baseline and treatment phases.

Gemma was engaged in study, social activities and a long bicycle excursion from Day 30 to Day 70 and did not undertake her usual work activities during this time. Aside from the general stress of not having as much work as she would like to have, her work activities did not seem directly correlated with her self reported daily or weekly anxiety measures.

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Gemma's Interests, Hobbies, and Recreation data are presented in Figure 105. Analysis of the baseline phase revealed an upward trend within the data as indicated by the C Statistic ($z = 1.73, p < .05$). Two of the three statistical tests showed a significant change comparing baseline and treatment phases: C Statistic ($z = 4.74, p < .01$), split middle binomial test ($z = 2.62, p < .01$). The Tau-U test ($z = 0.59, p > .05$) did not detect a statistically significant difference between phases. The difference between phase medians indicates an increase of 60 minutes per day spent on interests, hobbies and recreation.

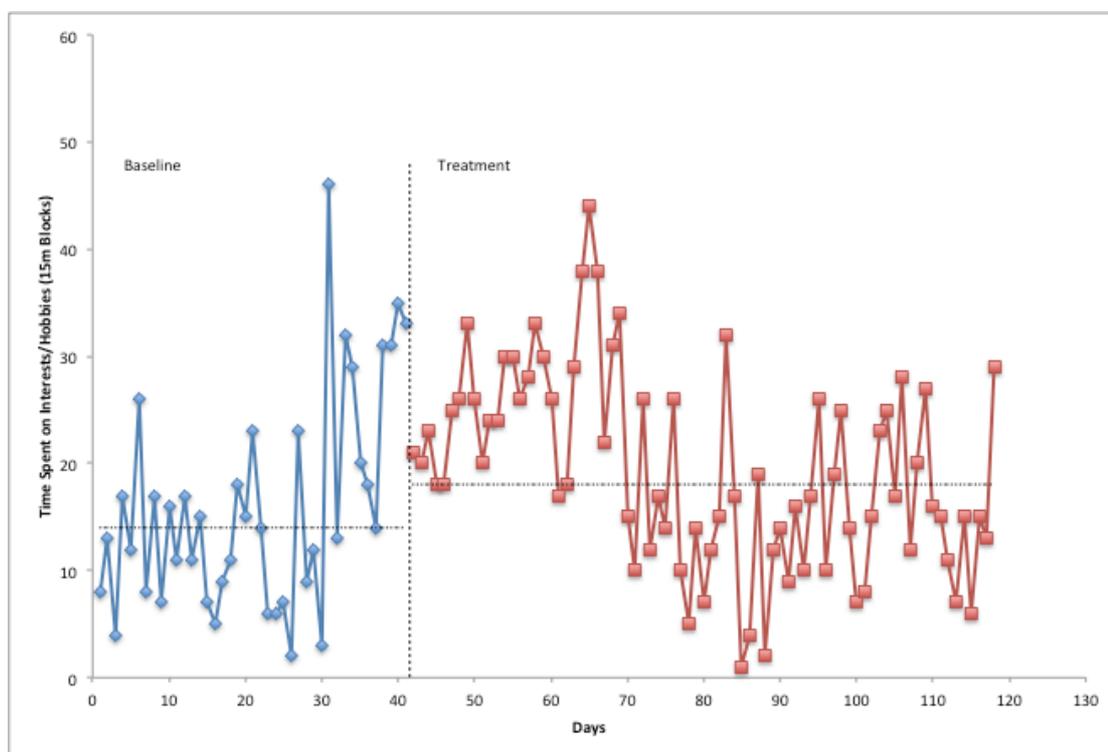


Figure 105. Case 9 Minutes spent per day on Interests, Hobbies, and Recreation across baseline and treatment phases.

The observed increase in hobbies activities from Day 30 to Day 70 was consistent with the reduction in her work activities described in the previous section.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Gemma's data representing time spent with other people (as opposed to alone) across baseline and treatment phases are presented in Figure 106. Analysis of the baseline phase revealed an absence of trend within the data, as indicated by the C Statistic ($z = 1.45, p > .05$). Compared to baseline, there was a significant increase during the treatment phase as indicated by one of the three statistical tests applied: C Statistic ($z = 3.69, p < .01$). The split middle binomial test ($z = 0.34, p > .05$) and Tau-U ($z = 0.02, p > .05$) did not detect statistically significant change across phases. There was no difference in phase medians.

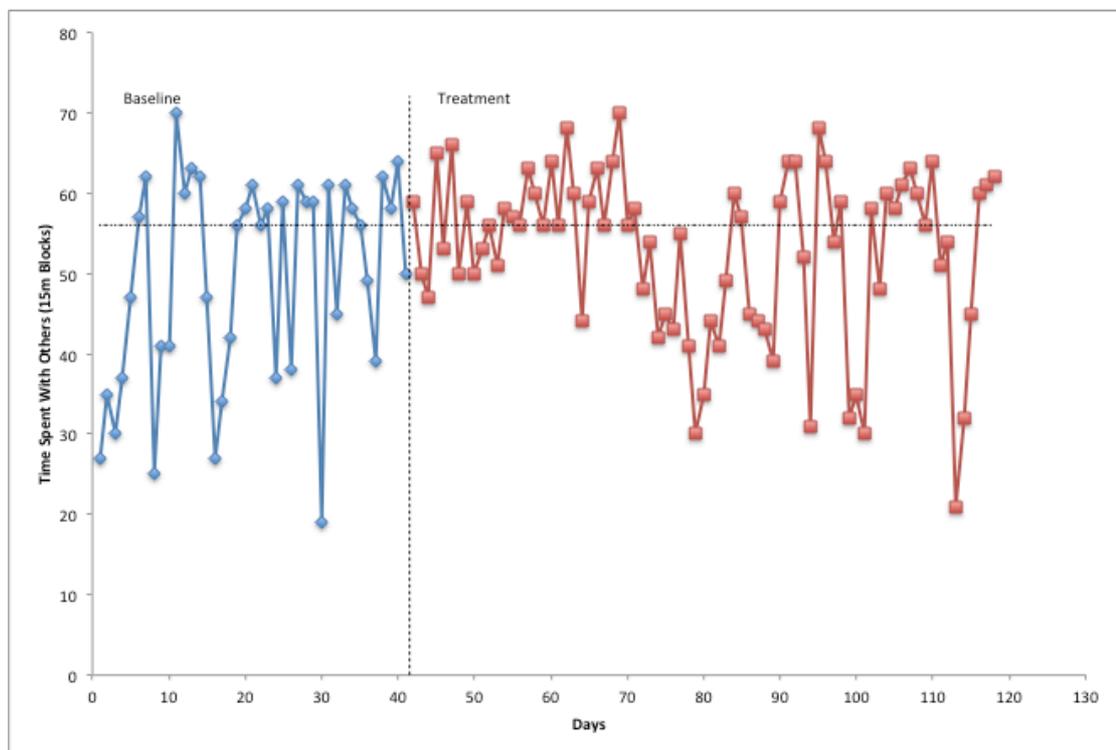


Figure 106. Case 9 Minutes spent per day spent with other people across baseline and treatment phases.

EVALUATION OF BATA DELIVERED IN-PERSON AND VIA VCP

Gemma's Out of Home (as compared to "at home") data across baseline and treatment phases are presented in Figure 107. Analysis of the baseline phase revealed an absence of trend within the data as indicated by the C Statistic ($z = 1.52, p > .05$). Compared to baseline, all three statistical tests showed significant increase in the amount of time Gemma spent out of home: C Statistic ($z = 3.05, p < .01$), split middle binomial test ($z = 3.52, p << .01$), and Tau-U ($z = 2.34, p < .05$). The change in phase medians showed an increase of 135 minutes per day spent on housework and errands.

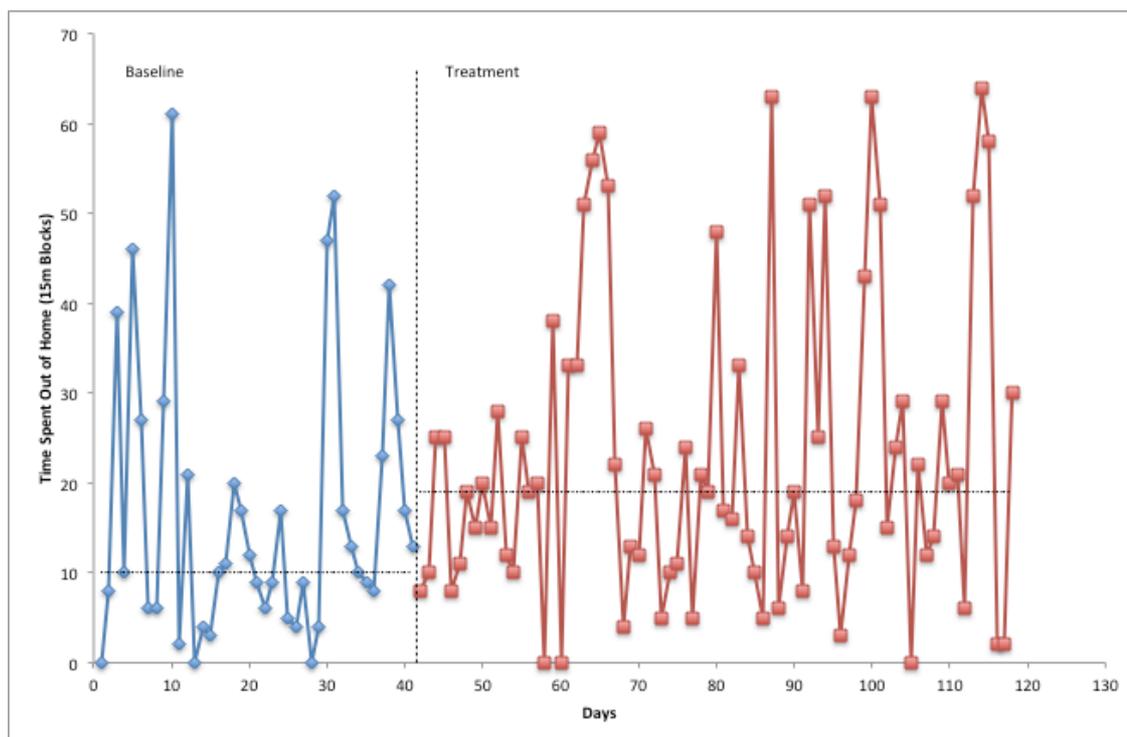


Figure 107. Case 9 Minutes spent per day spent out of home across baseline and treatment phases.

Formal activity scheduling began at Week 3 (Day 61). Gemma reported that she engaged with family friends, attended yoga classes, and went cycling. The increase in activities spent out of home reflects Gemma's efforts to increase her activities as part of BATA.

7.3.5 Therapist/Client Relationship

Gemma's total scale scores across the treatment phase from the Barrett-Lennard Relationship Inventory: Observer Form (OS-64) are presented graphically in Figure 108. The OS-64 was administered at 4, 8, and 12 week periods during treatment.

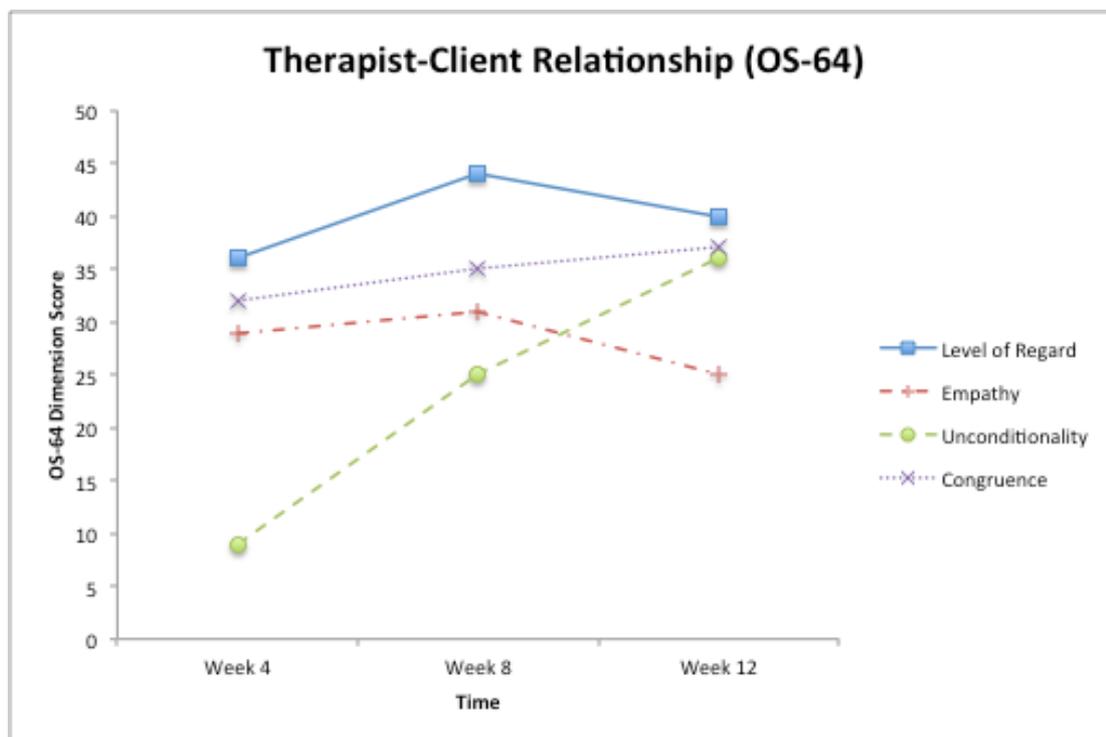


Figure 108. Case 9 OS-64 Assessment of Therapy Relationship Variables across the treatment phases.

Inspection shows that the level of regard, empathy and congruence scales were steady across the treatment phase, while unconditionality improved as the treatment phase progressed. While unconditionality was the only dimension score that commenced close to the threshold of 0 for a “level adequate for a constructive relationship” (Barrett-Lennard, 1986), all dimension scores significantly exceeded this threshold by Week 8, and thereafter stabilised.

7.3.6 Behavioural Cusps

Formal activity scheduling commenced on Week 3, and there is a clear reduction of anxiety and stress from Week 3 of treatment onwards. There was a persisting increase in her out of home activities, including spending time with family and friends, doing yoga classes and cycling. Gemma's results show statistically and

clinically meaningful decreases in standardised anxiety measures. Activities scheduled for Gemma included, taking more active approach in exercise, including cycling, activities that improve mental well being like yoga, planning healthy meals, and activities to improve her relationships, including spending quality time with her partner. Undertaking the valued activities scheduled, as opposed to the overwhelming “all-in” approach prior to therapy, increased her confidence and helped her to manage her schedule, in turn reducing her anxiety.

At 8 week follow up, Gemma reported that she did not feel as anxious as before and was more confident, more able to stay calm, and had become stronger and more confident.

7.3.7 Treatment Integrity

All of Gemma’s treatment sessions were audio-recorded and two sessions were randomly selected and scored for treatment integrity. Inter-observer agreement could not be assessed due to ethical reasons because it became apparent that the participant was known to the second rater. Therapist in-session behaviour compatible with the treatment modality (BATA) was calculated at 96.8%.

7.3.8 Post-Treatment Diagnosis

At the end of the treatment phase, Gemma reported a significant and consistent decrease in her everyday stress and anxiety levels, across settings and social contexts. There was a noted increase in the stress and anxiety level in the last point of follow up at 8 weeks follow up which may be explained by Gemma’s comment that it was the university examination period which was quite stressful. However, she felt that she was not as anxious as before. Post-treatment, Gemma no longer met DSM-IV criteria for Social Anxiety or General Anxiety Disorder, and maintained this 2 months post-treatment, indicating that the changes in behaviour were robust and maintained without contact with therapy.

7.4 Summary

All three participants in the Regional/Remote Videoconferencing group showed reduction in self-reported anxiety symptoms indicated by statistically significant reduction indicated on at least two of the three statistical tests applied on either one or both of the standardised anxiety measures (BAI and DASS Anxiety scale).

Chapter 8: Summary of Single Case Analysis Results

8.1 Summary of Self-Reported Anxiety Results

Table 2 below shows a summary of the results for participants on the two standardised psychometric measures of self-reported anxiety symptoms, BAI and DASS Anxiety scale, used in this study. Against each standardised psychometric measure, the presence or absence of statistically significant reductions (at the $\alpha = .05$ level of statistical significance) in self-reported anxiety symptoms is indicated as evaluated by each of the three analysis techniques calculated. Note that the C-statistic and Split middle binomial results provided for reference and consistency with Turner and Leach (2009, 2010).

Table 2

Results for Participants' Self-Reported Anxiety Measures

| | BAI | | | DASS Anxiety scale | | |
|------------------------------|-------------|--------------|-------|--------------------|--------------|-------|
| | C-Statistic | Split Middle | Tau-U | C-Statistic | Split Middle | Tau-U |
| Metropolitan In-Person Group | | | | | | |
| Joy | ✓ | ✓ | ✓ | ✓ | | |
| Anna | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Sharon | ✓ | | ✓ | ✓ | | ✓ |
| Metropolitan VCP Group | | | | | | |
| Stacey | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Clara | | | | | | |
| Summer | | ✓ | ✓ | | ✓ | |
| Regional/Remote VCP Group | | | | | | |
| John | ✓ | | ✓ | ✓ | ✓ | ✓ |
| Catherine | ✓ | ✓ | ✓ | | ✓ | ✓ |
| Gemma | ✓ | | ✓ | ✓ | | |

All but one of the participants (Clara) showed statistically significant reduction (at the $\alpha = .05$ level of statistical significance) in self-reported anxiety symptoms shown by Tau-u on either one or both of the standardised psychometric measures of self-reported anxiety symptoms (BAI and DASS Anxiety scale). Clara, the only participant not to meet this criteria, had self-reported anxiety symptoms that straddled the border between mild and normal range during the baseline phase (BAI). These reduced slightly to be within the normal range during the course of treatment, but the observed change was neither statistically significant nor clinically meaningful.

8.2 Summary of Activity Monitoring Results

A summary of each participant's activity monitoring results is shown below in Table 3, indicating an increase, decrease, or no change in six dimensions of daily activity levels recorded. An increase or a decrease was classified based on the Tau-u statistic at the $\alpha=.05$ level of statistical significance across phases.

Table 3

Participants' Activity Monitoring Results

| | Self/Other Care | Housework/ Errands | Paid/Unpaid Work | Interests/ Hobbies | With Others | Out of Home |
|------------------------------|--------------------|-----------------------|---------------------|-----------------------|----------------|----------------|
| Metropolitan In-Person Group | | | | | | |
| Joy | - | ↓ | - | - | - | - |
| Anna | - | - | - | - | - | - |
| Sharon | ↓ | - | ↑ | - | - | - |
| Metropolitan VCP Group | | | | | | |
| Stacey | - | ↑ | ↓ | ↑ | ↑ | ↑ |
| Clara | - | - | - | - | - | - |
| Summer | - | - | ↓ | ↑ | - | ↑ |
| Regional/Remote VCP Group | | | | | | |
| John | - | - | - | ↑ | ↑ | ↑ |
| Catherine | ↑ | - | ↓ | ↓ | - | ↑ |
| Gemma | - | - | ↓ | - | - | ↑ |

All but two of the participants showed a significant increase or decrease in at least one activity area across phases. Anna and Clara did not show any significant change across any of the activity areas. Five of the nine participants recorded significant increases in out-of-home activities, and five of the nine participants recorded significant change in paid/unpaid work activities, while four of the nine participants showed significant changes in interests and hobbies. Two of the nine participants recorded significant increases in activities undertaken with other people.

Chapter 9: Omnibus and Statistical Analyses Across Groups

9.1 Overview

The analysis of results presented thus far has treated each participant's data as a single case analysis with associated observations particular to each participant. In this chapter, the focus now shifts to quantitative assessment of two of the key research questions that this study set out to investigate: a) whether or not there is empirical evidence across the study sample that Turner and Leach's (2009) BATA protocol could be replicated in a group with a younger age range, and b) whether or not results supported the proposition that BATA can be as effectively delivered via videoconferencing.

9.2 Omnibus Analysis

To examine the wider applicability of BATA, an omnibus, weighted Tau-U statistical analysis was conducted as described in Chapter 4 (Method), combining all participants' scores, noting that participants had a wide range of anxiety conditions ranging from GAD to Panic with Agoraphobia. For the participants' BAI scores, the omnibus analysis resulted in a Global Tau-U (combining all participants' Tau-U weighted statistics) of -0.477 compared to an overall standard error of 0.150 ($z = -3.186, p < .01$), indicating a statistically significant downward movement overall in results between phases across all participants. This translates to an effect size measurement using Cohen's *d* equivalent for Tau-U of 0.745, well above the threshold of 0.5 suggested by Cohen for a "medium" effect size, and close to the threshold of 0.8 as suggested by Cohen for a "large" effect size (Cohen, 1988).

For the participants' DASS-21 Anxiety scale scores, the omnibus analysis showed a Global Tau-U of -0.437 compared to an overall standard error of 0.150 ($z = -2.91, p < .01$), indicating a statistically significant downward movement overall in results between phases across all participants. This translates to a Cohen's *d* equivalent measure of effect size for Tau-U of 0.686, above the threshold of 0.5 suggested by Cohen for a "medium" effect size (Cohen, 1988).

9.3 Group Analyses

The analysis then turned to "drilling down" further, applying a similar omnibus test to each of four combinatorial groups (Metropolitan, Regional/Remote, In-person, Videoconferencing). This enabled an examination of whether or not experimentally interesting, contrasting groups had statistically significant differences in treatment

effect sizes, specifically Metropolitan versus Regional/Remote, and In-Person versus Videoconferencing.

9.3.1 Metropolitan

For the Metropolitan group BAI scale scores, the analysis showed a grouped Tau-U (combining all metropolitan participants' Tau-U weighted statistics) of -0.505 with an overall standard error of 0.138 ($z = -3.32, p < .01$), indicating a statistically significant downward movement in results across phases. This translates to a Cohen's *d* equivalent of 0.785, above the threshold of 0.5 suggested by Cohen for a "medium" effect size, and close to the threshold of 0.8 as suggested by Cohen for a "large" effect size (Cohen, 1988).

Analysis of the Metropolitan group DASS-21 Anxiety scale scores showed a grouped Tau-U (combining all metropolitan participants' Tau-U weighted statistics) of -0.448 with an overall standard error of 0.152 ($z = -2.95, p < .01$), indicating a statistically significant downward movement in results across phases. This translates to a Cohen's *d* equivalent of 0.70, above the threshold of 0.5 suggested by Cohen for a "medium" effect size (Cohen, 1988).

For the Metropolitan group, both measures of anxiety, BAI and DASS-21 showed statistically significant downward movement across phases, consistent with the global omnibus test.

9.3.2 Regional/Remote

Analysis of the Regional group BAI scores showed a grouped Tau-U (combining all metropolitan participants' Tau-U weighted statistics) of -0.424 with an overall standard error of 0.145 ($z = -2.92, p < .01$), indicating a statistically significant downward movement in results across phases. This translates to a Cohen's *d* equivalent of 0.86, above the threshold of 0.8 suggested by Cohen for a "large" effect size (Cohen, 1988).

For the Regional group DASS-21 Anxiety scale scores, the analysis showed a grouped Tau-U (combining all metropolitan participants' Tau-U weighted statistics) of -0.410 with an overall standard error of 0.145 ($z = -2.82, p < .01$), indicating a statistically significant downward movement in results across phases. This translates to a Cohen's *d* equivalent of 0.651, above the threshold of 0.5 suggested by Cohen for a "medium" effect size (Cohen, 1988).

The Regional group results for both measures of anxiety, BAI and DASS-21, showed statistically significant downward movement across phases, again consistent with the global omnibus test.

9.3.3 In-Person

For the In-Person group BAI scores, analysis showed a grouped Tau-U (combining all in-person participants' Tau-U weighted statistics) of -0.558 with an overall standard error of 0.153 ($z = -3.66, p < .01$), indicating a statistically significant downward movement in results across phases. This translates to a Cohen's *d* equivalent of 0.861, above the threshold of 0.8 as suggested by Cohen for a "large" effect size (Cohen, 1988).

Analysis of the In-Person group DASS-21 Anxiety scale scores showed a grouped Tau-U (combining all metropolitan participants' Tau-U weighted statistics) of -0.539 with an overall standard error of 0.153 ($z = -3.54, p < .01$), indicating a statistically significant downward movement in results across phases. This translates to a Cohen's *d* equivalent of 0.83, above the threshold of 0.8 suggested by Cohen for a "large" effect size (Cohen, 1988).

For the In-Person group, both the BAI and DASS-21 anxiety scores showed statistically significant downward movement across phases, consistent with the global omnibus test.

9.3.4 Metropolitan

Analysis of the Videoconferencing group BAI scores showed a grouped Tau-U (combining all metropolitan participants' Tau-U weighted statistics) of -0.437 with an overall standard error of 0.148 ($z = -2.94, p < .01$), indicating a statistically significant downward movement in results across phases. This translates to a Cohen's *d* equivalent of 0.689, above the threshold of .5 suggested by Cohen for a "medium" effect size (Cohen, 1988).

For the Videoconferencing group DASS-21 Anxiety scale scores, the analysis showed a grouped Tau-U (combining all metropolitan participants' Tau-U weighted statistics) of -0.384 with an overall standard error of 0.148 ($z = -2.59, p < .01$), indicating a statistically significant downward movement in results across phases. This translates to a Cohen's *d* equivalent of 0.612, above the threshold of 0.5 suggested by Cohen for a "medium" effect size (Cohen, 1988).

The Videoconferencing group results for both the BAI and DASS-21 measures of anxiety showed statistically significant downward movement across phases, consistent with the global omnibus test.

9.4 Comparisons Across Groups

The results of the four groups above provide the basis of the comparison across groups, using reliable difference statistical tests as described in Chapter 4 (Method). Firstly a comparison between the Metropolitan based participants and the Regional/Remote participants was undertaken to attempt to rule out that any potentially observed differences between Videoconferencing and In-person groups was due only to the location of the participant (because there was no in-person/regional-remote group). The reliable difference measure ($z = -0.381, p > .05$) for the BAI scores, and for the DASS-21 Anxiety scale scores ($z = 0.175, p > .05$) indicated no statistically significant difference between the group Tau-U results for the Metropolitan and Regional/remote groups.

Finally, the reliable difference measure was calculated between the Videoconferencing and In-Person groups for the BAI scores ($z = -0.570, p > .05$) and for the DASS-21 Anxiety scale scores ($z = -0.728, p > .05$) and also showed no statistically significant difference between the Tau-U results for the Videoconferencing and In-Person groups.

9.5 Summary

In summary, the omnibus tests for the Tau-U scores across the whole participant cohort showed a significant overall decrease in both the BAI and DASS-21 standardised anxiety measures across phases. Additionally, comparisons of Metropolitan vs Regional/Remote groups and Videoconferencing vs In-Person groups showed no statistically significant differences between the outcomes of BATA when delivered via videoconferencing as compared to traditional in-person delivery.

Chapter 10: Discussion

10.1 Summary of Research Aims

This study set out to explore the wider applicability and effectiveness of the Behavioural Activation Therapy for Anxiety (BATA) as first described by Turner and Leach (2009, 2010). Specifically, this study examined (a) whether the original Turner and Leach (2009, 2010) outcomes could be replicated across a broader range of clients with a wider age range, and (b) if BATA could be delivered as effectively as an online psychotherapy via videoconferencing (VCP) as compared to traditional in-person delivery.

The same BATA protocol as used by Turner and Leach (2009) in the original study into BATA was delivered to all participants. The current research included nine replicated single case experimental evaluations of BATA applied to participants aged 19 to 52 years old. Dependent variables included standardised measures of self-reported anxiety (BAI and DASS-21), self monitored anxiety (DARS), activity levels, and ratings of the therapeutic relationship.

10.2 Key Findings

First, in relation to BATA, this study successfully extended the findings from Turner and Leach (2009, 2010). Results from the series of nine replicated single case studies showed that all but one of the nine participants in this study showed significant reductions in self-reported anxiety symptoms, indicated by statistically significant decrease detected by at least two of the three statistical tests applied, on either one or both standardised psychometric measures (BAI and DASS-21 Anxiety scale). The results from the single-case studies provided evidence that the effectiveness of the BATA protocol shown by Turner and Leach (2009, 2010) had been repeated. A new analysis of the research data, the Tau-U statistic, was used in this study that was not used by Turner and Leach (2009, 2010). Tau-U combines non-overlap and baseline trend compensation, is inherently more powerful, and opened up the opportunity to undertake quantitative omnibus and between-groups comparisons. Tau-U effect size scores for each individual participant were combined using an omnibus statistical analysis to quantify whether a significant overall “global” treatment effect could be detected. The global Tau-U significance test for all participants’ BAI scores and DASS-21 Anxiety scale scores both showed statistically significant downward movement overall in results between phases across all participants, with Cohen’s *d* equivalent

effect sizes in the medium-large range. Further, these decreases in self-reported anxiety measures were, in general, maintained at 2 month follow up.

Importantly, consistent with Turner and Leach (2009), the reported decrease in anxiety symptoms was associated with increases in reported activity levels, relative to baseline. Here, five of nine participants who reported a decrease in anxiety reported a significant increase in the amount of time they spent out of home, suggesting the potential role of behavioural activation in the reduction in anxiety. These results provide empirical support that the BATA protocol developed by Turner and Leach (2009, 2010) was able to be effectively applied to a range of non-trauma anxiety conditions with a wider client age range across the participant cohort in this study, fulfilling the first research aim of this research. Further, this study's findings supported Turner and Leach's (2009) suggestion that participants' increased approach behaviours replaced avoidance behaviours and were maintained without contact with therapy by naturally occurring contingencies of reinforcement, due to natural arrangement of response-reinforcer contingencies for approach behaviours leading to concurrent decreases in avoidant behaviour and gradual extinction of anxiety responses.

Taking into account that, alone, anxiety conditions are the most common category of psychological disorders, and that anxiety conditions are also often comorbid with a depressive disorder (which are also common), effective and easy-to-deliver treatments options for anxiety conditions, such as BATA, are valuable for improving service delivery and clinical outcomes for anxiety sufferers, especially because a significant proportion of clients treated with existing frontline (mainly CBT) psychotherapies do not achieve clinical improvement. While BA has been shown in Chapter 2 as being well supported in published literature for effectiveness in treating depression, there remains a dearth of research into BA applied to anxiety dating back to 2006 when Lejuez et al. (2006) called for further research into BA for anxiety conditions because of their observations of shared symptoms of anxiety and depression and functional similarities, particularly avoidance behaviour associated with the client's problems, and their suggestion that for anxiety, as with depression, symptoms could perhaps be reduced by modifying approach behaviours and eliminating environmental reinforcement for avoidance, since behavioural avoidance narrows behavioural repertoires and reduces opportunities for environmental reinforcement of non-clinical, socially-valid behaviour. The findings of the current study provide additional evidence that BA can be effectively applied to anxiety conditions, as originally posited by Hopko

et al., 2006), and empirical support, beyond the Turner and Leach (2009, 2010) research, that BATA has potential to be a viable, structured, easy-to-administer, behavioural approach to the treatment of non-trauma anxiety conditions, lending further support for future research using BATA.

The current research further supports that BATA, without adjuncts such as graduated exposure or relaxation training, can provide an effective model of anxiety treatment for use by clinical practitioners, especially those working from a behaviour-analytic perspective, which is important because there has been a tendency in prior research, identified by Turner and Leach (2009), to confound BA models as described by Martell et al. (2001) and Lejuez et al. (2001) with the use of adjunctive treatment modalities when treating anxiety, such as gradual exposure and relaxation training (for example, Hopko et al., 2004; Hopko et al., 2006; Lundervold et al., 2006), whereas BATA is uniformly a behavioural approach.

It is important to note that in this study, BATA reduced anxiety without specifically having an exposure component. It is evidenced in this study that simply increasing response contingent positive reinforcement with the BA protocol was sufficient to gain improvements in anxiety symptoms. Therefore practitioners with a wider range (for example, less) of training should be able to effectively deliver BATA.

The study's second objective was to explore whether BATA could be effectively conducted via VCP, as compared to traditional in-person delivery. Between-groups statistical comparison of the Metropolitan based participants compared with the Regional/remote participants showed no significant difference between the groups for both the BAI scores and DASS-21 Anxiety scale scores. This suggests that the improvements in these scores were not specific to geographical location. Similarly, the between-groups comparison of the Videoconferencing and In-Person groups, for both the BAI scores and DASS-21 Anxiety scale scores, did not detect statistically significant differences. Together, the two between-groups comparisons provide empirical evidence that there was no significant impact on the effectiveness of BATA when delivered via VCP as compared to traditional in-person delivery. This finding is consistent with the conclusion from the Backhaus et al. (2012) review that showed general support for VCP's feasibility and effectiveness, and more specifically, with findings from two RCT studies that examined VCP for anxiety and depression conditions (Nelson et al., 2003; Ruskin et al., 2004) that found no difference between in person and videoconferencing delivery of psychotherapy. However, this study is

distinct from others in this area because in contrast to most VCP studies utilising variants of CBT (Backhaus et al., 2012), BATA is a relatively straightforward, easy-to-administer, structured, behavioural-only treatment approach. In addition, though non-trauma anxiety disorders are some of the most common psychological conditions, research into the applicability of VCP to these disorders are underrepresented with only 7% of the studies reviewed by Backhaus et al. (2012) focussing on non-trauma anxiety conditions.

10.3 Interpretation of Therapist-Client Relationship Results

Given the focus on different delivery modes, this study explored the therapist-client relationship. Changes in the ratings of the type or quality of the therapy relationship, as measured by the Barrett-Lennard OS-64 (1964) were observed across participants but did not appear to be associated with changes in anxiety and activity levels, or delivery mode. Where changes did occur, improvement was generally observed as treatment progressed, which is to be expected. By Week 8 of treatment, all participants showed all dimension scores on OS-64 to be well above the threshold for “a level adequate for a constructive relationship” (Barrett-Lennard, 1986), irrespective of residential status and delivery mode. Thus, it appears that the use of VCP did not negatively impact on the client-therapist relationship, which is consistent with findings from Richardson et al. (2009) who demonstrated a high level of client acceptance and satisfaction for VCP generally, despite reservations they noted from providers who believed that the therapist-client relationship could be affected by “still artificial” interaction via videoconferencing, also described by Wray and Rees (2003). This study’s findings support the view that the therapist-client relationship does not seem to be negatively affected by VCP when using BATA.

10.4 Verification of Treatment Integrity

Treatment integrity, an important measure of the validity of research, which is not often evaluated or quoted in study findings (Waltz et al., 1993), showed that in all nine cases in this study, the therapist’s behaviour was rated as matching (at least 95.4% adherence with) the prescribed techniques outlined in the treatment protocol, with inter-rater reliability of at least 90.34%.

10.5 Behavioural Cusps

BATA aims to place the individual in new or changed “reinforcement-rich” environments that give rise to new “clinically healthier” behaviours or increase existing

but under-displayed behaviours (Turner & Leach, 2009) and in doing so, provide opportunities for the individual to reach a point of pivotal behavioural change, defined by Rosales-Ruiz and Baer (1997) as a “behavioural cusp”, that once occurs, profoundly alters, displaces or transforms the individual’s pre-treatment behavioural repertoire, specifically, replacing the anxiety sufferer’s avoidance behaviours with socially-valid, non-clinical, approach behaviours. However, quantitative analysis of behavioural cusps is more difficult. According to Bosch and Fuqua (2001), there are no objective measures for assessment of behavioural cusps. Rather, they suggest that operational guidelines should be proposed for the selection of potential cusps, noting that *a priori* analysis of cusps is not possible. In principle, cusps elicit and transform complex behavioural change. Functionally, we can see a cusp has occurred via post hoc observation of the effects that follow the introduction of the target behaviour to the existing behavioural repertoire of the individual. “Cusp” behaviours observed across the participant cohort included increased exercise, walking, attending to tasks like study, “paperwork”, making decisions and job-seeking (Participants 1, 2, 3, 4, 5, 6 and 8), and increased social interaction and reconnecting with family and friends (Participants 1, 3 and 7), related to formal activity scheduling that encouraged behaviours that brought the individuals into contact with opportunities in the environment for naturally occurring contingencies of reinforcement. These behavioural cusps led to changes in behavioural repertoire including reduced procrastination specifically noted by Participants 3, 5 and 7, leading to increased confidence reported by Participants 2, 5 and 9, and generally better motivation and energy.

10.6 Summary of Participant Withdrawals

The study largely showed positive outcomes for participants. Nevertheless, participant withdrawal, a form of treatment failure, is common in applied research (Barlow, 2004) yet rarely discussed in published research, such as in randomised-controlled trials that focus on between-group differences (Persons & Mikami, 2002). In this study, three participants withdrew during the treatment phase, two from the Metropolitan VCP group and one from the Metropolitan in-person group. Withdrawing participants generally cited personal reasons for not being able to commit to the study, including difficulty travelling to the clinic due to work, family and financial constraints. It is noted, anecdotally, that all participants who withdrew from the study had received a diagnosis that included agoraphobia, even though there were also participants who fully completed their participation in the study who also suffered with

agoraphobia. Two of the participants who withdrew commented that completion of daily measures during baseline and treatment phases was time consuming and onerous, and thus such demands should be considered in future research.

There was insufficient detailed data to comment on progressive results with all withdrawing participants ceasing their participation by Week 6 (one at Week 3 and two at Week 6) of the treatment phase, which is only half way through the 12 session protocol, and only 2 weeks after the commencement of formal activity scheduling. One participant in the Metropolitan Videoconferencing group stated that her regular subsidised treatment was again available and that her participation in the study had been motivated by her not having access to her preferred treatment. There is insufficient evidence to conclude whether this is due to her preferring her regular (presumably in-person) therapy over BATA via VCP because of the delivery mode, or due to loyalty to her regular provider, or because she did not feel benefit from BATA's behavioural approach.

10.7 Limitations and Factors to Consider in Future Research

Despite the positive research outcomes, there were several limitations to the present study. As in the original Turner and Leach research (2009, 2010), one person conducted intake interviews, assessments and treatment sessions. For intake and post-treatment assessment, the structured MINI was used to evaluate participants against DSM-IV diagnostic criteria. Even though the MINI has shown high levels of inter-rater reliability (Sheehan et al., 1998), assessment would ideally involve two independent interviews, limiting potential for single interviewer bias and reducing the chance of false positive diagnosis.

In addition, for pragmatic reasons the study used a single therapist (the author) and it is fair to assume that each therapist has unique characteristics and behaviours that could interact with the treatment protocol to influence outcomes (Behar & Borkovec, 2003). Future research would ideally use multiple therapists across participants (within delivery mode) to provide a more comprehensive evaluation of protocol-therapist interactions. Whilst caution needs to be taken before generalising BATA's effects across therapists, the current study used a different practitioner from the original Turner and Leach (2009, 2010) research, so there can be some confidence in the BATA protocol itself.

Integrity ratings were conducted independently by the author and the Principal Research Supervisor who were trained in the treatment protocol and the coding system.

Ideally, a rater of treatment integrity who was not affiliated with the research project could have removed any potential bias in the treatment integrity ratings.

Common feedback from participants was that completion of daily self-monitoring measures was troublesome, time consuming, and difficult to achieve comprehensively and accurately (many participants filled in forms at the end of their day, and relied on memory). Future research for BATA could include a variety of daily monitoring levels and techniques, for example, a different granularity in recording activity times and classifications, or technological alternatives including entering self-monitoring data into easy-to-use smartphone or tablet applications.

It is also important to note the sample characteristics of this study. The recruitment methods relied on self-selection, yielded limited male participants, and random allocation to location and delivery mode was not always possible, so care is required in generalising findings and conclusions of this study more broadly. For example, there were some confounding elements: all panic anxiety condition subtypes were in the Metropolitan in-person group, the Regional videoconferencing group were all older in age, and the highest withdrawal rate, 2 of 5, was in the Metropolitan videoconferencing group, but both withdrawing participants showed symptoms of agoraphobia. Inclusion criteria required satisfying DSM-IV diagnostic criteria for a non-trauma anxiety condition as assessed by the MINI, without co-morbid Axis I condition, but cohort characteristics may affect the function of treatment as described by (Michael, 1993), for example, increasing the power of reinforcers associated with following the therapist's instructions and completing between-session tasks. Whilst these factors should be addressed in future research using larger, more representative, controlled studies, this study nonetheless provides support for the use of BATA across broader contexts.

Four of the participants, though satisfying criteria for an anxiety condition as assessed by the MINI, showed BAI or DASS (Anxiety and Stress subscales) scores in the normal ranges (albeit the higher end of normal). Future research could perhaps use anxiety subtype specific assessments as part of the recruitment criteria, especially if assessing the effectiveness of BATA for more serious cases (which could not be included in this study due to risk factor limitations because the study was run from a University outpatient clinic with no 24/7 crisis care services).

While this study monitored non-specific treatment factors such as therapist-client relationship (for which no clear patterns were observed) and adherence to

treatment protocol (treatment integrity measures), future research may incorporate control for non-specific factors into the experimental design, including therapist-client relationship, therapist competence (level of training) and adherence to treatment protocol.

As the current study was intended to test the potential extension of BATA, the design did not compare outcomes to control participants, other evidence-based interventions such as CBT and its variations (Follette & Ruzek, 2006), or ACT (Hayes et al., 1999). Nevertheless, the single-case experimental design used in the current study enabled each participant to act as his or her own control. Several recommendations such as those by Shadish et al. (2001) were employed to strengthen confidence in the findings. Firstly, a longer baseline period, collecting at least six repeated measures of standardised anxiety, enabled more data to be collected than in the original Turner and Leach (2009) research, allowing better prediction of the client's anxiety levels if the intervention (BATA) had not been implemented, and enabling improved, higher power, statistical analysis to be conducted. Second, the study used staggered, randomised commencement of starting time so that random variations across the sample minimised the probability that identical confounding factors could affect multiple participants in the same way at the same time. Whilst these recommendations attempt to strengthen conclusions, future, larger scale research could include multiple control conditions as well as comparison to other interventions.

From an ethical perspective, a longer baseline could be questioned because of the "waiting time" (several weeks) for participants to access treatment. In this study, care was taken to ensure that risk factors for individual participants were considered, the participants were aware that they could cease participation at any point and access the University clinic services if their condition deteriorated, and the researcher used clinical judgement and weekly psychometric testing results to continually assess the participant's well being during the baseline and treatment phases with a view to referral to other psychological care and cessation of participation if the participant's condition warranted it. Future, larger scale studies may opt for a shorter baseline, especially if the number of participants is higher and a non-inferiority design is being applied.

Additional maintenance phase data may be of use. In this study, the post treatment follow-up period (2 months) was brief and due to time constraints could not be extended, so ideally would be of longer duration in future studies. In addition, whilst analysis of walking activity data for participants was undertaken in the original Turner

and Leach (2009, 2010) study, and was planned for this study, technical issues and non-adherence to pedometer use meant that data was not collected or could not be analysed. Given the technological advances in activity monitoring in recent years, however, future research should integrate physical activity monitoring into data collection.

10.8 Implications for Practice

The outcomes of the study have important implications for practitioners seeking to provide cost-effective treatment for adult anxiety in typical outpatient settings. In Australia, the public have had access to a federal subsidy scheme, called the Better Access initiative, that provides subsidies for up to 10 sessions of private outpatient psychotherapy per annum (Department of Health, 2012). In 2008, over 375,000 individuals accessed psychotherapy through this scheme (Australian Institute of Health and Welfare, 2009). Practitioners and their clients derive maximum benefit under this scheme from approaches that produce clinically meaningful change within a relatively short timeframe. The findings of this study lend further support to Turner and Leach's (2009, 2010) conclusions that BATA can produce clinically relevant outcomes over a short period of time for clients meeting DSM-IV criteria for non-trauma anxiety conditions.

Turner and Leach (2009) conceived the BATA protocol when Better Access subsidised up to 12 treatment sessions per annum. Future work could investigate if BATA can be as effectively delivered within 10 sessions, for example with content covered in Sessions 11 and 12 (maintenance and transition to post-treatment) combined into one session, and content in Sessions 2 and 3 (psychoeducation) combined into one session.

Importantly for clinicians, this study provides empirical support that BATA, a straightforward, uniformly behavioural approach, can be effective in treating non-trauma anxiety conditions, yielding clinically meaningful reductions in self-reported anxiety symptoms, without including cognitive elements typical of CBT, or other adjunctive techniques such as graduated exposure or relaxation (e.g. breathing or progressive muscle tension) techniques. BATA can provide an alternative for therapists who are working with anxiety sufferers who have not gained clinically relevant improvement from (or engaged well with) existing frontline non-behavioural treatment options, and with further future research, BA may one day itself be considered a frontline approach to treating non-trauma anxiety conditions (as it already for depression).

Finally, BATA delivered by videoconferencing has been shown in this study to be as effective when delivered via videoconferencing as when delivered in-person, which could lead to a significant improvement in access and service delivery for anxiety sufferers who reside in regional or remote areas of Australia and do not have easy access to specialist mental health care providers due to their geographic isolation. In Australia, “telehealth” was documented as a key economic and social benefit for the current priority rollout of the National Broadband Network to regional and remote areas (NBNC0, 2010). This study showed not only comparability in effectiveness of BATA across delivery mode, but also demonstrated that, in the study sample, Therapist-Client relationship did not seem to be affected by delivery mode when using BATA, which should go towards alleviating concerns cited by practitioners about the impact of VCP on Therapist-Client relationship cited in the work by Richardson et al. (2009) and Wray and Rees (2003).

10.9 Final Comments

In conclusion, this study demonstrated that the applicability of the BATA protocol, a straightforward behaviourally oriented treatment protocol for treating non-trauma anxiety conditions developed by Turner and Leach (2009, 2010), could be replicated in a wider population than the original research, and successfully provided the first evidence of the applicability of BATA via a VCP, a relatively novel, but increasingly acceptable and accessible delivery mode. With further research, this study’s research outcomes may have significant benefit for sufferers of non-trauma anxiety conditions, especially those who live in regional and remote areas who typically have limited access to specialist mental health services.

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Appendix A

Daily Anxiety Rating Scale (DARS)

Daily Anxiety Rating Scale

Week starting: _____

Using the anxiety scale below, please rate your average level of anxiety during each of these time periods (A). Also, in the space provided make a note of where you were, who you were with, and what you were doing (Setting).

Anxiety Scale (%)
 No Anxiety 0.....25.....50.....75.....100
 Moderate anxiety
 Extreme anxiety

| | Waking to 9am A Setting | 9am to 12pm A Setting | 12pm to 3pm A Setting | 3pm to 6pm A Setting | 6pm to 9pm A Setting | 9pm to bedtime A Setting |
|---|-------------------------------|-----------------------------|-----------------------------|----------------------------|----------------------------|--------------------------------|
| M | | | | | | |
| T | | | | | | |
| W | | | | | | |
| T | | | | | | |
| F | | | | | | |
| S | | | | | | |
| S | | | | | | |

Appendix B

Behaviour Self-Monitoring Diary (BSMD)

Behaviour Self-Monitoring Diary

Day: _____ Date: _____

Time you got out of bed: _____ Time you put on your pedometer: _____ Time you removed pedometer: _____ Distance (kms) _____

| Activities | From waking up to 12.00 midday | | From 12.00 midday to 6.00pm | | From 6.00pm to bedtime | |
|-------------------------------------|--------------------------------|-------------|-----------------------------|-------------|------------------------|-------------|
| | At home | Out of home | At home | Out of home | At home | Out of home |
| | Alone | With others | Alone | With others | Alone | With others |
| Self (or other) care. | | | | | | |
| Housework & errands. | | | | | | |
| Paid or unpaid work. | | | | | | |
| Interests, hobbies, and recreation. | | | | | | |

Appendix C

Behaviour Self-Monitoring Diary (BSMD) Instruction Form

Guide to completing your activity diary

This **Activity Diary** is designed to help you to monitor and record your daily activity levels as well as other important information. There is one page for every day of the week.

Walking Monitoring

When you get dressed **in the morning** record: (1) the day and date, (2) the time you got out of bed, and (3) the time you put on your pedometer.

When you get undressed to go to bed **at night** record: (4) the time you removed your pedometer, and (5) your pedometer reading (i.e., distance travelled).

Recording your activities

Diary layout

Reading from left to right, your day is broken up into three time periods (i.e., waking to 12.00 midday, 12.00 midday to 6.00 pm, and 6.00 pm to bedtime) for which to record activities. Directly below these, you will see that you group your activities during those times as being (a) either at home or out of home, and (b) either alone or with others.

Reading from top to bottom, your activities are grouped into four main areas: (1) self (or

other) care), (2) housework and errands, (3) paid or unpaid work, and (4) interests, hobbies, and recreation. **You will find definitions of these classes of activities on the next page.**

Filling in the diary

What we want is for you to record your daily activities in **15 minute blocks**. That means, for each time period simply register a dash (see example) for every 15 minutes you spend on a particular activity. Some activities may last for only 15 minutes or even less. If you engage in more than one activity in any given 15 minute period only mark one entry in your diary and decide which activity best sums up that 15 minute period. Of course, we don't expect you to stop your activities to mark your diary every 15 minutes – but we do want as accurate a recording as possible and for your whole day to be accounted for. Therefore, if an activity takes longer than 15 minutes (e.g., grocery shopping – 2 hours), when you complete the activity simply record either 8 dashes or the number '8' in the matching box (e.g., housework and errands/alone/out of home). Because of this, it may help you to carry your diary with you during the day.

Activity Class Definitions

These definitions can help to decide in which area to record your spent time:

Self and other care: This includes time spent on attending to your personal needs including self-cleaning, grooming, and dressing. It can also include time spent on the care of others including pet care and attending to the personal needs of a family member or friend.

Housework and errands: This includes regular house-keeping work including cleaning and cooking and can include house-maintenance like repairing taps or clearing gutters. Errands are everyday short journeys and tasks that are required including paying bills, grocery shopping, and car care.

Paid or unpaid work: This includes typical paid work as well as volunteer or charity work. It also includes time spent on formal education and training (e.g., university).

Interests, hobbies, and recreation: This includes time spent on activities that you enjoy and that are fun and interesting. There may be certain hobbies that you engage in that can be recorded in this category. Also, recreational activity such as exercise and reading can be placed here.

Note: These are broad categories. Try your best to record your activities. Most importantly, be consistent. Continue to use the diary in the same way throughout the whole study.

Appendix D

Coded Recording System for Behavioural Activation Therapy Sessions

(CRS-BATS)

INSTRUCTIONS: This scoring form measures ‘therapist verbal behaviour’ (TVB) in the therapy session that you are listening to. TVB is coded (**see below**) in categories of TVB prescribed and proscribed in behavioural activation (BA) therapy. The occurrence of any of these TVBs is scored by marking a slash through the corresponding symbol during the 20 sec time interval on the coding sheet. Following each 20 second interval make a slash through the coded-symbol which corresponds to the TVB which occurred during that time. If you are unable to categorise the TVB, place a slash through all symbols and note ‘UC’ and the interval will be scored as uncategorisable. If TVB is less than 10 secs of the interval place a slash through all symbols. **Note: It is the therapist’s verbal behaviour that you are focusing on (not the client’s) and care must be taken to code independent of client behaviour. Clients may be difficult, elusive, or attempt to lead the therapist towards content technically incompatible with BATA. What is MOST important is that the therapist implements the essential elements of BATA.**

Possible Categories of TVB:

SM = review of client self-monitoring and/or data review (compatible with BATA)

AV = Discussion oriented towards identifying avoidance and escape behaviour and its function (compatible with BATA)

AS = future activity scheduling (compatible with BATA)

GS = setting or reviewing client goals (compatible with BATA)

MD = discussing medication or other drug use (incompatible with BATA)

IP = interpersonal therapy (incompatible with BATA)

CT = cognitive therapy (incompatible with BATA)

AV = discussing avoidance (compatible with BATA)

ED = psychoeducation in the context of BATA (compatible with BATA)

RA = review of past activities (compatible with BATA)

RX = relaxation training (incompatible with BATA)

EX = exposure (incompatible with BATA)

UC = not otherwise classified

CV = client was talking for entire sound period

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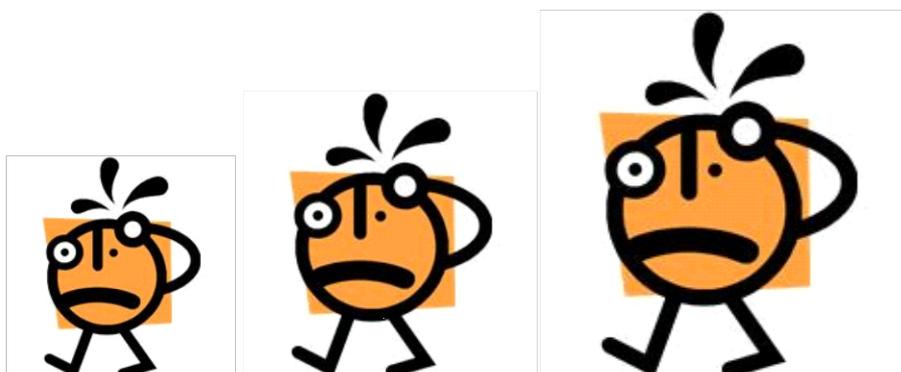
Coding Sheet:

| | | | | | | | | | | |
|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| SM ²⁰ |
| AV |
| AS |
| ED |
| GS |
| RA |
| MD |
| RX |
| IP |
| EX |
| CT |
| UC |
| CV |
| SM ²⁰ |
| AV |
| AS |
| ED |
| GS |
| RA |
| MD |
| RX |
| IP |
| EX |
| CT |
| UC |
| CV |
| SM ²⁰ |
| AV |
| AS |
| ED |
| GS |
| RA |
| MD |
| RX |
| IP |
| EX |
| CT |
| UC |
| CV |

Appendix E
Community Advertisement

ANXIETY SUFFERERS NEEDED!

Are you or someone you know suffering from anxiety?



Anxiety is the most common psychological problem in the community!

Murdoch University is investigating a new approach to treating anxiety, called Behavioural Activation Treatment of Anxiety (BATA). Participants in the study will receive 12 free weekly one-hour therapy sessions from a trained Clinical Psychologist. The study seeks to investigate whether BATA delivered via videoconferencing is as effective as when administered in-clinic.

| | |
|--|---|
| <p>Are you...</p> <ol style="list-style-type: none"> 21 to 50 years of age? Suffering from an anxiety condition? | <p>Your participation involves...</p> <ol style="list-style-type: none"> Attending a 60 min assessment interview. Keeping a daily journal of your activities and anxiety levels. Completing 12 weekly sessions of BATA Attending follow-up interviews 1, 2 and 4 weeks after the treatment finishes. |
| <p>Can you...</p> <ol style="list-style-type: none"> Attend Murdoch University in person? <p style="text-align: center;">Alternatively,</p> <ol style="list-style-type: none"> If you are outside the Perth area or wish to participate in the metropolitan videoconferencing sample, get private access to a computer and Internet connection capable of Skype videoconferencing? | <p>Benefits to you...</p> <ol style="list-style-type: none"> Receive 12 sessions of psychological treatment for anxiety at no cost. Parking charges for participants attending Murdoch Campus will be reimbursed. |



This study has been approved by the Murdoch University Human Research Ethics Committee (Approval 2012/219).

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Murdoch University Anxiety Study yhlee_2007@hotmail.com Dr. H. Correia 9360 2290 |
|---|---|---|---|---|---|---|---|---|---|

Appendix F

Information Sheet

Project Title: Experimental Evaluation of Behavioural Activation Therapy for Anxiety (BATA) in adults comparing delivery in-person and via videoconferencing

My name is Yong Lee and I would like to invite you to participate in a research study looking at a new psychological approach to treating anxiety, called Behavioural Activation Therapy for Anxiety (BATA). This study is part of my course for a Doctoral Degree in Clinical Psychology, and is being supervised by Associate Professor David Leach at Murdoch University.

Background

Research has shown that in some cases the behavioural component of cognitive-behavioural therapy (CBT) (e.g., problem solving, activity scheduling, relaxation training) may be the most important component in treating people's depression. In fact, some research suggests it is not necessary to directly focus on people's cognitions (e.g., thoughts, beliefs) to improve their mental health. For example, behavioural activation therapy, which involves identifying and promoting engagement in positive activities in order to help improve a person's mood and thoughts, has been proven effective in treating depression and given CBT also is most often used to treat anxiety some researchers are beginning to ask whether a purely behavioural approach may be an effective way to treat anxiety. This approach, however, has not been widely investigated.

Therefore, the aim of this study is to investigate whether behavioural activation therapy is an effective approach to treating anxiety.

This study is focussing on an adult population, aged 21 to 50 years of age and also seeks to investigate whether BATA is equally effective when conducted via videoconferencing as compared to traditional in-clinic delivery.

What does your participation involve?

You have been asked to participate in this study because you experience anxiety. Your participation in this study essentially will involve you consenting to receive individual psychological treatment for anxiety.

If you are a participant in the in-person group, then you will attend weekly sessions at the Murdoch University Psychology Clinic. If you are a participant in a videoconferencing group, then you will attend sessions using Skype videoconferencing via the Internet.

Initially, you will engage in a 60 minute assessment interview with a supervised trainee clinical psychologist. This will involve a standard set of questions that will ask you about mental health symptoms. Some of these questions may be of a personal nature and may even be distressing to some – but this is a fairly standard psychological assessment.

This will be followed by a two to three week period of pre-treatment assessment which will mostly involve self-monitoring (ongoing daily recording) aspects of your daily behaviour such as anxiety levels and your daily activities. Also, you will be required to wear a pedometer for the duration of the study that will record how many steps you take each day. This self-monitoring is required throughout your entire involvement in the study. Then, you will receive a 12-week therapy package (12 x 1 hour sessions) of behavioural activation therapy administered by the trainee clinical psychologist. The trainee is an advanced Doctoral student with experience in behavioural activation therapy and will be supervised by the research supervisor Associate Professor David Leach. All sessions will be audio-recorded so that members of the psychology faculty at Murdoch University can review them to ensure treatment is being carried out competently. These recordings will be destroyed following the completion of the study. Following completion of the 12-weeks of therapy you will be asked to complete self-report forms which will ask questions about your mood and anxiety at follow-up times (1, 2 and 4 weeks after the completion of treatment). A treatment protocol for future clinical work will be developed during the course of this study.

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As the entirety of this study is being conducted at Murdoch University, you will be required to travel weekly to the university throughout your involvement in the study. If you are traveling by car, parking costs will be reimbursed.

Voluntary participation, confidentiality and withdrawal from the study

If you consent to take part in this study, it is important that you do so voluntarily, and with a good understanding of the purpose of the study and the procedures you will be asked to undergo. Please make sure you ask any questions you may have about this study, and that you are satisfied with the answers you receive, before you consent to participate.

Again, your participation in this study is entirely voluntary. We hope you will participate, but if you do not want to, you do not need to explain why to anyone. If you do take part in this study, you are free to withdraw at any point, with no questions asked. You will also be able to tell us if you do not want to do things that come up as part of your involvement in this study. We want to ensure that you are comfortable and satisfied with your participation in this study.

Your participation in this study is entirely confidential. Data collected during your involvement is intended to be reported in the published literature as charts and figures, however your identity will be completely confidential. Aspects of your case will be reported (e.g., age, sex, anxiety history), but your name, date of birth, and address will definitely not be included. Made-up names will be used when reporting your case. If you withdraw, for any reason, all information will be destroyed. Following completion of the study all collected data will be securely stored, however any identifying personal information (including audio-recordings) will be destroyed.

Potential benefits

The therapy you will receive if you consent to participate in this study is provided without financial cost. We hope that the therapy you receive during your involvement in this study will help to significantly decrease your experience of anxiety and improve your overall mental health and wellbeing. Also, because a treatment protocol for future clinical work will be developed during the course of this study and the outcomes for

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you will be carefully reported, your involvement has the potential to help many others in the future (especially given the high rates of anxiety in the community).

Potential costs

Occasionally, when people engage in therapy, there is a chance that parts of the process may be upsetting (e.g., answering questions, engaging in activities which increase anxiety). Also, there is a (very rare) chance that someone's condition may in fact worsen. Because the therapy you are receiving involves a close collaboration between you and the trainee clinical psychologist who will be closely supervised by an experienced psychologist, your psychological wellbeing will be closely monitored at all times. If you feel your symptoms are in fact worsening, we will be happy to refer you to other appropriate mental health services. Also, although you will not be provided with treatment beyond the 12-week course of therapy, we will be willing to assist you in finding suitable support if you feel the need to continue therapy beyond your involvement in this study.

What's next?

If you have any questions about your involvement in this study please feel free to contact either myself, Yong Lee by email at yhlee_2007@hotmail.com or by phone on (08) 9360 2570, or my supervisor Associate Professor David Leach, by email at dleach@murdoch.edu.au or by phone on 9360 2703. We are happy to answer any questions you may have. When you are satisfied you have a good understanding of what your participation in this study involves, and are willing to participate, please complete the consent form attached to this information letter.

This study has been approved by the Murdoch University Human Research Ethics Committee. If you have any concerns about how this study is to be conducted and you wish to talk to an independent person you can contact the Committee on 9360 6677 or email ethics@murdoch.edu.au.

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Thank you for your time,

Yong Lee

Trainee Clinical Psychologist School of Psychology Murdoch University

Associate Professor David Leach Supervisor

School of Psychology Murdoch University

Dr Helen Correia

School of Psychology Murdoch University

Appendix G

Consent Form

Project Title:

Experimental Evaluation of Behavioural Activation Therapy for Anxiety (BATA) in adults comparing delivery in-person and via videoconferencing.

I voluntarily agree to participate in this study.

I have read the information sheet provided and understand the purpose of the study, procedures involved, and what is expected of me. I am also aware of the possible benefits and risks to me from my involvement in the study. The researchers have allowed me to ask any questions I have regarding my participation and I am satisfied these questions have been answered.

I understand that therapy sessions I receive due to my involvement in this study are to be audio-recorded. I understand that I am able to change my mind or stop my involvement in the study at any time with no questions asked. I understand that all information provided by me is confidential and my name and identity will be stored separately from any data, and these are accessible by authorised research personal only.

I agree that the results of my participation in this study may be reported, presented, and/or published provided names or any other information that may identify me is not used.

Signature of Participant: _____ Date: ____/____/____

Name of Participant: _____

Signature of Investigator: _____ Date: ____/____/____

Name of Investigator: _____

Supervisor's Signature: _____ Date: ____/____/____

Name of Supervisor: _____