EFFECTIVENESS OF AN INTEGRATED MINDFULNESS-BASED ANXIETY GROUP INTERVENTION WITH UNIVERSITY STUDENTS WHO SELF-REPORT ANXIETY: A SMALL-N, MIXED METHOD DESIGN

by

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

in

THE FACULTY OF GRADUATE STUDIES

(Counselling Psychology)

THE UNIVERSITY OF BRITISH COLUMBIA
(Vancouver)

July 2011

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ABSTRACT

Anxiety is a common mental health challenge seen at a university counselling centre. The Integrated Mindfulness-based Anxiety Group (IMAG) was a 10-session therapy program designed for use at a university counselling centre to work with university students who struggle with anxiety. IMAG integrated core mindfulness components from three prominent therapy programs; mindfulness was trained through both mindfulness meditative practices and skills. A mixed-method, Small-N design study investigated the effectiveness of the IMAG. Seventeen university students grappling with self-reported anxiety participated in this study. The dependent variables of anxiety symptoms, general clinical symptoms, and mindfulness were monitored across the study. Eleven of these participants also were interviewed three to six months after the end of the IMAG. There were four data analytic strategies used to assess effectiveness and change. First, the Participant and Group Practice Analyses showed that formal meditation techniques were the top-practiced activities in both intervention and follow-up phases; it also was shown that participants making the most change were those who practiced the longest per practice day. Second, the Small-N Visual Analyses, the principle research analysis, showed very few functional relationships between the IMAG and the three dependent variables. Third, the Within-subject analyses showed many significant changes both at the intervention’s end and during follow-up, with the average effect sizes being in the medium range. Finally, the Thematic Analysis showed themes in the categories of change, challenge, and mindfulness. The Change category contained themes pertaining to (1) the types of change experienced by the participants and (2) the contexts and criteria that seemed to support change. The Challenge category contained themes about (1) the
challenges related to the practices, (2) challenges related to the group, and (3) challenges related to the context of the participants. Although there were changes shown in the Within-subject analyses, the Small-N analysis provided only weak evidence, thus no effectiveness claim can be made for the IMAG. The study’s limitations as well as future research suggestions are provided. The study’s conclusions make recommendations to improve the IMAG to make it more robust and responsive to dealing with university students struggling with anxiety challenges.
PREFACE

The research presented in this thesis was approved by UBC's Behavioural Research Ethics Board, and the approval certificate number is H06-03675.
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ACKNOWLEDGMENTS

(1) To my dissertation committee, thank-you for your patience, support, rigor, excellence, wisdom, and compassion …

(2) To the Canadian Social Science and Humanities Research Council (SSHRC), thank-you for supporting my doctoral education …

(3) To Dr. Melanee Cherry, thank-you for sharing your expertise and journey …

(4) To my participants, thank-you for your bravery.
DEDICATION

I dedicate this work to the whale, the eagle, the bear, the wolf, and Stanley ... eternally.
CHAPTER ONE: INTRODUCTION

This study investigated the effectiveness of an Integrative Mindfulness-based Anxiety Group intervention (IMAG) for university students, who self-reported dealing with problematic anxiety. The IMAG (formerly the Challenging Anxiety Group [CAG]) was a long-standing group therapy intervention used at a major university counselling centre for students suffering with anxiety. This study used weekly assessments to evaluate student-client’s clinical progress across the intervention. Both reductions in anxiety and general clinical symptoms were monitored. Also, increases or acquisition of mindfulness characteristics were evaluated. Thus, this current study set out to investigate the IMAG’s effectiveness and ways to strengthen or improve the IMAG’s ability to support the student-client in dealing with anxiety and well-being concerns. The following is an introduction to this study and its aims.

University Students and Mental Health

University students are a goal-driven and determined group of individuals, who invest considerable time and resources into attaining a university or college education. One of the biggest challenges that can be faced by a student is mental health issues. “(S)tudents who struggled with symptoms related to depression and anxiety also tended to report struggling with academics …” (Locke et al., 2009, p. 14). These mental health issues present a burden not only for the student, but also for the university counselling centres that are charged to support the student in their pursuit of academic success (Benton, Robertson, Tseng, Newton & Benton, 2003; Gallagher, 2009).

Baez (2005), a senior psychologist at a large university counselling centre, emphasized that the clinical practice with college students involves the whole person,
including clinical (e.g., single disorders or multiple co-existing disorders) and developmental (e.g., normative adjustment to college) challenges. Several large-scale studies (e.g., ACHA-NCHA, CSCMH, CUSC) have shown that mental health challenges encountered on university campuses are varied, and have been found to be increasing in severity, chronicity, and complexity (Benton, et al., 2003; Erdur-Baker, Barrow, Abserson, & Draper, 2006). Additionally, the increases in mental health symptoms is taking place in the context of stretched campus counselling resources (Gallagher, 2006, 2009). This is further complicated by the sparse presentation of therapeutic outcome research, specifically targeting common mental health challenges experienced by university students who are seen at a university counselling centre. Anxiety is one of these challenges that has insufficient effectiveness research for interventions regarding this unique population and this common disorder (Baez, 2005).

**Anxiety and Therapy Interventions**

Anxiety is a mental health challenge that can have both positive and detrimental effects in a student’s academic life and career. Although there are multiple ways to view anxiety, one way to define it is “(a holistic human system that) functions to warn of a potential danger situation and triggers the recruitment of internal psychological and/or external protective mechanisms” (Barlow, 1988, p. 11). Anxiety is a human process that is experienced on physiological, behavioural, psychological, emotional, and social levels. The somatic presentations can include nausea, rapid heartbeat, shallow breath, chest pressure or tightness, chills, hot flashes, muscle tension, queasiness, dry mouth, or sweating (Bourne, 2000; Sullivan, Kent, & Coplan, 2000). The cognitive aspects might be misappraisal, confusion, selective and self-focused attention, negative judgments, and
self-talk with themes of worry, future-based fears, and what if’s (Bourne, 2000; Pincus, Ehrenreich, & Mattis, 2008; Rachman, 2004). The affective qualities can be those of being jittery, apprehensive, uneasy, psychologically tense, nervous, distressed, overwhelmed, and/or pressured. The behavioural characteristics can be avoidance or escape (Pincus, Ehrenreich & Mattis). Bourne (1998) outlines a quality of anxiety not often discussed, which is social or contextual disconnection (e.g., separation from family, from community, from nature, from self, and from one’s higher power). Anxiety, as a potent and critical evolutionary system, can be both advantageous to the student-client, and/or it can be devastating and highly disruptive to academic and life tasks.

Anxiety is a normative and protective human system that supports safety in the face of a threat of danger. It is easy to see how this could be helpful for survival. In an adaptive form, it could promote a student to study, meet imminent deadlines, and take academic tasks seriously, as not to do so would threaten safety and security as a successful student. However, this helpful system can become threatening in and of itself at high and chronic levels. Anxiety disorders are a class of discrete mental health disorders recognized in North America (e.g., DSM-IV-TR) and globally (e.g., ICD-10); each disorder has its own set of diagnostic criteria. They are described as “intense and prolonged feelings or fear and distress that occur out of proportion to the actual threat or danger. … The feelings of fear and distress interfere with normal daily functioning” (Health Canada, 2006, p. 81). Prevalence statistics in Canada show that approximately 4.7% of Canadians over the age of 15 years met the criteria for at least one of the anxiety disorders over the last 12 months, and approximately 11.5% of Canadians over the age of 15 years met the criteria for at least one anxiety disorder over their lifetime (StatsCan,
In addition to discrete anxiety disorders, Brown and Barlow (2009) discuss a transdiagnostic dimensional model involving neuroticism/behavioural inhibition, and low positive affect/behavioural activation, with types of avoidance strategies (i.e., behavioural and interoceptive avoidance, and cognitive and emotional avoidance) to explain dysfunctional anxiety. Although this particular model is in its genesis form, these leaders in anxiety treatment research stated that transdiagnostic models are useful in that they “may obviate the outcome of incomplete treatment and the necessity of repeated, sequential, and narrowly targeted courses of intervention for each DSM-IV disorder” (Brown & Barlow, 2009, p. 267). Thus, a single treatment modality can support the wellbeing and symptom reduction of many different anxiety sufferers.

Anxiety treatment and interventions are numerous. Most of the major therapeutic modalities can be used to assuage anxiety symptoms and distress (DiTomaso & Gosch, 2002). However, few of these treatments have evidence of their effectiveness with reducing anxiety and its symptoms. Treatments such as Cognitive-Behavioural therapy (CBT), Behavioural Therapy (BT), and Acceptance and Commitment therapy (ACT) are the exceptions (see Pincus, Ehrenreich, & Mattis, 2008; Twohig, Masuda, Varra, & Hayes, 2005; Zinbarg, Craske, & Barlow, 2006). Bloom, Yeager, and Roberts (2004) reviewed 59 studies on evidence-based practices with anxiety disorders, and concluded that “brief cognitive-behavioral therapies generally seem to be more efficacious than brief psychodynamic therapy, support psychotherapy, or nondirective therapy” (p. 301). Thus, there are rigorously examined therapeutic interventions designed to work with anxiety that can make substantiated effectiveness statements. However, it is important to ask under which conditions and with which populations can the intervention work (Shadish et
al., 1997). An additional burden of clinical effectiveness is the ability to produce reliable and significant clinical outcomes in real world therapeutic clinics, and not just under hygienic and heavily controlled research contexts.

The following two studies investigated the effectiveness of two group-based anxiety interventions for university students undertaken on a university campus. Damer, Latimer, and Porter (2010) adapted a cognitive-behavioural group therapy (CBGT) to deal with social anxiety on their specific university campus. Although they did find significant reductions in anxiety and its symptoms, effectiveness statements could not be made because there were no experimental controls utilized by the study. Van Ingen and Novicki (2009) examined the effectiveness of a group therapy for transdiagnostic anxiety at a university counselling center (UCC). And again, as with Damer, Latimer, and Porter, these clinician-researchers found significant differences between pre- and post-measurements in anxiety, but could not support effectiveness statements because of challenges to internal validity caused by insufficient experimental control.

Baez (2005) states that anxiety interventions specifically tailored for university students and rigorously evaluated for effectiveness with this population are few and far between. As mentioned above, the IMAG, a transdiagnostic anxiety group, works with university students self-reporting problematic anxiety. The IMAG however is unique in that its main therapeutic mechanism of change is mindfulness. To date, the IMAG does not have effectiveness evidence supporting its use with anxious university students.

**Mindfulness and Therapy Interventions**

Mindfulness (MF) is a 2500-year old strategy for mental, physical, and spiritual wellbeing, originating from the Buddhist tradition. More recently, Western psychological
therapeutic programs have appropriated this healing approach to deal with a variety of mental and physical health challenges (Kabat-Zinn, 2000, 2003). Mindfulness is difficult to define, but most broadly it is the cultivation of conscious attention and awareness (Brown & Ryan, 2003). Thich Nhat Hanh (1976) stated that it is “keeping one’s consciousness alive to the present reality (p. 11). Chögyum Trungpa Rinpoche (1974), a Tibetan master, discussed the practice of meditation to build mindfulness. The sheer discipline required to sit, to stay, to be present in one’s own life is “a brave attitude, a sane attitude”; he reflected that mindfulness simplifies one’s mind and slows one down. Some of the therapeutic change mechanisms cultivated through MF are: maintaining a present-moment focus; remaining open and aware of both internal and external contexts; training to relax both the mind and body; shifting to a non-judgmental and accepting stance; learning to respond, and lessen reactivity; de-identifying with mental content; and fostering a curious, open and patient attitude with the self and one’s world.

Although largely disconnected from its Buddhist roots, MF in western therapy is now being used in several therapeutic programs. McKee, Zvolensky, Soloman, Bernstein, and Leen-Feldner (2007) showed significant negative correlations between anxiety indicators, and both single-factor and multi-factorial mindfulness indicators. The major mindfulness programs (i.e., Mindfulness-based Stress Reduction [MBSR: Kabat-Zinn, 1990], Dialectic Behavioral Therapy [DBT: Linehan, 1993a], Acceptance and Commitment Therapy [ACT: Hayes, Strosahl, & Wilson, 2003]) each have shown success with working with anxiety and anxiety symptoms. Kabat-Zinn and his colleagues (Kabat-Zinn & Massion, 1992; Miller, Fletcher, & Kabat-Zinn, 1995) found that MBSR was effective at reducing anxiety symptoms across the program, and at 3-month and 3-
year follow-ups. Tacón, McComb, Caldera, and Randolph (2003) also found significant reductions of anxiety symptoms after a MBSR group for women with heart disease. Although DBT’s mindfulness skills are being used with anxious clients (see Marra, 2004), Gratz, Tull, and Wagner (2005) warn that “there is not yet empirical support for the use of only the skills training component of DBT (separate from the other components)” (p. 148). This is challenging because as DiGiorgio (2009) found, therapists are using components of DBT without knowing the effectiveness of these separate components at reducing anxiety symptoms or supporting a client suffering with anxiety. The following intervention however is the exception.

Roemer and Orsillo (2005) developed an integrative mindfulness-based approach for working with Generalized Anxiety Disorder (GAD). These authors created the Acceptance-based Behavioural Therapy for GAD, which is a 16-session program in which mindfulness activities or exercises from MBSR/MBCT, DBT, and ACT were added to a CBT-treatment for GAD. Preliminary findings on the effectiveness of this integrative approach (Roemer & Orsillo, 2005; Roemer, Orsillo, & Salters-Pedneault, 2008; Roemer, Salters-Pedneault, & Orsillo, 2006) are positive, showing significant reductions in anxiety at the end of the intervention and at 3-month follow-up. These researchers suggest that future investigations might focus using this therapy approach in different populations (Roemer & Orsillo, 2005). Additionally, they were interested in exploring the therapeutic change mechanisms actually creating the change (e.g., mindfulness).

The above studies investigating the effectiveness of mindfulness-based interventions are showing positive and promising results in terms of these intervention’s
abilities to create significant reductions in anxiety symptoms. Toneatto and Nguyen (2007) however temper the exuberance of these findings in an exploration of MBSR effectiveness studies and the specific findings of only well-controlled studies. These researchers report, “MBSR appears to have equivocal effects on the symptoms of anxiety and depression. … Better controlled studies found no evidence for the efficacy of MBSR” (Toneatto & Nguyen, 2007, p. 264). Therefore, further investigation in the area of effectiveness of mindfulness-based interventions and their ability to create change in anxiety symptoms would be advantageous and required.

**Rationale for the Study**

Evidence-supported therapeutic effectiveness is an important quality of any therapeutic intervention (Chambless, 1999; Shadish et al, 1997). Given the demands and pressures placed on a university student, an effective anxiety intervention offered at a university counselling centre would be an advantage, not only to the student but also to the centre. The IMAG is a unique and important intervention for many reasons. First, it was designed specifically for university students dealing with problematic anxiety. Second, it can work with transdiagnostic anxiety thus can broaden the catchment of clients and increase the IMAG’s usability in an university counselling center serving a vast variety of students suffering with anxiety and other complex mental health and academic issues. Finally, IMAG’s core mechanism of change is mindfulness, which is becoming a highly used intervention approach. The IMAG’s 10-week program integrates the mindfulness techniques and skills from three well-established therapy programs to create a versatile and potent therapy program. This IMAG however has not been
evaluated for its effectiveness with university students who self-report problematic anxiety.

For the purposes of this research, the main areas of investigation are: (1) is the IMAG effective at reducing anxiety symptoms in student-clients, and (2) is the IMAG effective at increasing the qualities of mindfulness in the student-clients. Additionally, exploring the student-clients’ experience of change (or lack thereof) in the IMAG is important to understand not only the possible change mechanisms utilized by the IMAG but also to provide insight in how to strengthen or improve the IMAG’s delivery and effectiveness. Given that therapy groups like the IMAG might increase in the future as mindfulness as a change mechanism for anxiety becomes more accepted, it is important to understand how effective it is with university students and how to make this specific group (i.e., IMAG) more potent in supporting these students in their academic tasks.

**Overview of the Dissertation**

There are a total of eight chapters comprising this dissertation research. This chapter was a general orientation to the study and its aims. The second chapter provides a more in-depth review of the current literature supporting this study as well as outlines some of the gaps in the literature that this current study addresses. The research questions guiding this study are reviewed at the end of the second chapter. The third chapter describes the research methodology being used by this study, the student-participants and the IMAG, the study’s procedures, and the four data analytic strategies being used to answer the research questions. The next four chapters present the results of the study. The fourth chapter presents the frequency and the types of skills and techniques practiced by the participants and the group. The fifth chapter presents the results from the Small-N
Visual Analyses. The sixth chapter presents the results from the Group-based Within-Subject Analyses. The seventh chapter presents the results from the Thematic analysis of the post-group interviews. The final chapter discusses these results in the context of the research questions, as well as the unique contributions and the limitations of this study, and future research suggestions. This final chapter included statements about the IMAG’s effectiveness, and future directions that could improve and enhance this important intervention.
CHAPTER TWO: LITERATURE REVIEW

This chapter outlines the literature underlying this study. This research project explored the effectiveness of an integrative mindfulness-based anxiety intervention (IMAG) for university or college students who self-report problematic anxiety. There are three key areas of literature reviewed in this chapter. The first area of literature is university or college students and the mental health challenges that the students face. Understanding mental health challenges of students leads this review into a discussion of campus counselling centres and their role in working with student populations and their mental health challenges. The second area of literature is anxiety, which is one of the most prevalent mental health challenges within the general population as well as on the university campus. Within this topic, the clinical definitions and a component analysis are undertaken. A particular focus is placed on current popular and evidence-supported anxiety interventions. The final area of literature to be reviewed is an overview of mindfulness and mindfulness-based clinical interventions. This section includes a description of the IMAG (formerly the Challenging Anxiety Group [CAG]), the anxiety intervention explored by this current study. Additionally, definitions of mindfulness, and its respective anxiety interventions are reviewed. To end, this literature review summarizes the main rationale of the study, provides the research questions guiding this research, its expected findings, and a conclusion for the chapter.

University or College Student

The University of British Columbia’s homepage (www.ubc.ca) describes the life of a university or college student as involving transition, growth, and learning. University or college education requires considerable determination, achievement,
commitment, and possibly sacrifice. At the core of the student’s academic task is the successful completion of a program of study, which can support a future career and possibly wage-earning potential. For this, the student invests considerable personal resources into academic success.

To understand Canadian university students better, the Canadian University Survey Consortium (CUSC) surveyed 11,981 undergraduate students at 31 Canadian campuses (CUSC, 2008). This report found that the average student age is 22 years, and female. At the undergraduate level, females currently outnumber males by about 2:1. About half of the students have majors in the Arts and Humanities (24%) or Social Sciences (22%), with the remaining students completing majors in Business (13%), Biological Sciences (13%), and other majors (28%). Most have full-time status (92%). Nineteen percent report being a part of an ethnic or minority group. Six percent report having children. Approximately eight percent of students have identified themselves as having a challenge or disability, with either a learning or mental health disability being most prevalent. Interestingly, the age of the average undergraduate student is within the age range of onset for many major psychological disorders (e.g., anxiety, schizophrenia, mood disorders) (APA, 2000). According to the CSCMH student health report, thirty-five percent of students reported taking psychiatric medications at some time in their life (Locke et al., 2009); psychotropic medication may have allowed broader access to academics for a student that might not have formerly been able to manage both scholastic and mental health demands (Kitzow, 2003).

In the area of work or employment, the above CUSC survey (2008) found that students spend about 33 hours a week on school-related tasks: 16 hours in class and 17
hours out of class. Time spent on academics however fluctuates depending on the
discipline (e.g., engineering students typically spend about 44 hours on academics).
Approximately 49% of students have a job, and work about 17 hours per week. Of these
individuals, about 60% stated that employment has some negative consequences on their
academic success. Forty-nine percent indicated that they had some debt resulting from
their education; on average, students carry about $19,000 of debt, with increases in this
amount as school progresses. This is important because financial strain can be associated
with stress and mental health challenges (Andrew & Wilding, 2004; Eisenberg, Gollust,
Golberstein, & Hefner, 2007). Thus, being successful in academics occurs in the larger
context of the student’s life, which can have other responsibilities or obstacles. One of
the most profound challenges to a student’s academic success is difficulty with one’s own
mental health.

**University Student Mental Health**

Academic success is tied to mental health. “(S)tudents who struggled with
symptoms related to depression and anxiety also tended to report struggling with
academics …” (Locke et al., 2009, p. 14). Transitions, personal expectations,
interpersonal challenges, and academic demands can represent psychosocial or
environmental stresses, which can worsen existing mental health problems, overwhelm
coping systems, and/or strain cognitive, emotional, or social resource-bases. Kessler,
Foster, Sauder, and Stang (1995) found in a sample of 5877 subjects that anxiety, mood
disorders, substance abuse, and conduct disorder were all significantly predictive of
academic failure at the high school or university level; conduct disorder was particularly
disruptive for males, and anxiety disorders created substantial obstacles for females.
When the prevalence of depression and anxiety in undergraduate students was 15.6%, and 13% in graduate students (Eisenberg et al., 2007), psychopathology or mental health challenges begin to appear as obstacles to success for both the student and the academic institution alike.

To further understand these challenges in student populations, American College Health Associations- National College Health Assessment (ACHA, 2009) surveyed 80,121 students from 106 academic institutions across the United States and Canada. Although this largely web-based survey inquired about physical and mental health, only mental health information is reviewed here. In terms of reported health impediments to academic performance, stress was reported by 33.9% as the highest ranked health issue to impact academics; stress was reported more frequently by females (37.5%) than males (27.2%). Other mental health concerns impacting academic performance was the third-ranked sleep difficulties impacting about 25.6% of surveyed students; the sixth-ranked depression/anxiety disorder/SAD (16.1%); and the seventh-ranked relationship difficulties (15.9%). Of the top rank-ordered health problems most concerning to students over the year, depression was fourth and anxiety was seventh. Although there are broad health challenges concerning students, mental health issues are amongst the top ranked student concerns impacting academics.

Taking a closer view of mental health in the above-mentioned ACHA-NCHA survey (ACHA, 2009), 14% students reported a depression at some point in their lives. Of these depression-reporting students, 32% indicated a diagnosis in the past school year, with 25% currently attending therapy, and 36% taking medication for depression. Approximately 1% attempted suicide at least once during the school year, and about 9%
reporting seriously considering suicide at least once. In terms of frequency of mental health difficulties, students reported feeling the following challenges over nine times in the last school year: overwhelmed (36.7%), exhausted (35.6%), sad (17.3%), hopeless (12.3%), and depressed to the point it was hard to function (8.9%). Students felt the following challenges between 5 - 8 times during the past school year: overwhelmed (25.5%), exhausted (24.5%), sad (15.5%), hopeless (11%), and depressed to the point it was hard to function (8.9%). This cross-sectional study not only emphasized the prevalence of mental health challenges in a large university sample, but also outlined the variety of psychological challenges that can be found on a campus. The next two longitudinal studies follow mental health challenges over both a semester, and across a program of study.

Andrews and Wilding (2004) investigated depression and anxiety over a semester. These authors surveyed 351 undergraduate students before the semester and at the mid-point in the semester. They found that 9% of symptom-free students had depressive symptoms by the mid-point. Surprisingly, clinically significant anxiety symptoms had manifested at the semester mid-point in about 20% of prior symptom-free students. Thus, academic demands may worsen mental health over certain points in a semester. However, this was not always the case. Thirty-six percent of students with symptoms at the beginning of the semester were symptom-free by the semester mid-point. Andrews and Wilding surmise that a stable structure, rules and procedures, and predictable expectations possibly can improve a student’s psychological condition. Thus, the academic context plays a complex role in a student’s mental health; it can be an agent influencing health, and it can be an environment in which health (or dysfunction)
manifests. Understanding this complexity along with the uniqueness of the student’s needs is arguably important for the successful treatment of the student-client.

Zivin, Eisenberg, Gollust, and Golderstein (2009) surveyed 763 university students in 2005 and again in 2007. These authors used a variety of brief screening instruments (i.e., depression, anxiety, eating disorder, self-injury, and suicidal thoughts) to assess mental health. The findings showed that over half of the students suffered from at least one mental health problem at some point in the study (i.e., either baseline or follow-up). Sixty percent of those who had elevated scores in 2005 still had similar scores in 2007. Of those students who had elevated scores at both times in the study, less than half of these students received treatment for their difficulties. This study shows not only the prevalence but also the persistence of mental health challenges in a university student population. Although mental health is important to academic success, this research warns that students are not necessarily pursuing clinical support for their challenges.

When dealing with a mental health challenge, one of the main sources of support for a student is a university’s counselling centre (UCC). Benton and her colleagues (2003) reviewed a counselling centre’s archival clinical information for over 13,000 client-students over the span of 13 years. The findings of this research show that students’ mental health issues are becoming more complex, chronic, and severe. Research by Erdur-Baker, Aberson, Barrow, and Draper (2006), and Gallagher (2006, 2009) each echo this finding. “The number of students seen each year with depression doubled over the time period, while the number of suicidal students tripled and the number of students seen after a sexual assault quadrupled” (Benton, Robertson, Tseng,
Newton, & Benton, 2003, p. 69-70). Benton and her colleagues (2003) also showed many mental health challenges (e.g., stress and anxiety) have steeply increased over the 13 years, and have stabilized at these high levels towards the end of the study. Overall, these authors conclude that greater mental health severity and complexity in students will require more resources to meet these new demands. They also critique the availability of these resources in the community, and acknowledge that “the role of providing care (will primarily rest) in the hands of the counseling center staff” (p. 72). Thus, the student’s mental health challenges have ramifications for both the student, and the university campus trying to support the success of these students in their programs.

**University Counselling Centres**

University counselling centres (UCC) are charged with the task of helping students meet their academic goals. “(T)o assist a student to define and accomplish personal, academic, and career goals” through providing developmental, preventive, and remedial counseling (Council for the Advancement of Standards in Higher Education [CAS], 2008, p. 5) succinctly states a UCC’s goals.

The National Survey of Counseling Center Directors (NSCCD) reports on the changing roles and duties of counselling centers (Gallagher, 2009). Following is some of their findings. In 2008, over 300 university counselling center directors reported that 2.6 million students were eligible for clinical services at the various UCCs, with approximately 10.4% of students or 270,000 students actually seeking help. This creates a ratio of 1 counsellor to 1527 students. Remarkably, many more students (32.5%) were supported through other services, such as through workshops or campus outreach. Many centers provide free services, with only 6.1% charging nominal fees for
personal counselling; the mean counselling centre fee was $13.00 per session (Gallagher, 2009). This would be important for students whose financial resources are being subsumed by tuition and related fees. Correspondingly, several of these directors (66.2%) also reported concerns about the growing demand for services without adequate or appropriate increases in resources from the universities (Gallagher, 2009). Although UCCs provide affordable mental health support on campuses, these services may be stretched due to said ratios, and demands of a large student body.

When asked about current psychological trends, Gallagher (2009) reported that the directors have consistently reported an increase in the severity of the psychological issues being seen at the centres; 92% of directors in 2006 and 93.4% of directors in 2009 reported this pattern (Gallagher, 2006, 2009). Even with stretched resources and increases in client difficulties, many of the directors agreed that the various treatment modalities provided at their centres (e.g., eclectic/integrative, cognitive-behavioural therapy, psychodynamic, developmental) were successful in supporting or treating most students with mental health challenges.

The statement of efficacy for campus-based services is supported by the CSCMH study that used pre- and post-therapy data from over 1500 students who utilized UCC counselling services (Locke et al., 2009). This study found that students had statistically significant decreases for depressive symptoms (\(d=0.87\)), and suicidal ideation (\(d=0.37\)) over the six-weeks of treatment at a counselling centre. This finding held even for students who self-reported high levels of depressive symptoms. Impressively, “students who initially presented with a more significant history of suicidal ideation, and thus are at higher risk for a future suicidal attempt, exhibited an even more pronounced decrease in
suicidal ideation after treatment” (Locke et al., 2009, p. 13). Locke and colleagues concluded that UCCs play an important role in the maintenance of mental health and safety of university and college students.

Although the above shows that UCC services have been found to be clinically and financially effective for students, Baez (2005), a senior psychologist at a large UCC, highlighted the lack of clinical outcome research focused on the effectiveness of clinical interventions for common mental health challenges at universities. He states:

Campus based therapists wanting to know the EBT (evidence-based treatment) literature in our field would likely be disappointed by the scarcity of outcome research on the anxiety disorders in college mental health. Moreover, the majority of the existing empirical evidence in college settings is based on non-clinical samples, especially psychology student volunteers. (Baez, 2005, p. 37)

Although UCCs are charged with the task of supporting a mass variety of students with progressively worsening symptoms and disorders, outcome research specifically focused at supporting counselling centres and the populations they serve is sparse. This is troubling given the scope of the mental health problems faced, and the importance of the academic success for students and institutions alike.

**Summary**

University counselling centres (UCC) play an important role in helping students achieve academic success, even in the face of mental health challenges. They are a core resource for supporting university student’s mental health. The findings above show a successful post-therapy decrease in depressive symptoms and suicidal ideation, both mental health challenges that can have devastating consequences. Thus, not only are
UCCs a central mental health resource for students, they can be very successful. However, therapeutic outcome research focused specifically on common mental health issues impeding university students is not always available.

Huge campuses, with heterogeneous student populations, with varied health challenges sets up university counselling centres with the overwhelming task of servicing these students and supporting their academic tasks. The directors acknowledged the increased complexity and severity of mental health problems that university students are grappling with, and they also outline stretched and inadequate resources to deal with the increasing demands being placed on UCCs by students and campus administrations. Therefore, an intervention capable of supporting a student’s successful management or assuaging of anxiety would be helpful to a university counselling centre, particularly if the intervention was able to work with a group of students simultaneously thus lessening the demands on the counselling centre staff, and increasing the service capacity of the counselling center.

Gap in the literature. Baez (2005) clearly outlines a gap in the literature: the need for evidence-supported anxiety treatments for university students dealing with problematic anxiety who are seeking support from an UCC. “(S)tudents who struggled with symptoms related to … anxiety also tended to report struggling with academics …” (Locke et al., 2009, p. 14). Thus, researching the effectiveness of an anxiety group-based intervention for counselling centres would seem to be a worthwhile and supportive endeavour for both students and campuses alike.

As reviewed above, there are a multitude of mental health challenges that can be found on a university or college campus, with one of the most common being anxiety.
The next section explores the mental health challenge of anxiety and the interventions that are designed to help clients (and student-clients) deal with anxiety symptoms and/or anxiety disorders.

**Anxiety**

Anxiety is a relatively common mental health challenge on a university campus, and it can have a detrimental impact on students’ “academic performance, attendance, retention, career selection, relationship development, as well as on their physical health and general well being” (Baez, 2005, p. 35). Several authors note that anxiety is related to and can precede other mental health challenges, such as depression, substance abuse, alcoholism, and suicidal behaviour (Baez, 2005; Barlow, 1988; Marra, 2004). Anxiety also is mentioned by all of the major studies reviewed above (e.g., CSCMH, CUSC, NCMH-ACHA) as being a prevalent and persistent mental health challenge on campuses. However, as Barlow (1988) points out, without anxiety few accomplishments would be undertaken, performance of students would suffer, creativity would decrease, and motivation would be low. For many, anxiety is a normal and advantageous emotional state, which promotes safety and achievement. Thus, there seems to be a continuum of anxiety ranging from the helpful to the harmful, with both ends of the continuum being present on campuses.

**Anxiety Definitions**

Anxiety is a universal human experience, and a highly valuable system that activates in the face of a perceived threat. Bourne (2000), the author of one of the most popular anxiety workbooks, describes that an anxiety reaction can be “appropriate and reasonable” (p. 4) and continues onto say, “if you didn’t feel any anxiety in response to
everyday challenges involving potential loss or failure, something would be wrong” (p.4).
The Yerkes-Dobson effect states that low and high arousal can both be detrimental to both physiological and psychological performance; yet optimal performance requires some moderate-range arousal (Gorbatkov, 2008). In other words, normative anxiety is adaptive in contexts where actual potential harm or threat is present, or advantageous at moderate levels in performance tasks or environments. Although anxiety can be a normative and protective process, current pressures and demands in life can increase the experience of threat in a variety of areas in a vulnerable person’s life tasks, and subsequently increase the experience of anxiety. Anxiety is seen by some to be endemic to modern times, as this century is labelled the “age of anxiety” (Bourne, 1998, p. 19).

Not only can anxiety be a response to a threat, it also can become the threat at high levels. Anxiety, functional or dysfunctional, is difficult to define, and there is not much agreement in the literature on a single definition. The word anxiety arguably comes from the Latin word *angh*, which refers to the concept of narrowness or constriction (Barlow, 1988). However, this definition does not seem to correspond to the various ways to define it in the literature. Following are some of these definitions: “(t)he feeling of difficult to describe discomfort in anticipation of some poorly defined threatening situation” (Sullivan, Kent, & Coplan, 2000, p. 17); “a feeling of uneasy suspense, the tense anticipation of a threatening but obscure event” (Rachman, 2004, p. 26); “the occurrence of disordered stimulus evaluation as it is conditioned through the conflict of the organism with a certain environment which is inadequate for it” (Goldstein, 1939, p. 295); or, “(a) function to warn of a potential danger situation and triggers the recruitment of internal psychological and/or external protective mechanisms” (Barlow, 1988, p. 11).
According to these definitions, anxiety involves negative affect in response to a threat or the apprehension about a perceived threat.

There are less conventional definitions. Sarbin (1968) saw anxiety as “a class of mental state words in psychology, words that seem to lead lives of their own- their status uninfluenced by empirical events or by rational argument” (p. 411). He also discussed anxiety as a reified metaphor (Sarbin, 1968). Hallam (1994) posited anxiety as a personal construct able to describe a broad range of experiential states, which could differ from person to person. Finally, Barlow (1988) added to his considerable discussion, an existential definition and purpose to include anxiety as “a higher level of existence and a greater appreciation of what it is to be alive” (p. 10). Although anxiety can mean many different things to different theorists, it is more often understood through how it is experienced. Perhaps, the narrowness and constriction found in the word can be found in the experience.

Anxious experience is a holistic one. It occurs on physiological, behavioural, psychological, emotional, and social levels. The somatic presentations can include nausea, rapid heartbeat, shallow breath, chest pressure or tightness, chills, hot flashes, muscle tension, queasiness, dry mouth, or sweating (Bourne, 2000; Sullivan, Kent, & Coplan, 2000). The cognitive aspects might be misappraisal, confusion, selective and self-focused attention, negative judgments, and self-talk with themes of worry, future-based fears, and what if’s (Bourne, 2000; Pincus, Ehrenreich, & Mattis, 2008; Rachman, 2004). The affective qualities can be jitteriness, apprehensiveness, uneasiness, psychologically tense, nervous, distressed, overwhelmed, and/or pressured. The behavioural characteristics can be avoidance or escape (Pincus et al., 2008), but the
response behaviours also can be effective coping and/or facing the threat. This is an important distinction because avoidance and escaping patterns can ultimately maintain the perceived threat, and sustain and even strengthen the anxious experience. Bourne (1998) outlines a quality of anxiety not often discussed, which is social or contextual disconnection. He outlines several areas of disconnection that can happen for the anxious person: separation from family, from community, from nature, from self, and from one’s higher power (e.g., God, Goddess).

Thus, the anxious experience might be an orchestrated response with all of the above areas activated. Or, there may be only one or a couple of these facets activating for the anxious individual. Regardless, anxiety will expend resources, and can leave the individual feeling *wired and tired*. When activated, anxiety also tends to be prevalent or dominant in the subjective experience of the person, not leaving a lot of psychological resources for other systems or processes. The following is a description of the unfolding of the subjective anxious experience.

Rachman (2004) described the experiential sequence of the anxious process. He discusses the anxious person’s global scanning in order to find the threat in the environment. Once a threat is detected from the global scan, “the person’s attention then focuses narrowly and intensely on the potential threat, with enhanced perceptual sensitivity and even distortion” (p. 27). This enhanced perception allows for sustained attention and focus on the threat, and according to the interpretation of the threat, may lead to a particular response to the situation (e.g., avoidance or escape). Other characteristics attributed to the anxiety process are: vulnerability, sensitivity, vigilance, selective attention, self-focused attention, interpretation/misinterpretation, and
consequences (i.e., avoidance and escape) that reinforce and strengthen the initial process (Rachman, 2004). Interestingly, this process can take place in an actual situation, in preparation to engage in a particular situation, or in a hypothesized situation. Anxiety can occur in preparation or in apprehension, thus can lead one to avoid the potential perceived threat. Thus, maladaptive attempts (e.g., avoidance and escape) to decrease this negative emotion can actually sustain and strengthen the anxious response through maintaining the threat.

More recently, Barlow (2000) and Barlow, Allen, and Choate (2004) have investigated anxiety from within a theory of emotion. He describes an anxiety process as “a coherent cognitive-affective structure within a defensive motivational system” that has at its heart “a sense of uncontrollability focused largely on possible future threat, danger, or other upcoming potentially negative events … where the danger is present and imminent” (Barlow, 2000, p. 1249). This system brings about a state of helplessness in regards to the perceived lack of control to bring about desired outcomes (Barlow, 2000). He also discusses the etiology of anxiety from a triple vulnerability standpoint: a generalized heritable (biological) vulnerability, a generalized psychological vulnerability set up by one’s sense of control in early life, and a second, more specific psychological vulnerability where one learns to focus anxiety on situation or objects (Barlow, 2000; Suarez, Bennett, Goldstein, & Barlow, 2009). What is posited is that anxiety disorders are “essentially disorders of emotion” where “deficits of emotional regulation are found in each of the disorders … (and) maladaptive regulation strategies … contribute to the persistence of symptoms” (Brown & Barlow, 2009, p. 267). He and his colleagues
(Brown & Barlow, 2009; Campbell-Sills & Barlow, 2007; Moses & Barlow 2006) have forwarded an emotional regulation approach to anxiety and mood disorder treatment.

In summary, anxiety is a powerful, important, and holistic human system, which can promote achievement, adjustment, and protection and safety. Anxiety announces a threat to the individual, and involves both intrapersonal and interpersonal characteristics as anxiety alerts to, focuses on, and mobilizes for action to respond to the threat. This evolutionary system produces a response to one’s environment that can be either adaptive or maladaptive.

In terms of anxiety with college or university students, adaptive anxiety can promote studying or preparation, meeting deadlines, taking one’s tasks seriously and responsibly, and striving to do one’s best. Adaptive anxiety (e.g., anxiety at low or moderate levels) might be evidence of the student’s growth, learning, and achievements as they challenge and surpass the limits of who they were. Dysfunctional anxiety however can have the opposite effect. Goldstein (1939), a psychiatrist and neurologist, reflected that fear brings acuity to the senses, whereas anxiety brings paralysis. Problematic anxiety will activate a high demand and priority system in order to address or redress a threat that is not necessarily a veridical risk to the person. Thus, the actual risk is low, but the perceived threat is high. This threat activates and locks a highly consuming system that can create damage psychologically, physiologically, emotionally and/or socially. Needless to say, it can severely interfere with the academic tasks of a university or college student. The following is a discussion of the classes of dysfunctional anxiety acknowledged by the psychological and psychiatric communities.
Anxiety Disorders

Anxiety disorders are a cluster of psychological disorders that differ from normative anxiety in several ways: the disorders are more intense; they last longer; they are maladaptive or dysfunctional in the person’s life (Bourne, 2000). The prevalence of anxiety disorders is that approximately one in eight Canadians between the ages of 15-64 reported meeting the criteria for an anxiety disorder over their lifetime; 4.7% of Canadians met criteria for an anxiety disorder over the last 12 months (Health Canada, 2006).

Anxiety disorders can be described as “intense and prolonged feelings of fear and distress that occur out of proportion to the actual threat or danger” and “the feeling of fear and distress interferes with normal daily functioning” (Health Canada, 2006, p. 80). Psychological and psychiatric communities have created several categories for discrete anxiety disorders; each disorder has its own set of criteria for the purposes of diagnosis. The Diagnostic and Statistical Manual of Mental Disorders-IV- Text Revision (DSM-IV-TR: American Psychiatric Association [APA], 2000) reports on 12 disorders; International Statistical Classification of Diseases and Related Health Problems-10 (ICD-10: World Health Organization [WHO], 2010) also portrays 13 disorders, however they have similar yet different symptom constellations and disorder names. The following are several DSM-IV-TR (APA) brief descriptions of these disorders and their prevalence statistics.

Panic disorder. This disorder is evidenced by a persistent concern of having an unexpected panic attack (e.g., sudden onset of the feelings of apprehension and doom, combined with distressing symptoms, such as shortness of breath, tightness in the chest,
sweating, and shaking) (APA, 2000). In 2002, between 1.4% - 1.9% of Canadians 15 years or older met criteria for a panic disorder over a 12-month period, with a lifetime prevalence of 1.4% – 4.6% (Health Canada, 2006, p. 83). This corresponds to the DSM-IV-TR lifetime prevalence rate of 1% - 2% (APA, 2000, p. 436).

**Generalized anxiety disorder.** This disorder is characterized by excessive anxiety and worry for at least six months (APA, 2000). There is a prevalence rate of 3% over a 12-month period, and 1% over a lifetime period (APA, 2000).

**Social (or performance) phobia.** This disorder is characterized by extreme fear and avoidance of social and/or performance situations, where there is a possibility of being embarrassed, humiliated, or observed (APA, 2000). In 2002, between 0.9% - 4.7% of Canadians 15 years or older met criteria for a social anxiety disorder over a 12-month period, with a lifetime prevalence of 2.6% – 9.4% (Canadian Community Health Survey as cited in Health Canada, 2006, p. 83). In a community sample, there is a prevalence rate of 3% -13% over a lifetime period (APA, 2000).

**Specific phobia.** This disorder is evidenced by substantial and excessive fear of a specific object or situation, such as flying, heights, and animals (APA, 2000). In a community sample, the prevalence rates are between 4% - 8.8%, and over a lifetime is 7.2% - 11.3% (APA, 2000).

**Obsessive-compulsive disorder.** This disorder is characterized by obsessive thoughts that cause marked anxiety or distress, and/or repetitive or compulsive behaviours that occur in response to an obsession or in a ritualistic way (APA, 2000). In a community sample, the 1-year prevalence rates are between 0.5% - 2.1%, and over a lifetime is 2.5% (APA, 2000).
**Post-traumatic stress disorder.** This disorder characterizes re-experiencing a past traumatic event that is accompanied by increased arousal or avoidance around the trauma event stimuli (APA, 2000). In a community sample, there was a lifetime prevalence rate of 8% (APA, 2000).

**Agoraphobia.** This disorder presents when escaping from a situation or a place might be difficult or embarrassing, thus avoidance ensues (APA, 2000).

Although there is professional agreement about this classification, there are authors that are investigating alternative ways of understanding anxiety disorders. Brown and Barlow (2009) proposed a dimensional classification system, which is based on the shared aspects of anxiety and mood disorders. These authors discuss some of the difficulties with the above classification being measurement error, diagnostic co-morbidity, and challenges with “categorical threshold on the number, severity, and duration or symptoms” (p. 259). Brown and Barlow (2009) presented a higher-order dimensional model: neuroticism/behavioural inhibition, and low positive affect/behavioural activation, with types of avoidance strategies (i.e., behavioural and interoceptive avoidance, and cognitive and emotional avoidance). Although in its nascent form, these two leaders in the area of anxiety research suggest that including a dimensional understanding of anxiety could complement the existing categorical diagnosis, and help to include important therapeutic features that would be missed with the current framework.

Brown and Barlow (2009) also add that a dimensional understanding promotes a possibility of “a transdiagnostic treatment protocol” (p. 266), which “may obviate the
outcome of incomplete treatment and the necessity of repeated, sequential, and narrowly
targeted courses of intervention for each DSM-IV disorder” (p. 267).

The next section reviews literature and research regarding the treatment for
anxiety difficulties and clinical interventions with current anxiety disorders.

**Anxiety Treatment or Intervention**

Given the prevalence and the disruption that anxiety can cause in someone’s life,
clinical treatment and intervention is important for supporting the person struggling with
problematic or dysfunctional anxiety or someone dealing with one or more anxiety
disorders. There is a voluminous quantity of anxiety treatment and outcome literature
and research. Some of this literature is in the popular therapeutic domain, and some of it
is scientific-based outcome research. The following is a cross-sectional review that
discusses some current approaches to clinically working with anxiety.

As outlined above, there is not a single definition of anxiety and there are a many
different manners that anxiety, functional or dysfunctional, can present itself in a person’s
experience. Being that anxiety is one of the most prevalent disorders in the modern time,
it is not surprising that there are many ways in which a therapist could approach clinically
how 11 different possible treatments dealt with an anxious client; these interventions
were Cognitive-behavioural therapy (CBT), Problem-solving therapy, Acceptance and
Commitment Therapy (ACT), Context-centered therapy, Contextual-family therapy,
Adlerian therapy, Interpersonal psychotherapy, Person-centered therapy, Supportive-
expressive therapy, Psychodynamic therapy, and psychopharmacological treatment
(PPT).
Although only a few of these therapy-types had outcome research supporting their use (e.g., CBT, ACT, PPT), all of the above interventions provided a rationale for their theoretical conceptualization of anxiety, the change mechanisms behind the intervention they proposed, and the logic for the approach that the intervention would take with the client (DiTomasso & Gosch, 2002). Thus, although there may be an abundance of anxiety interventions, there are few intervention types that have evidenced their effectiveness with anxiety. This echoes the challenges outlined by Baez (2005); there are few evidenced-based anxiety interventions for use on college campuses with university students.

Bourne (2000) approaches the problem of treatment slightly differently. He reviews the anxiety disorders and the popularly accepted treatments. Following is Bourne’s list of the disorders and possible corresponding interventions.

- Panic disorder: relaxation training, panic-control therapy, interoceptive desensitization, medication, lifestyle & personality changes
- Agoraphobia: relaxation training, graded exposure, cognitive therapy, medication, assertiveness training, group therapy
- Social/performance phobia: relaxation training, cognitive therapy, imaginal & real-life exposure, medication, social skills training, assertiveness training
- Specific phobia: relaxation training, cognitive therapy, incremental exposure
- Generalized anxiety disorder: relaxation training, cognitive therapy, problem-solving, distraction, medication, lifestyle & personality changes
- Obsessive-compulsive disorder: relaxation training, cognitive training, exposure & response prevention training, medication, lifestyle & personality changes
• Post-traumatic stress disorder: relaxation training, cognitive therapy, exposure therapy, medication, support groups

Specific anxiety disorder interventions are the most common researched or evidence-based interventions in the anxiety therapy literature. Bloom, Yeager, and Roberts (2004) reviewed 59 studies on evidence-based practices with anxiety disorders, and concluded that “brief cognitive-behavioral therapies generally seem to be more efficacious than brief psychodynamic therapy, support psychotherapy, or nondirective therapy” (p. 301). These authors also found that these brief therapy practices could be in either individual or group formats and be effective, but that directed programs generally had better outcome results. The following reviews two disorder specific cognitive-behavioural therapy programs, which have empirical evidence supporting the therapy program’s effectiveness.

Pincus, Ehrenreich, and Mattis (2008) developed a therapy program named, *Mastery of Anxiety and Panic for Adolescents*. This 11-session intervention is designed to work with adolescents who struggle with anxiety and panic. The manual also provides an opportunity for the parents to be involved in their child’s treatment. The sessions covered the following areas: the introduction to intervention and the component model (i.e., feelings, thoughts, and behaviors), the physiology of panic and breathing, cognitive component covering probability over-estimation and catastrophic thinking, cognitive re-structuring, interoceptive exposure, introduction to the situational exposure, safety behaviors and exposure, exposure sessions, and relapse prevention and therapy termination. Additionally, the authors of the manual review the research that supports this model. The effectiveness of this program was evaluated using a wait-list control
design. A total of 24 adolescents completed this program, and significant differences were found from pre-intervention to post-intervention in the areas of severity of panic symptoms, as well as in anxiety sensitivity. Interestingly, the control group means remained in the clinical range, whereas the intervention group fell to sub-clinical levels and maintained these gains at a 3-month follow-up (Pincus, May, Whitton, Mattis, & Barlow, 2008).

The second program, *Mastery of Your Anxiety and Worry, 2nd Edition* (Zinbarg, Craske, & Barlow, 2006), focused on adults with Generalized Anxiety Disorder (GAD). This 10-session (or more if need be) covers: an introduction to the intervention and the disorder, learning to recognize anxiety, understanding anxiety’s function and purpose, learning to relax, controlling thoughts (e.g., overestimating risk, thinking the worst), learning to face fear, dealing with real life problems (e.g., time management, goal setting, and problem solving), medication options, and reviewing accomplishments and terminating the intervention. The efficacy of this program was established using a wait-list control design (Zinbarg, Lee, & Yoon, 2007). The results showed that 50% of those who completed were within one standard deviation of the non-clinical mean on four of the five indicators. Another 37.5% of the participants were within one standard-deviation on between two or three of the five indicators. Thus, these two programs show outcome evidence for a CBT approach for the disorders of panic in adolescents, and GAD in adults. As stated above, the anxiety disorder specific interventions and their corresponding research are abundant. Less available is effectiveness research with anxiety disorders in particular contexts.
The following reviews a treatment for social anxiety with university students. Damer, Latimer, and Porter (2010) adapted a cognitive-behavioural group therapy (CBGT) to deal with social anxiety on their specific university campus. These authors adapted the CBGT in the areas of duration (i.e., shortened therapy from 12-24 weeks, to 8 weeks), length (i.e., shortened sessions from 2.5 hours, to 1.5 hours), size (i.e., 5 members, to up to 10 members), and focus (from individualized exposure plans, to common social anxiety-inducing situations). They did report however that the treatment component of cognitive restructuring and exposure remained the same between the original and modified programs. To evaluate this adapted group, 12 student-clients completed pre- and post- measurements, and it was found that there were significant decreases in social interaction anxiety and phobia. It should be noted that there were no experimental control options utilized in this outcome evaluation. Thus, these clinicians needed to make changes to a CBGT program to fit the unique needs of their college counselling center. Although an evaluation was undertaken, no statements of effectiveness can be made given the inadequacy of the effectiveness research design.

In addition to anxiety disorder specific interventions, Barlow and other authors are exploring and developing transdiagnostic anxiety treatments (e.g., Brown & Barlow, 2009; Campbell-Sills & Barlow, 2007; Eifert et al., 2009; Kabat-Zinn & Massion, 1992). Wolfe (2005) proposes a synthesis across several major psychotherapy theories (e.g., Behavioural, Psychodynamic, Social Learning, CBT, Experiential), and arrives at an integrated approach with three goals, which are “(a) reduction of symptoms, (b) analysis and modification of defenses against painful self-views, and (c) healing self-wounds” (p. 191). There is no effectiveness research for Wolfe’s model. Moses and Barlow (2006)
forwarded transdiagnostic anxiety treatment approach emphasizing emotional regulation as a change mechanism, and has integrated the “most salient components of the currently empirically supported individualized treatment for various specific anxiety and mood disorders” (p. 148). This approach also has three components: “(a) altering antecedent cognitive appraisals, (b) modifying emotion-driven behaviours, and (c) preventing emotional avoidance” (p. 148). Transdiagnostic anxiety approaches allow clinicians to serve a more heterogeneous population of clients who suffer from anxiety. Additionally, these approaches were integrative across several therapy programs to capture the salient and change promoting components.

van Ingen and Novicki (2009) examined the effectiveness of a group therapy for transdiagnostic anxiety at a university counselling center (UCC). These authors were interested if a CBGT could work in the real life setting of a UCC, with university students struggling with anxiety; these clinician-researchers also do not distinguish across the anxiety disorders and allowed clients presenting with one or more of the disorders into the group. Although not integrative, they did allow group process to supplement the change mechanisms of the CBGT.

Of the 31 clients who started, it is reported that 17 clients completed the 20 or more sessions of the CBGT. The stated goal of the research “was management, not elimination of anxiety symptoms to allow more satisfactory functioning in the participant’s daily lives” (van Ingen & Novicki, 2009, p. 246). This CBGT had the basic CBT components of exposure therapy, ritual prevention, cognitive restructuring, psychoeducation, breathing exercises, social skills training, and cognitive-behavioural
modification. These authors also included group process (e.g., member-member learning and support, group cohesion) as an active change mechanism in the CBGT.

The results showed significant decreases found in the self-report measure between pre-group and post-group; this measure assessed issues such as general anxiety, anticipating anxiety, depressed mood, and other clinical indicators (van Ingen & Novicki, 2009). The identified shortcomings of this research were the expert anxiety therapists co-leading this group making it difficult for generalizability, a single self-report measure being used to measure change, and not controlling for time. These authors suggest future research to increase internal validity by using a research design with a control, thus allowing for stronger effectiveness statements to be made.

**Summary**

Anxiety is a common mental health challenge in Canada, and on Canadian university campuses. Anxiety can occur at levels that are helpful and motivating, or it can exceed these levels to become distressing, and even disordered. Anxiety at these levels would be disruptive even detrimental to academic and general life tasks.

Given the common occurrence of anxiety in the population, it is not surprising that there are many different therapeutic approaches for clinically working with anxiety. Treatments can address separate anxiety disorders, or can use a transdiagnostic anxiety approach. Additionally, treatments can utilize a single theoretical orientation (e.g., CBT) or can integrate across several orientations or programs to capture salient or core change mechanism components (e.g., Wolfe, 2005).

In terms of effectiveness claims, there are different methods with which an author, clinician, or research might promote the effectiveness of a given anxiety intervention.
For some interventions, there is no research or effectiveness evidence provided but instead there is an appeal to clinical experience or the author’s reputation. For others, there is evaluation, but the research designs used in the assessment are not sufficient to make effectiveness statements. Finally, there are interventions for which outcome and effectiveness statements are supported by rigorous research designs capable of supporting effectiveness assertions. However, as Shadish and his colleagues (1997) point out, effectiveness evidence is most applicable if an intervention is evaluated in the particular environment and with the participant population with which it will be used.

**Gaps in the literature.** Given the unique context of university student’s health outlined in the first section, evaluating the effectiveness of a group therapy intervention specifically tailored for university students dealing with dysfunctional or problematic anxiety would be advantageous. This would address several literature gaps. First, there is a need for well-designed effectiveness research with anxiety interventions capable of being used in the university or college counselling context (Baez, 2005; Damer, Latimer, & Porter, 2010; van Ingen & Novicki, 2009). Second, most of the well-designed anxiety effectiveness research has been completed on discrete anxiety disorders, and with carefully selected participants; it is not efficient for a busy university counselling centre to treat anxiety in this manner. Given the recency of transdiagnostic anxiety treatments (see Brown & Barlow, 2009), effectiveness statements for these interventions are less available. Thus, the even larger gap in the literature is well-designed effectiveness research on transdiagnostic or dysfunctional anxiety treatments specifically designed for university students.
The next section outlines the Challenging Anxiety Group, a transdiagnostic, theoretically-integrative group anxiety intervention developed and used at a university counselling centre. This type of group therapy would be helpful not only for the anxious student but also for university counselling centres that are charged with the responsibility of supporting university and college students in meeting their academic goals.

**Integrative Mindfulness-Based Anxiety Group Intervention**

The Challenging Anxiety Group therapy (CAG) for university students was a transdiagnostic anxiety intervention used at a counselling centre at a major university. Dr. Melanee Cherry, an expert anxiety therapist, developed the CAG for use with university students in a counselling centre. She believed that a transpersonal approach, namely mindfulness, could supplement CBT approaches for anxiety, in particular Generalize Anxiety Disorder, which she states has a longer course (e.g., earlier onset and longer duration) and is more resistant to recovery or achieving a high end state functioning (Cherry, n.d). Cherry advocated for the use of mindfulness meditation for use with anxiety because it: develops the observing self and awareness, helps to face fear or other negative affective states, induces a state of both mental and physical relaxation, helps a here and now orientation, supports not attaching to an affective state, supports noticing impermanence of affective, cognitive, and physical states, and supports accepting the self and one’s affect states thus circumventing the need to escape or avoid. “(M)indfulness offers … a means to develop the spaciousness necessary to stay present with fear ….” (Cherry, n.d.). The CAG has mindfulness as its main mechanism of change, with multiple methods (e.g., practices, techniques, skills, perspectives) to support the student-client in developing mindfulness in their lives.
The CAG is a technically integrative group therapy, which integrates core mindfulness components from Mindfulness-Based Cognitive Therapy (MBCT: Segal, Williams, & Teasdale, 2002) and Dialectic Behavioral Therapy (DBT: Linehan, 1993a). From the program of MBCT, the core components of breathing practices and meditative practices (Segal, Williams, & Teasdale, 2002), and stretching and movement routines. From the program of DBT, the core components of Wise Mind skills, Mindfulness skills, Radical Acceptance, and the emotional regulation of fear and shame were incorporated (Linehan, 1993a). More recently, Cherry (personal communication) had begun to integrate some of the practices of Acceptance and Commitment Therapy (ACT: Hayes, 2005) into the CAG. From ACT, the values orientation was beginning to be added. The following are some of the advantages presented by the CAG:

- The focus population were university students who dealt with transdiagnostic anxiety; this intervention allowed for a broad catchment of students who suffered.
- It was integrative. Thus, captured the change mechanisms across empirically supported therapy programs.
- Has a focus on emotional regulation through the application of mindfulness techniques.
- Promoted cognitive and meta-cognitive observation, regulation, and restructuring through the application of mindfulness techniques.
- Trained in relaxation and breathing techniques.
- Promoted exposure to internal contexts (e.g., cognitive, sensory, physical, and affective), and external contexts (e.g., environmental and social).
- Promoted non-reactivity to mental and external stimulus.
• Promoted present moment awareness and openness.
• Promoted goals and goal achievement.
• Used member to member learning and cohesion to support and normalize anxious and life experiences.

Mindfulness is at the core of CAG. For the purposes of this current research, the CAG had its name changed to the Integrated Mindfulness-Based Anxiety Group (IMAG) so that there could be greater transparency for the integrative nature of the intervention. Following is a review of mindfulness, and its expansive contributions and presence in western therapeutic programs that deal with anxiety.

**Mindfulness**

Mindfulness (MF) is difficult to define, but most broadly it is the cultivation of conscious attention and awareness (Brown & Ryan, 2003). Thich Nhat Hanh (1976) stated that it is “keeping one’s consciousness alive to the present reality (p. 11). He believes that MF should not be reserved only for meditation, but should be exercised in everyday tasks (e.g., driving to work, relating to others, and being in one’s life). At the beginning of a MF practice, there is consciousness of the breath; attention follows the breath as it enters and leaves the body (Hanh, 1976). Simply following the breath. This leads to consciousness of the body, and consciousness of one’s surroundings (Hahn, 1976). Consciousness is not evaluating and thinking; it is being non-judgementally aware of the information entering the sense doors (i.e., sight, hearing, touch, taste, and smell). MF changes “how one relates to dysfunction thought and negative affect, rather than changing eliminating the states themselves” (Breslin, Zack, & McMain, 2002, p. 281).
This promotes a way of living based on non-evaluative and accepting awareness of one’s experience in the moment.

In addition to facilitating conscious awareness, there are certain attitudes for being with one’s experience in the moment (e.g., non-judgement, patience, seeing as new, trust in self, non-striving, acceptance, and letting go in the moment), and commitments to the breath, meditation, and the embodiment of experience (Kabat-Zinn, 1990; Kornfield, 1993; McLeod, 2002). MF is not a narrowing of attention or concentration (i.e., transcendental meditation), but promotes insight and integration of the perceptual and sensory fields (Killackey, 1998). This is a holistic approach, which addresses not only cognitive, emotional, behavioural, spiritual, social, and physiological areas, but also the gestalt of these spheres. MF is a way of being, which encourages holistic engagement of one’s experience with the present moment.

Thoughts and emotions driven from the past and expectations of the future block the ability to experience today, which is experiencing this moment exactly as it is. Training the MF attitudes through a meditative practice is the mechanism for loosening the mental pervasiveness, and challenging mental and emotional automaticity (Kabat-Zinn, 1990). It is a “self-regulation and retraining of attentional habits … to achieve a specific attentional set” (Goleman, 1976, p. 44). Attention regulation, openness to new information and experience, less reliance on pre-conceived ideas or beliefs, release of self- and other-judgment, relaxation, and self-care are some of MF’s healing pathways (Kabat-Zinn, 1990). Being alive to the present moment and its content is antithetical to pervasive, reactive, and rigid patterns of response to one’s world.
Chögyum Trungpa Rinpoche (1974), a Tibetan master, discussed the practice of meditation to build mindfulness. He joked that the Buddha sat and wasted his time, so sitting and wasting time is very important. He reflected that mindfulness is the basis of being. One of Chögyum Trungpa Rinpoche’s students, Pema Chödrön (2005) talked about the power of staying. Staying with the good thoughts, and the bad thoughts; staying with the good emotions, and the bad emotions. Good, bad, no problem, just stay (Chödrön, 2005). Thus, these masters discuss mindfulness and meditation as ways to train to stay, non-judgementally and with openness, in the present moment, with all that it has to offer.

Awareness or consciousness has been identified by many philosophical, spiritual, and psychological traditions as being important to wellness (Wilber, 2000). Learning to heighten one’s awareness in the moment is hypothesized to help individuals “manage the capricious nature of the mind”, and can aid in “protecting one’s mental health and for raising awareness of choice in action” (Hirst, 2003, p. 365). Kabat-Zinn (2000) eloquently states, “all human beings … have … deep and life-long inner recourses for learning, growing, healing, and personal transformations. Part of (the therapist’s) job is to make available appropriate opportunities and effective vehicles for mobilizing those resources … so (the clients) can put them into service of their own health” (p. 239).

**Mindfulness and Health**

In terms of MF’s place in Western psychological healing practices, this tradition originated from a different categorical system of health and wellbeing. MF is firmly seated in Buddhism, which is considered to be the most psychological religion, or the most spiritual psychology (Walsh, 1988).
The Eastern perspective tends to view mental illness as extensions of the pathology of the everyday. From the Eastern perspective, the roots of everyday pathology are said to be ignorance, attachment, and aversion (Goleman, 1976). Ignorance is a paucity of knowledge regarding one’s own psyche and true nature, which is good and socially concerned at its essence (Goleman, 1976; Walsh, 1988). The affect of this ignorant state can be shamelessness, remorselessness, egoism, and perplexity or the inability to decide what is in the interest of compassion and equanimity; when ignorance is present so is attachment and aversion (Goleman, 1976). Attachment constitutes the never-ending need to fulfill desires, and may present as greed, materialism, and envy. Aversion is the avoidance of anxiety and fears. Goleman (1976) states a fourth pathological factor as contraction and torpor. These contribute to “a nonadaptive, rigid inflexibility and moribund clinging to unhealthy mental states” (Goleman, 1976, p. 43). Overall, happiness is predicated, not on satisfying attachments and aversions, but on extinguishing them (Walsh, 1988).

In addition to the reduction of ignorance, attachment/aversion and rigidity, Walsh (1988) discussed seven health-related attitudes that can be broken into three broad categories. The first category is arousing the mind, which is composed of effort, rapture (i.e., delight of conscious awareness), and exploration. These motivate the mind’s inquisitive and curious properties. The second category is quieting the mind, which is composed of calm, equanimity, and concentration. These encourage the mind’s reflective and still properties. The final category is MF, which is the awareness and balance of the other two categories. MF is the awareness of the sensory-field stimulus, and the metacognitive position of being aware of this awareness. With this, the qualities of MF can be
seen as: attention regulation (MF), openness to new information and experience (arousing), less reliance on pre-conceived ideas or beliefs (arousing), release of self- and other-judgments (quieting), relaxation (quieting), and disciplined self-care (MF).

Through MF, one can monitor the state of one’s mind to bring it into equanimity, or balance. An equanimous mind is one that can engage fully with the world, yet not become embroiled with it.

Although the Eastern perspective seems ostensibly incongruent with Western notions of health and illness, there is a remarkable overlap with many of the conceptual ideas in Western therapy types, such as Psychoanalysis, Existential, Cognitive, and Behavioural techniques (Walsh, 1988). Although attaining understanding of the roots of mental dysfunction may be different, there may be common roads to healing. Walsh (1988), an expert in Eastern religions and Western therapeutic practices, outlines these pathways, some of which are summarized below.

• MF “might be regarded as the refinement of the psychoanalytic ‘observing ego’” (Walsh, 1988, p. 553). The observing ego allows us to step outside and view ourselves more rationally.

• MF’s therapeutic use of a distancing function or de-centring serves two purposes: (1) allows for greater volitional access to the 0.25 seconds between unconscious impulse and conscious action (Libet, 1985), and (2) challenges an over-identification with mental content that is by its nature capricious and not enduring.

• MF encourages the relaxing of psychic structures, and the acceptance and non-judgment of whatever material occurs in consciousness. This allows the
individual to see that thoughts are not facts, but mental events that inevitably change.

- MF pertains to how you relate to objects presenting in both your internal and external worlds. Experiencing the world with a beginner’s mind, or without pre-conceived notions about how it should be or how it has been in the past is an objective of MF. The beginner’s mind precludes an evaluative and judgmental stance.

- MF acknowledges the fundamental reality of suffering, and authenticity equaling the experience and acceptance of the fullness of human experience (i.e., pain and pleasure) in the present moment.

- Controlling the content of the mind through volition, practice, and attention/concentration is the aim of both cognitive and MF practices. These two approaches share the similarity of conditioning or training the mind.

- MF focuses on behaviours, and how behaviours can affect the mind. Although the first step in many MF practices is quieting the mind through calming the body, the body also is a mechanism for fostering attention, awareness, and consciousness.

In general, Western therapies focus on altering the impact of past on present functioning. In contrast, Buddhist practice ignores the “emotionally loaded contents of awareness” and seeks to alter the context in which this information is presented in conscious awareness (Goleman, 1976, p. 52). The Western therapist “assumes as given the mechanisms underlying perceptual, cognitive, and affective processes, while seeking to alter them at the level of socially conditioned patterns” (Goleman, 1976, p. 52). MF
bypasses these patterns and targets the “control and self-regulation of the underlying mechanisms themselves” (Goleman, 1976, p. 52). In MF, therapeutic behavioural and personality change is a secondary phenomenon to the primary goal of consciously regulating mental states that define one’s reality (Goleman, 1976). Finally, Daniel Goleman (1976), a Buddhist psychoanalyst, states:

Consciousness is the medium which carries the messages that compose experience. Psychotherapies are concerned with these messages and their meanings; meditation instead directs itself towards the nature of the medium, consciousness. (p. 53)

Mindfulness is different yet complementary to Western approaches. Not judging and releasing mental content, training the mind to stay open to experience in the moment, slowing the impulse-to-action process, and not overly identifying with emotional or cognitive content of the capricious mind are methods of conditioning consciousness or the medium that holds negative thought and emotions, and automatic and rigid response patterns. Given the complementary nature of MF and western psychotherapies, it is not surprising the Western therapy is beginning to integrate MF into modalities of health.

**Mindfulness and Anxiety**

Mindfulness is fast becoming one of the most popular clinical approaches being used, and with a vast variety disorders and ailments. A short list of disorders that mindfulness techniques have been applied to are: binge eating disorder (Kristeller & Hallet, 1999), job stress (Cohen-Katz et al., 2005a; Shapiro, Astin, Bishop, & Cordova, 2005), stress reduction and quality of life (Roth & Robbins, 2004), substance abuse (Bowen, Chawla, & Marlatt, 2011; Breslin, Zack, & McMain, 2002; Marcus, Fine,
Moeller, Khan, Pitts, Swank, & Liehr, 2003), mood and stress with medical patients (Carlson, Ursuliak, Goodey, Angen, & Speca, 2001; Speca, Carlson, Mackenzie, & Angen, 2006), nurses’ burnout (Cohen-Katz et al., 2005b), academic stress (Beauchemin, Hutchins, & Patternson, 2008; Shapiro, Schwartz, & Bonner, 1998), recurrent depression (Scherer-Dickson, 2004; Segal, Williams, & Teasdale, 2002), positively influencing brain and immune functions (Davidson, et al., 2003), psoriasis (Kabat-Zinn, et al., 2003), increases in brain grey matter (Holzel, Carmody, Vangel, Congleton, & Yerramsetti, 2011), aggression (Singh et al., 2007b), schizophrenia (Davis, Strasburger, & Brown, 2007), and various difficulties in mild mental retardation (Singh, Wahler, Adkins, & Myers, 2003; Singh et al., 2007a). Additionally, there have been both quantitative and qualitative research (see Mackenzie, Carlson, Munoz, & Speca, 2007; Mason & Hargreave, 2001) completed with participants undertaking mindfulness-based programs to deal with a psychological or physical difficulty. One of the most prevalent disorders that mindfulness has been used to address is anxiety.

Anxiety and its manifestation is antithetical to mindfulness and its presentation. When comparing anxiety to mindfulness, one finds these stark differences:

- Narrowing and constriction of mental states vs. opening and expansion of the mental states
- Future orientation vs. a present orientation
- Fleeing, avoiding, and escaping vs. staying and facing in
- Embroiled or centered in mental content vs. an observing or de-centred stance
- Over-identification with emotional/mental content vs. de-identification with the impermanence of emotional/mental content
• Judgement of self or situation vs. non-judgement of self or situation
• Not trusting self vs. trusting self and one’s being state
• Intolerance of the situation vs. acceptance of the situation as it is
• Tension and stress vs. relaxed, calm, and balanced
• Narrowly focused attention vs. broadly focused attention
• Automatic and habitual reaction patterns vs. situationally-based responding
• Reactive and closed vs. curious and open

Needless to say, there is an abundance of literature and research that has investigated mindfulness-based therapy or treatment of anxiety. Brown and Ryan (2004), Carmody and Baer (2008), McKee, Zvolensky, Soloman, Bernstein, and Leen-Feldner (2007) showed significant negative correlations between anxiety indicators and both single-factor and multi-factorial mindfulness indicators, respectively. The use of mindfulness-based interventions with anxiety and anxiety disorders is plentiful: transdiagnostic anxiety (Kabat-Zinn, et al., 1992; Miller, Fletcher, & Kabat-Zinn, 1995), social anxiety (Goldin, Ramel, & Gross, 2009), anxiety reduction in medical patients (Tacón, McComb, Caldera, & Randolph, 2003), anxious children (Semple, Reid, & Miller, 2005), insomnia in anxiety disorders (Yook et al., 2008), anxiety reduction in schizophrenia (Brown, Davis, LaRocco & Strsburger, 2010; Davis, Strasburger, & Brown, 2007), general anxiety disorder (Evans et al., 2008), and depression and anxiety presentations (Finucane & Mercer, 2006). Finally, there are workbooks and manuals to support the acquisition and increase of mindfulness through various theoretical programs, such as The Mindfulness & Acceptance Workbook for Anxiety- A Guide to Breaking Free From Anxiety, Phobias & Worry Using Acceptance & Commitment Therapy (Forsyth &
Like these workbooks, many of the above studies utilized specific mindfulness-based or mindfulness-included programs to train and support the increase and acquisition of mindfulness in a client’s life. The following briefly outlines these main mindfulness programs, and specifically reviews anxiety research that uses these programs to increase mindfulness in the lives of the anxious participants.

**Mindfulness-based Stress Reduction (MBSR: Kabat-Zinn, 1990).** MBSR is “a clinical program, developed to facilitate adaptation to medical illness, which provides a systematic training in MF meditation as a self-regulatory approach to stress reduction and emotion management” (Bishop, 2002, p. 71). It is an 8-10 week program that trains people in foundations of MF (i.e., the attitudes and commitment), correct breathing and sitting meditation posture, body-scan technique, yoga, walking meditation, a day of silent retreat, and generalizing the seeds of MF across one’s life. “MBSR aims to teach people to approach stressful situations ‘mindfully’ so they may respond to the situation instead of automatically reacting to it” (Bishop, 2002, p. 72). The program itself is largely psychoeducational and skill-based, with a large homework or practice commitment. Essentially, participants work up to a personal, daily practice of MF meditation and body-scan techniques. Additionally, leaders of MBSR are expected to have a restorative and stable meditative practice of their own (Brantley, 2005). In MBSR, MF is presented as a mind-body intervention, without any evidence of its Buddhist origins. In Buddhist terms, MF is one of the paths to enlightenment; personality and therapeutic change and health are merely secondary gains to the main goal of training of a MF way of being in the
world. It therefore could be said that MBSR is not a stress-reduction, anxiety-reduction, or pain-reduction program at all, but a new way of being in the world. Mindfulness-based Cognitive Therapy for Depression Relapse (MBCT: Segal, Teasdale, & Williams, 2002) uses MBSR’s meditation approaches and techniques as a basis or foundation to its own program.

MBSR was one of the first mindfulness-based programs to show effectiveness outcome research with transdiagnostic anxiety. Kabat-Zinn and his colleague (1992) tested the effectiveness of the MBSR with anxiety disorders. Twenty-two participants with diagnosed anxiety completed the MBSR group. Assessments in anxiety, depression, and general and medical symptoms were taken before, during, and after the group. It was reported that the participants served as their own controls. The results showed significant reductions across the measurements, and at a 3-month follow-up. Miller, Fletcher, and Kabat-Zinn (1995) followed-up with these same participants at 3-years to see if gains were maintained. Eighteen of these same participants showed a maintenance of prior gains as reported on depression and anxiety measures. It also was shown that the majority of the participants (10 of 18) maintained their meditational practices, with 16 of 18 practicing informal techniques of mindfulness.

Tacón, McComb, Caldera, and Randolph (2003) showed improvements in anxiety symptoms in female patients suffering from heart disease. A total of 20 women were randomly assigned to an experimental group and a control group. After the MBSR group, the experimental group showed significant reductions in anxiety symptoms and reductions in the tendency to suppress negative emotions. Finally, Shapiro, Schwartz, and Bonner (1998) randomly assigned 78 pre-medical or 2\textsuperscript{nd} year medical students to
either an experimental group or a control group. The experimental group undertook the MBSR intervention while the remainder stayed on a wait-list. It was found that there was a reduction in depressive symptoms, state and trait anxiety, increases on empathy scores, and increases on a spirituality measure. Additionally, these same gains were observed when the wait-list participants entered intervention, across experimenters, and during examination periods. These authors stated that compliance to the treatment (i.e., maintaining meditative practice) was important to outcome. From these four studies, one can see that MBSR is successful in reducing anxiety symptoms in transdiagnostic groups, and that the gains that are made are maintained at during extended follow-up periods.

**Dialectic Behavioral Therapy (DBT: Linehan, 1993a, b).** DBT is a multi-component program that was built to treat difficult and complex mental disorders (e.g., chronically suicidal patients, multi-disordered individuals with Borderline Personality Disorder). Although DBT belongs to the family of cognitive-behavioural and behavioural therapies, it has some significant differences. Dimeff and Linehan (2001) outline the three main differences from said therapies being (1) inclusion of the dialectics of acceptance and change, (2) possessing multiple components (i.e., group skills training, individual therapy, and telephone consultation), and (3) having therapists supported through a consultation team to keep motivated and healthy. Linehan (1993a) discusses her inclusion of the dialectic orientation from her experience with meditation practices and Eastern spirituality. “The DBT tenets of observing, mindfulness, and avoidance of judgment are all derived from the study and practice of Zen meditation” (Linehan, 1993a, p. 20). One of Linehan’s multiple contributions was distilling mindfulness meditation down to sets of practical skills (e.g., Mindfulness skills, Wise Mind, and Radical
Acceptance); stated differently, it is “a pragmatic approach to mindfulness training that may serve as a valuable resource for clinicians who wish to teach mindfulness skills to clients with anxiety disorders” (Gratz, Tull, & Wagner, 2005, p. 148). Interestingly, DiGiorgio (2009) found in her dissertation research that DBT therapists were less likely to adhere to the full protocol of DBT when dealing with anxiety clients, and that those therapists with a non-cognitive-behavioural orientation were more likely to use the mindfulness skills in non-DBT work. In other words, therapists are adapting or cherry-picking core components of DBT (e.g., the Mindfulness skills) to meet the unique needs of their therapeutic environments. However, although this cherry-picking is shown to be common practice (e.g., Marra, 2004), Gratz, Tull, and Wagner (2005) warn that “there is not yet empirical support for the use of only the skills training component of DBT (separate from the other components)” (p. 148). There is however research on using DBT techniques as combined or integrated with other non-DBT techniques to deal with anxiety.

**Integrative mindfulness-based approach.** Roemer, Salters-Pedneault, and Orsillo (2006) suggest an integrated mindfulness- and acceptance-based strategy for dealing with Generalized Anxiety Disorder (GAD). In this 16-session model, mindfulness activities or exercises from MBSR/MBCT, DBT, and ACT were added to an established CBT-treatment for GAD. These authors report instructing clients in both formal and informal mindfulness practices. The intervention is divided into two components: “the first seven sessions involve instruction in the relevant concepts, in addition to relevant experiential exercises, whereas the last nine sessions are focused on reviewing clients’ efforts to engage in valued, mindful action, obstacles encountered, and
plans to future action” (Roemer, Salters-Pedneault, & Orsillo, 2006, p. 55). These authors use both a case study (Roemer, Salters-Pedneault, & Orsillo, 2006), and a randomness controlled trial study (Roemer, Orsillo, & Salters-Pedneault, 2008) to show effectiveness. Following is an excerpt from this case study:

Thomas was reported to end the 16 week treatment with significantly lower levels of generalized worry and anxiety, as well as lower anxiety related to social situation. He was not given any principal DSM-IV diagnoses; he was judged to have GAD in partial remission (2 of 8), social phobia in partial remission (severity of 2), and a GAF score of 78. (Roemer, Salters-Pedneault, & Orsillo, 2006, p. 65)

Additionally, Roemer and Orsillo (2006) reported preliminary data regarding the treatment described above. Sixteen clients who suffered from GAD as well as other anxiety and mood disorders, underwent said-treatment and reported significant reductions in worry, anxiety, and depression on self-report measures. The large treatment effect observed at the end of the treatment also held at three months. Thus, these authors concluded that their integrated mindfulness- and acceptance-based strategy was useful for treating GAD and other additional disorders. For these authors, a future direction of research was demonstrating the success of their strategy in different populations, and also understanding the change mechanisms that were creating the change (e.g., mindfulness).

Acceptance and Commitment Therapy (ACT: Hayes, Shrosahl, & Wilson, 2003). It is important to acknowledge the contributions made by ACT (Hayes, 2005) has made to the field of integrating mindfulness into anxiety treatment. Although not a large component, ACT strategies and activities (e.g., valued actions) were beginning to be
integrated into the CAG (Cherry, personal communication). Roemer and her colleagues (Roemer et al., 2009; Roemer & Orsillo, 2002, 2005; Roemer, Salters-Pedneault, & Orsillo, 2006) integrated key components of ACT into their work with GAD. Eifert and Forsyth (2005) have created an ACT manual to work specifically with anxiety disorders. Although there is empirical support for the use of ACT with anxiety disorders (see Twohig, Masuda, Varra, & Hayes, 2005), this effectiveness research is not covered in this review because of ACT’s limited application in the CAG.

**Mindfulness Interventions and Effectiveness**

The reviewed studies show that mindfulness as it is trained in particular programs can have a healing and health promoting effect. This statement has been supported through a variety of therapeutic outcome studies, across a variety of mindfulness-based interventions. Grossman, Niemann, Schmidt, and Walach (2004) conducted a meta-analytical investigation of 20 studies indicating that MBSR is an useful intervention for a diversity of mental and physical health challenges. “(C)onsistent and relatively strong levels of effect sizes across very different types of samples indicates that mindfulness training might enhance general features of coping with distress and disability in everyday life, as well as under more extraordinary conditions of serious disorder or stress” (Grossman, et al., 2004, p. 39). In terms of anxiety, Hofmann, Sawyer, Witt, and Oh (2010) also conducted a meta-analytic study on the effect sizes of 39 studies of mindfulness-based interventions for anxiety, and found the effects sizes to be robust and in the moderate range. These authors concluded that mindfulness-based therapies were a promising intervention for treating anxiety. Thus, the investigation into the effectiveness
of an integrated mindfulness-based intervention for anxiety in university students is a worthwhile endeavour.

This point is accentuated by Toneatto and Nguyen (2007) who question the accepted belief that mindfulness-based stress reduction programs, in particular MBSR, are effective at reducing symptoms of anxiety and other mood disorders. Through an analysis of (1) experimental controls utilized in the outcome and effectiveness studies, (2) follow-up measurements, and (3) mindfulness and practice as a change mechanism, these authors conclude that MBSR’s effectiveness at making changes to anxiety and other mood symptoms is equivocal at best. They charge that maintenance of gains is not well established, and that the relationship between practicing mindfulness and changes in anxiety and depression were also equivocal.

Thus, although MF is commonly practiced in many Western therapeutic programs or interventions, an analysis of effectiveness, not assumptions or generalizations, needs to guide IMAG’s use in college and university populations.

**Summary**

Historically, mindfulness (MF) was an Eastern spiritual and psychological practice. Due to its ability to promote healing and well-being, MF has been transported from its original context to be used in clinical and medical environments (Kabat-Zinn, 2000). MF means staying open to and aware of the present moment, and doing so with particular attitudes, such as patience, non-judgement, and curiosity. MF is currently being used in many therapeutic programs, and with a variety of medical and psychological ailments. Its popularity in clinical contexts is partially due to the reputations of these clinical programs (e.g., MBSR, MBCT, DBT, and ACT), but also
due to the research that is being completed to understand its effectiveness and the exact change mechanisms responsible for the clinical change that is being seen in these popular therapy programs. Along with this outcome research, authors are beginning to critique the mindfulness-based outcome research, which is not seen as unequivocally effective, nor is mindfulness as a change mechanism fully understood or accepted.

At the centre of this current research is the IMAG, which is an integrative mindfulness-based intervention developed for clinical use with university students who struggle with self-reported anxiety. It integrates several core components found in these popular mindfulness-based therapy programs into one program focused on training student-client in mindfulness for the purposes of decreasing anxiety and increasing well-being.

**Gaps in the literature.** There are several gaps identified in this section of the literature review. First, although mindfulness is being frequently used in clinical treatments, the effectiveness of mindfulness-based programs in treating anxiety and other psychological disorders is currently being explored and established. Additional well-designed effectiveness research needs to be completed with mindfulness-based programs. Second, mindfulness is currently being explored primarily within full therapeutic programs (e.g., MBSR, or DBT, or MBCT). However, frequently clinicians use only selected components of these programs, without knowing these component’s effectiveness or how removing these components from their original programs will impact the initial effectiveness. It is the full programs that have effectiveness research, not its selective components. Third, it is unknown what aspects of mindfulness is creating change in these programs. MF training is complex and very involved, therefore
several aspects of this training could be responsible for the clinical change being evidenced. Additionally, it is unknown how mindfulness training is creating the change being observed. Finally, the IMAG is a relatively new integrative mindfulness-based anxiety group therapy for university students who self-report anxiety. Although this has been used on a university campus, its effectiveness at reducing anxiety symptoms or increasing mindfulness levels has not been explored.

**Research Questions**

Across the three main sections of this review are several identified gaps in the literature. Below are several research questions that attempt to address some of these literature gaps. These questions are divided into two main categories: (1) the effectiveness of the IMAG, and (2) the participant’s experience with the IMAG.

**Effectiveness of the IMAG.** There are two main approaches for understanding the effectiveness of the IMAG. The first assesses change created by the IMAG across the study at the individual client, cohort, and group levels, so as to (1) understand the process of change across the study, and (2) design a research study capable of supporting effectiveness claims. The following questions each inquire about functional relationships between the IMAG and the dependent variables, which are anxiety reduction, general clinical symptom reduction, and an increase in mindfulness levels. Following are these questions:

a) Is there a functional relationship between the IMAG and an increase in mindfulness, as seen by qualities of consciousness, awareness, attention, non-reactivity, and non-judgment among university or college students who self-report anxiety?
b) Is there a functional relationship between the IMAG and a decrease in the symptoms generally associated with anxiety (e.g., worry, physical, cognitive, affective symptoms) among university or college students who self-report anxiety?

c) Is there a functional relationship between the IMAG and a decrease in general clinical symptoms in university or college students who self-report anxiety?

In addition to an intrapersonal change analysis across the intervention, a more traditional method of supporting effectiveness claims, a group-based approach, was used. This approach used repeated-measures at pre-group, mid-group, end-group, and post-group to investigate change across the IMAG. This research question was:

Did the IMAG create statistically significant ($\alpha = 0.05$) differences between scores on the dependent-variable measurements at pre-group, mid-group, end-group, and post-group measurements?

**Participant’s experience in the IMAG.** The second approach inquires about the participant’s experience with the IMAG. This was guided by two discrete methods for understanding the participant’s experience. The first method was an analysis of the participant’s use of the various practices, techniques and skills taught in the IMAG. An additional question regarding the context of their practice was asked. The questions guiding this method were:

a) How often and for how long did the participant’s practice the mindfulness skills and techniques taught in the intervention?

b) Which mindfulness skills and techniques were practiced?
c) What types of stress and anxiety events confronted the participant’s on a weekly basis?

Finally, a post-group interview directly explored the participant’s experiences. The participants were specifically asked about their experience in the IMAG and the change that they experienced and also the challenges that they faced while working with the IMAG. The research question guiding the exploration of the post-group interviews was:

a) What themes occurred in the post-group interviews regarding the participant’s successes and struggles with anxiety, mindfulness, and the group intervention?

Expected Findings

Given the meta-analytic study that explored several mindfulness-based interventions’ success with creating therapeutic change (Grossman, Niemann, Schmidt, & Walach, 2004) and more specifically the meta-analytic study that explored the magnitude of change in mindfulness-based interventions for anxiety and mood disorders (Hofmann, Sawyer, Witt, & Oh, 2010), it was expected the IMAG, a mindfulness-based intervention for university students who self-reported anxiety, would be positive in that the IMAG would be successful or effective at creating the desired change. It was also expected that participants would have a positive experience with both the mindfulness practices and skills. Finally, it was expected that the participants would provide insight in terms of their experience of both their successes and their struggles in the intervention. The themes generated from the interview were expected to improve the IMAG.
Conclusions

There are several queries presented by this literature review deserving emphasis. These points are listed below:

- University students are a unique clinical population because they have goals of academic completion and success, and these goals can be severely stressed or disrupted by mental health challenges, such as anxiety. Coping with mental health challenges is accomplished within a goal-driven and focused context. Thus, they are a unique population with unique needs.

- There are few anxiety interventions for university students, which have well-designed effectiveness evidence with this driven and goal-oriented population.

- Transdiagnostic anxiety therapy groups are advantageous on university campus because of the increased service opportunities of a broader client-base; there are however fewer anxiety interventions with effectiveness evidence with this type of general anxiety treatment.

- Although research has shown strong negative correlations between mindfulness and anxiety, and mindfulness-based programs (e.g., MBSR) have suggested evidence of effectiveness with anxiety, there are challenges to these statements based on methodological rigor of the outcome studies; therefore, the veracity of effectiveness and change mechanism claims need to be established.

- Although there is evidence of effectiveness with full programs of (e.g., MBSR, DBT), it is unknown how effectiveness changes when core components (e.g., mindfulness formal and informal practices, and mindfulness skills) are taken and
integrated into a new program focused only on anxiety and mindfulness training for university students.

- It is unknown what the change mechanisms are in the effective mindfulness-based programs (e.g., mindfulness).

This current study acknowledged many of these queries through evaluating the effectiveness of an integrated mindfulness-based anxiety group intervention (IMAG, formerly known as the CAG) for university students who self-report dealing with anxiety. This current study investigated not only the effectiveness of the IMAG at reducing anxiety, but also the IMAG’s ability to increase or support student-client acquisition of MF. Additionally, this study monitored both MF skills and technique practice. But most importantly, this study explored the participant’s perspectives of not only the IMAG but also their experience of anxiety and mindfulness after their involvement in this intervention. Thus, the participant’s perspective is included into the exploration, and supports possible improvements in the IMAG’s delivery and effectiveness. Honouring the participant’s voices is another unique contribution made by this current study. The next chapter outlines the research methodology for this study.
CHAPTER 3: METHODOLOGY

Introduction

The goal of this study was to determine the effectiveness of an integrative mindfulness-based anxiety group therapy intervention (IMAG) at producing desired changes in anxiety symptoms and mindfulness characteristics of university or college students who self-reported dealing with problematic anxiety. A Small-N, mixed-method research design was utilized. This design allowed for the assessment of the therapy intervention through monitoring the application of techniques taught in the intervention; comparing pre- and post-measurements; analyzing the intrapersonal change process across the therapy intervention; and exploring the participant’s perspective of the therapy intervention. Multiple avenues of analyses permitted a broader understanding of the effectiveness of this intervention while considering the participant’s perspectives.

This paragraph outlines the general content of this chapter. First, the research design section describes the conceptual approach to the study, and outlines the type of data produced to answer the research questions. The pragmatic and paradigmatic rationale for using a mixed qualitative and quantitative design is briefly reviewed. Second, recruitment strategies and participant characteristics are discussed. Third, the procedures of the study outline the various steps taken to complete the therapy intervention and to collect the data. Then, a brief session-by-session outline is provided. The data production strategies also are reviewed. The dependent variables are anxiety, mindfulness, and therapeutic outcome; the respective measurement scales for the dependent variables are reviewed. Additionally, the post-group interview protocol and procedures are outlined. Finally, the four separate sections for each of the data analytic
strategies are described: the Participant and Group Practice Analyses, the Analysis of Variance (ANOVA), the Visual analysis, and finally, and the Thematic Analysis.

**Research Design**

A mixed method strategy was used as a broad research approach for this study. More specifically, a quantitative, multiple-baseline Small-N design was the predominant model, with a qualitative, post-group interview accompanying this broader design. Stated differently, the Small-N design was the principle design, and the qualitative post-group interview was the complementary method (Morgan, 1998; Steckler, McLeroy, Goodman, Bird & McCormick, 1992). This approach was chosen because of the newness of this particular intervention. This design was both technically and paradigmatically consistent. It captured both changes expected by the researcher (i.e., quantitative data) and unexpected changes as they were experienced by the participants (i.e., qualitative data).

Using this strategy, therapeutic change can be both observed by the researcher and experienced by the participant; it is recorded over time from a scale-based objective lens, and perspective-based subjective lens. These diverse data strategies allowed for a multidimensional analysis of change created by this mindfulness-based anxiety intervention, thus effectiveness is assessed broadly and thoroughly.

A Small-N research design is well established in therapy-outcome research, particularly for newer interventions where the process of change may be less well understood or where the intervention itself may benefit from being fortified (Barlow & Hersen, 1973; Kazdin, 2011; Lucyshyn, Albin, & Nixon, 2002; Morgan & Morgan, 2003). Small-N design focused on intrapersonal change patterns created across various phases of a therapeutic intervention; it provided a window into the ongoing clinical
process at an individual level. The multiple baselines allowed for the determination of whether a functional relationship between the intervention and the dependent variable existed or not. Thus, “a flexible and viable scientific methodology” to explore intrapersonal change and therapeutic effectiveness was produced (Lundervold & Belwood, 2000, p. 94).

Multiple visual analyses and two sets of ANOVAs are used to present the Small-N’s repeated and multiple measurements on the several scales of anxiety, mindfulness, and general clinical outcome. This approach maximized the possible assertion of a functional relationship existing; it allowed for the observation of possible change across several indicators at several points in time. Additionally, the ANOVAs provide levels of statistical significance, which are important if a statement about therapeutic effectiveness is to be widely accepted. In short, these quantitative analyses allowed for a triangulation of findings, which strengthens an assertion of change in key indicators over time.

Qualitatively, the participants’ experiences of anxiety, mindfulness, and the therapy group itself were explored after the intervention through an interview. This allowed unexpected or novel experiences pertinent to the goals of the study to be located in the client’s experience. A thematic analysis (Boyatzis, 1998; Braun & Clarke, 2006; Ritchie, Spencer, & O’Connor, 2003) provided a data analysis approach, which remained flexible and open to the qualitative material as it occurred in the transcripts. This data-driven or inductive approach to analysis allowed the data to be parsed, coded, and organized according to the client’s experiences as they were expressed in post-intervention interviews. Although of a different paradigm, this analysis provided another dimension to the triangulation efforts described above.
Participants

Recruitment

Three university and college campuses in a Western Canadian region were chosen to facilitate the therapy groups because of the support of the counselling centres at these campuses. Counselling centre directors were contacted for the purpose of informing about the study, and ascertaining their interest in supporting the research. Please see Appendix A for the letter to the counselling centre directors.

Recruitment was undertaken on campuses where the therapy groups took place. Participants were recruited by advertisements posted at University and College Counselling Centres and their respective websites, posters distributed over campus and department email list serves, and posters hung around university and college campuses. Additionally, brief presentations about this research study were given at each of the counselling centres so staff-counsellors would be aware of the research and its aims, and could give prospective participants poster-advertisements at intake.

The inclusionary criteria for the study were: (a) self-report of anxiety; (b) full or part time students; and (c) over 18 years of age. The exclusionary criteria for the study were the presence of (a) Obsessive-compulsive disorder; (b) Post-traumatic stress disorder; (c) psychosis; and (d) suicidality.

Two campuses were on a 2-semester system, and one was on a 3-term system. Recruitment took place in Spring and Summer months. Please see Appendix B for the recruitment advertisement.
Initial Brief Telephone Pre-Therapy Screen

A total of 45 individuals made initial phone contact with the study, and underwent the brief 10-minute telephone pre-screen interview. This initial screening briefly explained the research and the therapy group, and asked several questions: yes/no items about several common anxiety symptoms, prior and current therapy experience, and current school status. If the individual was still interested in participating and they met the initial criteria, a two-hour face-to-face interview was arranged. A copy of the informed consent was emailed to the individual in the time between the brief telephone screen and the pre-group interview. Please see Appendix C for the revised Informed Consent form, with the follow-up sessions.

Fifteen of these individuals, after the brief telephone screens, were deemed to be not eligible, decided against participating, or couldn’t be reached by phone. An Anxiety Resource Sheet was offered to non-participating individuals with whom contact was possible. Please see Appendix D for the brief telephone pre-group screening. Please see Appendix E for the Anxiety Resource Sheet.

Pre-Group Screening and Research Interview

Thirty individuals continued to the two-hour, audio-recorded pre-group screening and research interview. The participants reviewed and signed the consent form at the beginning of this meeting. This interview further explored: (a) suitability for the study; (b) their experiences with anxiety and coping; and (c) their goals for the therapy group. Sections of the Anxiety Disorders Interview Schedule for DSM-IV, Adult Version (Brown, DiNardo, & Barlow, 1994) were administered for the purposes of exploring which types of anxious characteristics were present in the prospective participant’s experiences.
Participants also were introduced to the Weekly Questionnaire (WQ), which they completed in-full or in-part over the duration of the study. The WQ is outlined in the Procedures section below. Each participant completed one full-WQ at this pre-group interview. Please see Appendix F for the Pre-Group Screening Interview Protocol.

Attrition

Eight individuals who had the pre-group interview stopped their participation in the study’s Baseline Phase. The reasons were non-eligibility, scheduling conflicts, a lack of time, and a move out of region.

Five participants dropped out of the study after the intervention began. These individuals participated in between one and four sessions in the Intervention Phase. The reasons for stopping were timing conflict with new job (stopped after four sessions), and a lack of fit with their expectations and needs (stopped after one to three sessions). An exit interview when possible, or email correspondence if participant initiated, confirmed their reasons for leaving the study. Referrals or support in finding resources were offered when possible to those who contacted the study and were not eligible, could not attend, or decided to stop participating. The data for these participants were sealed and not used in the study.

Characteristics of the Participants

Seventeen people (herein referred to as participants) continued onto complete the therapy group intervention. Four men and 13 women participated in the study. The age range for the study was 21 through 53 years of age, with a mean age of 30 years (SD=8.31). In terms of racial diversity, there were 12 European-descent, two Asian-descent (one international student), two Hispanic-descent (one international student), and
one African-descent participants. The English language was identified as challenging by three of the participants; however, their English was proficient enough to attend English-based university classes. There were 14 students who reported their school status as full-time; three participants were in transition from school into the workplace, with one of these three participants preparing to return for graduate studies at a participating campus. Eleven participants identified their student designation as Undergraduate, one as Continuing Education, one as Honours, three as Masters, and one as a Doctoral student. In terms of programs, 12 identified as being in Liberal Arts, one in Mathematics, one in Sciences, and three in Fine Arts. Ten of the participants reported some paid employment in addition to their school programs, and seven participants did not. Two of the participants reported single-parenting responsibilities for school-aged children. One participant reported two-parenting responsibilities for a small child, as well as becoming pregnant during the study, and consequently reporting frequent “morning sickness” during the homework exercises. In order to protect their identities, the participants were assigned a number, and these numbers became their label in the study material. To further protect identity, the plural pronouns of they or their was used in place of gender specific pronouns. For the purposes of the study write-up, participants were re-assigned the labels of Participant 1, Participant 2, Participant 3, up to Participant 17.

**Vulnerability factors.** Vulnerability factors such as caffeine-use, alcohol-use, and drug-use were present in the participants’ lives. Approximately half of the participants (9 of 17) drank caffeinated beverages daily, with two-thirds of these participants drinking about one cup a day. The remaining one-third of the caffeine-consuming participants drank between two and four cups daily. In terms of alcohol
consumption, just under 60% of the participants (10 of 17) drank alcohol, with a range of between one and four drinks per sitting. About half of those who drank alcohol (5 of 17) had only one drink during a sitting. In terms of frequency, again about half of those who drank alcohol (5 of 17) did so on a weekly or monthly basis. The other half drank alcohol (5 of 17) on a biweekly (e.g., out socializing with friends), or daily basis (e.g., a beer after work). Only one person mentioned using drugs (e.g., smoking marijuana occasionally). Under half of the participants (47%, or 8 of 17) mentioned regular exercise as part of a weekly routine.

**Anxiety characteristics.** The following is a list of anxiety characteristics indicated by the participants. This study did not attempt to diagnose a participant with a particular disorder, but instead tried to understand the constellation of anxiety-based challenges that were faced. The anxiety-based challenges commonly experienced by the participants were worry, generally focused on an issue or content domain (15 of 17), panic-like activation (13 of 17), fear of social or stranger contexts (11 of 17), and fear of going out or unfamiliar places (5 of 17). Seldom did a participant experience only one of the above characteristics. Also, an emotional presentation with anger-like or irritability qualities was mentioned by over half of the participants (9 of 17). In addition to the anxiety symptoms, depressive features were reported by about half of the participants (9 of 17). Four of the 17 participants reported taking medication during the study. Several participants mentioned not wanting to take medication, which was why they chose to be in the study. During the Intervention phase, two participants decided to end a course of medication (i.e., a longer course of anti-depressants, and a PRN panic medication). During the Follow-up phase, two participants reported beginning a course of medication.
(i.e., anti-depressants for depressive features or for anxiety reduction). Twelve of the participants had past experiences with counselling or psychotherapy. In terms of anxiety’s impact on life and school functioning, the majority of participants were in the mild to moderate range, with about a third of participants indicating more substantial interference with school or daily tasks.

**Group Composition**

All participants were placed in one of four therapy groups, with each group corresponding to a participating university or college campus. Participants attended the group at their campus, with the exception of two participants who had recently moved or lived closer to a different participating institution. The therapy groups were different in composition, size, and start dates. *Group One* had six participants begin, with one participant drop-out. *Group Two* had two participants begin, with no drop-outs. *Group Three* had eight participants begin, with three participants drop-out; *Group Three* had one participant who undertook the intervention in individual-session format due to a last minute schedule conflict. *Group Four* had five participants and one faculty-observer participant begin, with one participant drop-out. Three of four groups had a staggered or lagged start, with these groups starting in the mid and late summer, and the other started in the early fall.

** Procedures **

The following describes the procedures undertaken in the study. First, this section outlines the interview screening procedures. Second, there is an overview of the intervention, which is the 10-week Integrated-Mindfulness Anxiety Group program (IMAG). The ten sessions are briefly described, and the therapy leader’s training is
reviewed. Third, the weekly questionnaire, and the various scales used to measure the dependent variables are outlined. Finally, the qualitative material used in the study, the post-group interview, is overviewed.

**Pre-Group Screening Interview**

The participants were each interviewed in a two-hour pre-group screening. The nature of the study, and the nature of the therapy and its homework expectations were outlined at this interview. This was the first face-to-face meeting between the participant and the principle investigator/group leader, Asa-Sophia Maglio, MA, RCC. In this interview, the group leader was able to listen to participant’s experiences with anxiety and coping, build rapport, outline the expectations of the group, and set two or three goals for the participant to work on during the therapy group. The structure of this interview followed a general protocol, but also was flexible enough to allow for rapport to be built between the group participant and group leader. Please see Appendix F for this protocol. Although this pre-group screening interview was audio recorded and transcribed, it was not used in the analysis as data because this interview did not speak to or address the intervention’s effectiveness.

During the Pre-Group Screening interview meeting, the participant also completed a full weekly questionnaire (WQ) containing the measurement scales used in the study, and was given between three and nine full WQs to take with them to complete over the following weeks. The number of full WQs provided at this meeting was largely an estimation of the number of weeks between this Pre-Group Screening interview and start of the their therapy group. Addressed, stamped envelopes also were provided. A full description of the WQ and its scales are given below in the Data Production section.
Baseline Phase

The Baseline phase was the start of data collection, and lasted a total of 24 weeks, from the beginning of the study to the start of Group 4, the last group. The minimum number of weeks a participant was in Baseline phase was three weeks, with a maximum being 15 weeks. The three-week minimum created a three data-point trend line (i.e., three full WQ over three weeks) so that the participant could operate as his/her own experimental control. The average length of time in the Baseline phase was 7.6 weeks.

Participants were emailed weekly to remind them to complete a full WQ. Also, they were emailed to remind them to forward the completed WQs to this researcher. Participants were notified once the start-date for their campus’s therapy group was selected. The various therapy groups had a staggered or lagged start. Group One started in Week 9 of the study; Group Two started in Week 13 of the study; Group Three started in Week 18 of the study; Group Four started in Week 23 of the study.

Intervention Phase

In this phase, the participants shifted to completing the partial WQs; the partial WQ is described in the Data Production section below. This following section describes both the group leader’s training, and the group therapy intervention.

Group leader training. Ms. Asa-Sophia Maglio was the group leader of the Integrative Mindfulness-Based Therapy Group (IMAG) in this research. She possessed a Master of Art degree in Counselling Psychology, and has completed all of her clinical training and coursework for her Doctoral degree. She was a Registered Clinical Counsellor in good standing (RCC, #2752), and had a private therapy practice. In 2004, a
7-day Mindfulness-Based Stress Reduction (MBSR) training program for health professionals lead by Dr. Kabat-Zinn was attended; in 2005, 9-day training to lead MBSR programs was attended at the Center for Mindfulness at the University of Massachusetts. In 2005-2006 under supervision, Ms. Maglio twice co-led and once solo-led the Challenging Anxiety Group (CAG) with the same clinical population that was investigated in this research; in the solo-led CAG group, a faculty observer attended the group for the purposes of learning its application. In addition to the supervised training with the CAG, in 2006, Ms. Maglio co-taught a graduate course on Meditation and Stress-Reduction, and gave several educational lectures on meditation. She has had her own regular mindfulness meditation practice for the last eight years, and attends mindfulness retreats. Additionally, in 2006, she trained in Dialectic Behavioural Therapy (DBT). Ms. Maglio also has attended several pertinent workshops: Cognitive-Behavioral Therapy for panic and OCD in 2001, DBT for multi-disordered and suicidal clients in 2006, Acceptance and Commitment Therapy for Anxiety in 2007, and Mindfulness in Therapy in 2008. More recently, in 2010, she attended the 8-day Teacher Development Intensive for MBSR. And, in early 2011, she completed training in DBT Chain Analysis, DBT Validation Principles and Strategies, and DBT Mastery of Anxiety and Panic in Adolescents.

Therapy group history. Following is a brief outline of the Integrative Mindfulness-based Anxiety Group therapy (IMAG), which was initially named the Challenging Anxiety Group (CAG). The prior-mentioned CAG was initially created by Dr. Melanee A.Cherry, Ph.D., LSW. During Ms. Maglio’s pre-doctoral internship, she worked with and was supervised using the CAG, which Dr. Cherry had been using for
university students coming to an university’s counselling centre with anxiety concerns and difficulties. The CAG was a regularly conducted and long-standing therapy group at the counselling centre. For the purposes of this research, the CAG was re-named the Integrative Mindfulness-based Anxiety Group therapy (IMAG) to make its components and application more transparent.

**Therapy group design.** The IMAG was a ten 2-hour weekly session intervention, which integrated Mindfulness-Based Cognitive Therapy (MBCT: Segal, Williams, & Teasdale, 2002), and Dialectic Behavioral Therapy (DBT: Linehan, 1993a, 1993b). In 2005-2006, Dr. Cherry was beginning to integrate components of the Acceptance and Commitment Therapy (ACT: Hayes, 2005; Eifert & Forsyth, 2005) in the CAG; however, there was only a limited presentation of ACT in the IMAG. Additionally, when compared to the CAG, the IMAG had greater emphasis on the meditative practices found in the MBCT and Mindfulness-Based Stress Reduction (MBSR: Kabat-Zinn, 1990). Consultation and supervision was available from Dr.Cherry for this current research. A brief weekly outline of the components of the IMAG intervention follows.

**Session 1.** The session starts with a 5-minute free write, which consisted of the participant writing anything they wanted in a provided booklet. Leader introduces herself, and participants introduce themselves and briefly discuss why they are in the group and what they want to achieve. Participants write out norms to be followed during the group. Leader over views the goals and the group. Leader briefly discusses anxiety, mindfulness, and the reasons for training in mindfulness. Leader introduces breathing
anatomy and introduces calming breath. Homework assignment: Calming Breath (Bourne, 2000). Exercise for 5-10 minutes x 5 per week.

**Session 2.** The session starts with a free write. Leader and participants do a mindful movement routine; a CD of the routine is provided for homework practice. Group checks in on homework, and goal progress. Leader introduces differences in mind states: Wise Mind (Linehan, 1993b) and Being and Doing Mind (to Group 3 & 4 only) (Segal, et al., 2002). Leader teaches meditation posture, and Mindfulness Breathing Meditation (Segal, et al., 2002). Homework assignment: Breathing exercise with Wise Mind x 2 per week; Mindful Movement with CD x 2 per week; 10-minute meditation practice x 3 per week; and taking notice of mind states: Wise/Emotional/Reasonable Minds and Doing/Being Minds.

**Session 3.** The session starts with a free write. Leader and participants do a body scan routine (Kabat-Zinn, 1990). A CD of the routine is provided for homework practice. Leader leads a 10-minute breath meditation (Segal, et al., 2002). Group checks in on homework from past session, and goal progression. Leader teaches Mindfulness “What Skills” (Linehan, 1993b). Homework assignment: Body Scan or Mindful Movement x 2 per week; 10-minutes of meditation practice x 5 per week; and practicing the What Skills.

**Session 4.** The session starts with a free write. Leader leads mindful movement routine. Leader leads a 15-minute breath meditation (Segal, et al., 2002). Group checks in on homework from past session, and goal progression. Leader teaches Mindfulness “How Skills” (Linehan, 1993b). Homework assignment: Body Scan/Mindful Movements x 2 per week; 15-minutes of meditation practice x 5 per week; complete the non-judgment log; and practicing the What/How Skills.
**Session 5.** The session starts with a free write. Leader leads body scan routine. Leader leads a 15-minute meditation, which includes breath and body sensations (Segal, et al., 2002). Group checks in on homework from past session, and goals progression. Leader teaches “Radical Acceptance” Skills (Linehan, 1993b). Homework assignment: Body Scan/Mindful Movements x 2 per week, 15-minutes of meditation practice with breath and body sensations x 5 per week; practicing the What/How Skills and Radical Acceptance Skills with chores or tasks that one is *wilful* (Linehan, 1993b).

**Session 6 (Group 1 & 2).** The session starts with a free write. Leader leads Mindful Eating routine (Kabat-Zinn, 1990). Leader leads a 15- to 20-minute meditation, which includes breath and body sensations and sounds (Segal, et al., 2002). Group checks in on homework from past session, and goals progression. Leader reviews “Radical Acceptance” Skills (Linehan, 1993b). Homework assignment: Body Scan/Mindful Movements x 2 per week; 15- to 20-minutes of meditation practice with breathe or body sensations or sounds x 3-5 per week; and, eat one meal mindfully.

**Session 6 (Group 3 & 4).** The session starts with a free write. Leader leads Mindful Eating routine (Kabat-Zinn, 1990). Leader leads a 15- to 20-minute meditation, which includes breath and body sensations and sounds (Segal, et al., 2002). Group checks in on homework from past session, and goals progression. Leader leads a “Physicalizing Exercise” (Hayes, 2005). Homework assignment: Body Scan/Mindful Movements x 2 per week; eat one meal mindfully; and 15- to 20-minutes of meditation practice with breath or body sensations or sounds x 3-5 per week.

**Session 7.** The session starts with a free write. Leader teaches Mindful Walking (Kabat-Zinn, 1990). Leader leads a 20-minute meditation, which includes breath and
body sensations and sounds (Segal, et al., 2002). Group checks in on homework from past session, and goals progression. Leader teaches regulating Emotional Mind (Linehan, 1993b) and increasing positive emotions and events (Linehan, 1993b). Homework assignment: Body Scan/Mindful Movements/Mindful Eating/Mindful Walking x 2 per week; 20-minutes of meditation practice with breath and body sensations x 3-5 per week; practicing the What/How Skills and Radical Acceptance Skills; work on regulating Emotional Mind and positive events; and, complete an emotion identification form.

**Session 8.** The session starts with a free write. Leader leads a 25-minute meditation, which includes breath and body sensations and sounds (Segal, et al., 2002). Group checks in on homework from past session, and goals progression. Leader teaches “emotional regulation” of fear (Linehan, 1993b). Homework assignment: Body Scan/Mindful Movements/Mindful Eating/Mindful Walking x 2 per week; 25-minutes of meditation practice with breath and body sensations x 3-5 per week; and, use the skills to work with fear as it applies to a goal from the group.

**Session 9.** The session starts with a free write. Leader leads a 25-minute meditation, which includes breath and body sensations and sounds (Segal et al., 2002). Leader teaches Metta Meditation. Group checks in on homework from past session, and goals progression. Leader teaches “emotional regulation” of guilt and shame (Linehan, 1993b). Homework assignment: Body Scan/Mindful Movements/Mindful Eating/Mindful Walking x 2 per week; 25-minutes of meditation practice with breath and body sensations x 3-5 per week; working with a goal from the group; use the skills to work with fear, or guilt/shame as it applies to a goal; and, complete the valued living form (Hayes, 2005).
**Session 10.** The session starts with a free write. Leader leads a 30-minute meditation, which includes breath and body sensations and sounds. Leader leads Metta Meditation. Group checks in on homework from past session, and goals progression. Leader teaches a new form of goal setting using the values and skills learned over the group (Hayes, 2005).

**Follow-Up Phase**

In this phase, participants resumed completing the full WQ, but did so on a monthly basis. Many participants mentioned wanting follow-up sessions as they felt they needed more practice with the meditation and the skills taught. The data from the prior WQs also supported this assertion. Thus, two extra sessions were added at the end of the group.

**Follow-up I meeting.** The first follow-up sessions all took place in week 42 of the study. The three Follow-up I meetings took place on their respective campuses. Seven of 17 participants attended these Follow-up I meeting. These 3-hour sessions reviewed the mindfulness skills and how the skills taught in the group could be used in reaching the participant’s goals using the goal sheets. A strong emphasis was placed on resuming their meditative practices, and using the skills in areas that they were having challenges. Commitments to formal meditative practice were made, as well as practicing the skills. Light refreshments were served.

**Follow-up II meeting.** The second follow-up sessions all took place in week 49 of the study. Again, these meetings took place on their respective campuses. Six of 17 participants attended these Follow-up II meetings. This session used a behavioural chain analysis (Linehan, 1993a) approach to understand the participant’s difficulties, such as
the challenges to sitting during meditation practices or being caught up in judging thoughts. The meeting focused on problem solving in regards to the participant’s identified challenges. More individualized plans were set up to support the participant in dealing with the difficulties they presented. Light refreshments were served.

Data Production

This study used two main sources of data production: weekly self-report questionnaires and post-group interviews. The weekly self-report questionnaires contained several components: reporting of technique-use, stressful and anxiety events questions, series of measurement scales, and the monitoring of personal goals. The post-group interview was an one-hour interview conducted by a research assistant. The following is an overview of these data production strategies.

Weekly Self-Report Questionnaires (WQ)

Two versions of the WQ were used in this research. These two questionnaires provided the data to be used in the Small-N Visual Analysis, Group-based Within-Subject Analysis, and the Participant and Group Practice Analysis. A more detailed review of these analyses and their corresponding research questions are provided in the Data Analysis section below.

To review the content of these questionnaires, a full WQ version, had all of the scales of measurement and the goal achievement questions. Participants were given the full WQ when they were in the Baseline or Follow-up phases. A second version, the partial WQ, was used in the Intervention phase because of the considerable homework component. There were two forms of the partial WQ, each containing approximately half of the scales measuring the anxiety and mindfulness dependent variables. The partial WQ
was administered to lessen the amount of time in completing the questionnaires in the Intervention phase, and to lessen testing effects by lowering repeated measurement of some of the measures. The two forms of the partial WQ were alternated weekly in the Intervention phase.

Both WQ versions monitored goal achievement. Both also had questions regarding meditation and skills practice, and stressful or anxiety-causing events experienced over the week. Both WQ versions also contained the general therapy outcome scale.

Permission from either the author or the publisher was received for all scales of measurement that were not available in the public domain. Due to copyright on some of the scales, the full WQ and the partial WQ are not provided in an appendix.

The following outlines the scales of measurement used in the study, as well as the practice and context questions found at the beginnings of the WQ.

**Scales of Measurement**

Mindfulness, anxiety, and general clinical outcome were the three primary dependent variables being used in the quantitative portion of the study; these three variables were measured using several scales of measurement. Multi-operationalism (Primavera, Allison, & Alfonso, 1996) or multiple measurements were used for each of the main variables. This addressed issues related to response covariance and construct validation (Lundervold & Belwood, 2000). The following describes the scales of measurement assessing the dependent variables of mindfulness, anxiety, and general clinical outcome.
Measures of mindfulness. The first dependent variable was mindfulness. It was operationalized as “bringing one’s complete attention to the experiences occurring in the present moment, in a nonjudgmental or accepting way” (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006, p. 27). There is discussion in the literature about whether mindfulness is a uni-dimensional or multi-dimensional construct (Leary & Tate, 2007), thus two scales were used in the study to capture these potential differences. The two scales of measurement used by the study were Mindfulness Attentional Awareness Scale (Brown & Ryan, 2003) and Five Facet Mindfulness Questionnaire (Baer et al., 2006). Following are descriptions of these scales.

Mindful Attentional Awareness Scale (MAAS: Brown & Ryan, 2003). This is a 15-item self-report scale measuring the consciousness of the current moment awareness. Items are measured on a six-point rating scale (1= “almost never”, to 6= ”almost always”). There is a single sum score produced ranging between 15 to 90; a higher score indicates higher levels of mindful attention and awareness. Thus, an ascending trend is optimal for this research. In the article exploring the MAAS’s development, reliability in past research with university students was alpha .92, and research reported good convergent and discriminant validity (Brown & Ryan, 2003). Mackillop and Anderson (2007) completed a large-scale study of the MAAS (N=757) in a university population, which reported uni-dimensionality and respectable reliability ($\alpha=0.89$). This is an often-cited measure in mindfulness-based research.

Five Facet Mindfulness Questionnaire (FF: Baer et al., 2006). This is a 39-item five factorial self-report scale, which measures mindfulness as multifaceted construct. The five facets are (a) Acting with Awareness, (b) Nonreactivity to Inner
Experience, (c) Observing Sensations, (d) Describing with Words, and (e) Nonjudgment of Experience. Items are measured on a five-point rating scale (1 = “never”, to 5 = “very often true”), with the sum scores ranging between 8 to 40 for four of the scales, and fifth scale’s sum score ranging from 7 to 35 points. Higher scores indicate a greater degree of the facet of mindfulness, thus ascending trends are optimal. Construct validity was supported (Baer, et al., 2008). In an article exploring FF’s development, reliability in past research with university students was reportedly adequate to excellent (Nonreactivity, $\alpha = 0.75$; Observation, $\alpha = 0.83$; Acting with Awareness, $\alpha = 0.87$; Describing, $\alpha = 0.91$; Nonjudgment, $\alpha = 0.87$), and reported respectable convergent and discriminant validity (Baer et al., 2006). This is a newer scale therefore few studies were using it as a measure, or in a repeated administration design.

**Measures of anxiety.** The second dependent variable was anxiety. Anxiety is a complex human response to a perceived threat to one’s self or one’s wellbeing. It typically has cognitive, emotional, behavioural, and physiological characteristics, and is adaptive when this orchestrated and holistic response protects the individual from a harmful event. However, for some, this threat response occurs in the presence of non-harmful or neutral stimulus, which are perceived as threatening. This protective system becomes overly vigilant and maintains a state of readiness to respond regardless to the nature of the threat. In these last two scenarios, the protective system of anxiety becomes maladaptive, and can harm the individual. Given the multi-faceted nature of anxiety, four scales were used to assess anxiety’s various characteristics: *Penn State Worry Scale- Past Week* (Stöber & Bittencourt, 1998), *Burns Anxiety Inventory* (Burns & Eidelson, 1998), and the two scales of the *State-Trait Anxiety Inventory* (Spielberger, 1983; 1985).
**Penn State Worry Questionnaire- Past Week (PSWQ-PW: Stöber & Bittencourt, 1998).** This is a 15-item self-report measure of worry, which is built to be sensitive to small changes in pervasive worry over shorter durations of time. This is an adaptation to *Penn State Worry Questionnaire* (PSWQ: Meyer, Miller, Metzger, & Borkovec, 1990; Molina & Borkovec, 1994), which is a gold standard measure for worry. Items are measured on a seven-point rating scale (0= “rarely” to 6= “almost always”). A total score ranging from 0 to 105 is produced. The higher scores indicating greater worry, thus a descending trend is optimal for this research. In an article exploring PSWQ-PW’s development, reliability in past research with a clinically anxious population was reported as α= 0.91, and had respectable convergent validity (Stöber & Bittencourt, 1998). Although the initial PSWQ has been shown to be responsive to probe or repeated measurement (Brown, Antony, & Barlow, 1992; Stöber & Bittencourt, 1998), the PSWQ-PW was specifically built so it could be given in an interval, probe, or repeated manner over shorter durations of time.

**Burns Anxiety Inventory (BAI: Burns & Eidelson, 1998).** This is a self-report measure consisting of 33 items measuring cognitive, affective, and somatic indicators of anxiety. Items are measured using a four-point rating scale (0=“not at all” to 3=“a lot”). The range of scores is 0 to 99, with higher scores equalling higher levels of anxiety. Thus, a descending trend is optimal. The internal consistency with university students is reported as α=.94, with respectable convergent and discriminant validity reported (Burns & Eidelson, 1998). Other authors have used these scales in research requiring interval, probe, or repeated measurement (such as Persons, Roberts, & Zalecki, 2003).
Additionally, this scale was used in Vancouver Coastal Health’s psychological assessment battery, thus has validity in local and applied contexts.

**State-Trait Anxiety Inventory (STAI: Spielberger, 1983).** This is a gold measure of both state and trait anxiety. This self-report measure is comprised of 40 items, 20 state-anxiety items and 20 trait-anxiety items. Thus, two sum scores are produced: trait anxiety and state anxiety. The items are measured using a four-point rating scale (1= “almost never” to 4= “almost always”). The respective ranges of these scales are 20 to 80, with higher scores suggesting higher anxiety. Descending trends are optimal. The reliabilities with university students are respectable (state-anxiety, \( \alpha = 0.91 \), and trait-anxiety, \( \alpha = 0.93 \)) (Campagna & Curtis, 2007), as are validity assessments for this measure (Gaudry, Vagg, & Spielberger, 1975; Spielberger, 1985). Several researchers have used these scales in research requiring interval, probe, or repeated measurement (such as, Chaput & Tremblay, 2007; Massarini, Rovetti & Tagliaferri, 2005).

**Measure of general clinical outcome.** The final scale is a global measure for therapeutic outcome. The *Outcome Questionnaire-45.2 (OQ-45.2: Lambert et al., 1996)* is designed to measure client progress through repeated measurements across the therapeutic process and at termination. This measure is widely used in counselling centres to monitor client progress (Vermeersch, Lambert, & Burlingame, 2000; Vermeersch et al., 2004). This 45-item measure has a range of 0 to 145, with higher scores suggesting higher client distress or challenge. Items are measured on a five-point rating scale (0=“never” to 4=“almost always”). This measure also has cut-off score for the clinical range (i.e., score of 64 and higher) and the non-clinical range (i.e., score of 63
and lower). There is a Reliable Change Index (RCI) of 14 points, such that change of 14 points in either direction is considered reliable change (Lambert et al., 2001). Internal consistency with university students for this measure’s full score is .93, and it has respectable convergent and discriminant validity (Lambert et al., 2001). This scale was developed for repeated measurement across a therapeutic process (Lambert et al., 2001).

**Composite scale scores.** To capture the impact of the intervention on the two dependent variables, two composite scores were created: the Composite Anxiety score (CAS), and the Composite Mindfulness score (CMS). The CAS was composed of sum scores of three anxiety measures: the State-Trait Anxiety Inventory, Burns Anxiety Inventory, and Penn State Worry Scale- Past Week. The range of the CAS was from 40 to 364. The CMS was composed of the sum scores of two mindfulness measures: the Mindfulness Attentional Awareness Scale and Five Facet Mindfulness Questionnaire. The range of the CMS was 54 to 285.

**Practice and Context Questions**

There was a series of questions at the beginning of both full or partial WQ that pertained to two areas of inquiry: mindfulness practice, and stressful or anxiety-causing events.

The practice of mindfulness skills and techniques were monitored using three questions. The first question pertained to the number of days in a particular week that mindfulness exercises and practices were undertaken. The second question pertained to how many minutes, on average, that a particular participant practiced in a given day. The third question asked which mindfulness skills and techniques were practiced.
The stressful or anxiety-causing events had two questions. The first question inquired if there was anything particularly stressful or anxiety-causing that occurred over the week in question. And, the second question asked the participant to comment on this stressful or anxiety-causing event.

Goals

There was a series of questions at the end of both full or partial WQs, which inquired about goal attainment. Due to a lack of specificity in the scale (i.e., metric) used to respond to these questions, the goal’s questions were not used in the analysis of the current study.

Post-Group Interview

This post-group interview was completed between three and six months after the Intervention phase ended. This audio-recorded phone interview was conducted by a research assistant to the study, and was approximately one-hour in length. The post-group interview gave a second description of the participant’s experience and struggles with anxiety, and also explored their experiences with mindfulness and the group. The study’s research assistant, who was trained in how to ask questions and probe for informational clarity or concrete examples, administered these one-hour Skype/telephone interviews. These interviews were audio-recorded, transcribed, and identity protected. Please see Appendix G for the post-group interview questions.

Data Analyses

The quantitative data were entered into an Excel spreadsheet, and then transitioned into an SPSS-17.0 file. Two data files were created: the questionnaires and
the participant goals. Two research assistants checked these raw data files for both systematic and random errors; in total, the checks for errors were approximately 10 hours.

The qualitative interview data were verbatim transcribed into a Word file, and then transitioned into a rich text format for use in ATLAS-ti (Buhr, 1995).

The following outlines the four data analytic strategies used by this study. Each section begins with a recounting of the research questions guiding the particular analysis. All data were identity protected, and the participants are numbered 1 to 17.

**Small-N, Visual Analyses**

Small-N, visual analyses documented changes in the data paths of the dependent variables (DV) caused by the manipulation in an independent variable. Kratochwill and his colleagues (2010) outlined four steps for a visual analysis: (1) documentation of a predictable baseline, (2) examination of the data within each phase of the study, (3) comparison of the data from each phase with the data in the adjacent phase to see if a basic effect has occurred, and (4) integration of the results of the analyses across the phases to assess if a functional relationship (i.e., at least three effects at different points of time) has occurred. For the purposes of this study, both basic effects (i.e., DV changes in the Intervention phase) and delayed effects (i.e., DV changes in the Follow-up phase) were used to assess the presence of a functional relationship. The criteria to assess for effects and functional relationships are presented below.

The visual analyses used in this study were guided by the following questions:

a. Is there a functional relationship between the IMAG and an increase in mindfulness, as seen by qualities of consciousness, awareness, attention, non-
reactivity, and non-judgment among university or college students who self-report anxiety?

b. Is there a functional relationship between the IMAG and a decrease in the symptoms generally associated with anxiety (e.g., worry, physical, cognitive, affective symptoms) among university or college students who self-report anxiety?

c. Is there a functional relationship between the IMAG and a decrease in general clinical symptoms in university or college students who self-report anxiety?

The 17 participants’ visual analyses were assessed at the levels of single cases, cohorts, and the total group. This approach allowed for an in-depth analysis of change across baseline, intervention, and follow-up phases. Additionally, multiple measures allowed for a broader coverage of the dependent variables, and multiple opportunities to view the process of change in the dependent variable constructs. The use of multiple measurements can strengthen the argument that change has occurred in the dependent variables in that there are more opportunities to view a functional relationship.

Additionally, the visual analyses of the composite scores allows for a better assessment of change in the two main dependent variables. These composites also provide greater variability because of the increased sum scores, and allowed a consistent assessment of change in the main constructs undergirding the various scales used in the study.

Further, in a multiple baseline design, the participant serves as their own control. In order for experimental control to be evidenced, there needs to be a predicted change in the dependent variable at a minimum of three different points in time, with these three
different changes occurring only after the manipulation of the independent variable has begun (Barlow, Nock, & Hersen, 2009). Taken together, multiple measures over multiple measurements over time, with basic effects or delayed effects demonstrated at three different points in time provides strong evidence for clinical change.

**Procedures.** Following are the steps undertaken to accomplish the visual analyses. First, the weekly raw data were entered into a Excel spread sheet. These data were transitioned into SPSS (17.0), and the data were checked for errors and missing data. Reversed items were corrected to prepare for summing. Second, the sum scores for the weekly measurements of a particular scale of measurement were calculated. This summing occurred at the individual, cohort, and group level. Third, the weekly sum scores for a particular scale for an individual participant were placed on a multiple baseline design graph, which indicated all of the weeks of the study, the three phases of the study, and the range of scores for a scale of measurement (Please see Figures 5.1 - 5.13 for the multiple baseline design graphs). These graphs were created using InDesign (Adobe, 2008). However, only the individual participants’ summed scores were graphed; this was due to unequal time in the baseline phase. For the analyses of the cohorts and total group, this researcher used levels (i.e., phase mean) and the standard deviations to assess for clinical change.

Fourth, to create the dependent variable composite scores, the sum scores for the weekly measurements for the respective scales of measurement were added together. For anxiety, four anxiety scales were added together at the weekly level to create a weekly measure of anxiety scales, or the weekly composite anxiety scores. For the mindfulness variable, two mindfulness scales were added together at the weekly levels to create a
weekly measure of mindfulness, or the weekly composite mindfulness score. Fifth, the weekly sum scores for a particular composite score for an individual participant were placed on a multiple baseline design graph, which indicated all of the weeks of the study, the three phases of the study, and the range of the composite scores (Please see Figures 5.2 and 5.7). These two respective composite score graphs were both created using InDesign (Adobe, 2008). The visual analyses described below for the respective composite scores were completed on the graphed data. Additionally, this researcher used levels (i.e., phase mean) and the standard deviations to assess for clinical change. Following are the visual criteria used to analyze for changes in the aforementioned graphed data.

**Visual analysis indicators and criteria.** In order to determine if a basic or delayed effect occurred, the analysis used the several indicators outlined by Lundervold and Belwood (2000). First, the visual indicator was *level*, which is “the relative magnitude of change observed and can be assessed at any points during baseline or intervention (or follow-up)” (p. 96). The phase level was assessed using the phase mean and range; the phase mean was an average of the achieved level of the variable (i.e., scale of measurement) being measured in a particular phase, and the range was the range of data in the phase. Assessing level change from baseline directly before the intervention and directly after the intervention resembles a pre- and post-intervention design; the caveat for this assertion is the challenge of autocorrelation with serial measurement. Second, *trend* was the pattern of intra-phase sum scores; trends were assessed as either ascending or a consecutive increase of sum scores across the phase, or descending or a consecutive decrease of sum scores across the phase. Depending on the nature of the
criteria being measured, a trend can be optimal (e.g., descending for anxiety or therapy outcome, or ascending for mindfulness), non-optimal (e.g., ascending for anxiety or therapy outcome, or descending for mindfulness), or stable (e.g., no change). Additionally, this indicator assesses change in the directional pattern of sum scores across phases; shifting directionality or sum score patterns across phases also can assess phase change. Third, slope assesses the magnitude or steepness in a trend. Level, trend, and slope analyses were the bases for detecting change in the visual analysis, and supersede all other criteria used in the analyses. These three foundational criteria use the researcher’s judgement of the data and data paths to assess for change. However, additional standard-based criteria were included in the visual analyses of this current study. These additional criteria were included to increase the thoroughness and rigor of the assessment of group, cohort, or participant change.

A fourth criterion used was non-overlapping data, which is an indicator of across phase change as it assesses improvement in the intervention and follow-up phases based on scores in the baseline phase. Non-overlapping analysis provides a percentage of scores in the intervention and follow-up phases that do not overlap with baseline data (Banda & Therrien, 2008). In order to assess if non-overlap has occurred, a standard of 80% (i.e., a moderate effect) was being used for this study (Banda & Therrien, 2008). Fifth, a form of clinical significance was used to assess participant change. The intervention phase mean and the follow-up phase mean were compared to a calculation of the baseline phase mean plus or minus two baseline standard deviations (i.e., \( \bar{X}_{bl} \pm 2SD_{bl} \)) (Jacobson & Truax, 1992). Clinical significance was met if the intervention or
follow-up phase means surpass the clinical significance level established by the baseline calculation (i.e., $X_{\text{bl}} \pm 2\text{SD}_{\text{bl}}$). The final criterion used in this study was *variability* (Barlow, Nock, & Hersen, 2009), which assessed changes in the standard deviation, or the amount of difference between sum scores found in the phase. Variability is important in clinical assessment because it can elucidate clinical change in the form of learning a skill (e.g., higher variability), or stabilizing or maintaining a skill (e.g., lower variability). Unlike the prior two criteria, variability as an indicator has no agreed upon standard, thus is made through a visual judgment.

**Determining an effect.** The above six change indicators or criteria were used to assess if the IMAG had made a desired change in the various scales of measurement utilized by this study. Thus, the visual analysis entailed viewing each data path for the group, cohort, or participant, and assessing if the specific data or data path under scrutiny met first the criteria for level, trend, and slope, and second if it continued to meet the criteria of non-overlapping data, clinical significance, and variability. Although these six criteria were used to assess intra-phase and inter-phase change, a particular criterion was only reported if it was relevant to understanding the participant’s progress, or to understand if the IMAG had created an effect.

An effect is the demonstration in either the intervention or follow-up phases of a clear pattern of change in the dependent variable (e.g., scales of measurement outlined above) due to a manipulation of the independent variable (i.e., IMAG). Stated differently, an effect is a desired change in data or a data path across a baseline. There are four types of effects being used in this study. Basic effects or weaker basic effects represent desired change in the intervention phase. Delay effects or weaker delayed
effects represent desired changes in the follow-up phase.\(^1\)

The specific criteria for the four effects follow. First, a basic effect was a desired change across the baseline and intervention phases in level and/or trend, with the additional criteria of non-overlapping data (>80%) and clinically significant change between baseline and intervention phases. Second, a delayed effect was a desired change across the baseline and follow-up phases in level and/or trend, with the additional criteria of non-overlapping data (>80%) and clinically significant change between baseline and follow-up phases. These two effects are a strict and thorough application of the criteria so as to lessen the possibility of Type I error. Third, a weaker basic effect was a desired change between baseline and intervention in level and/or trend, but does not meet the criteria of non-overlapping data (>80%) and/or clinical significance. Thus, moderate to minimal effectiveness would be indicated (Banda & Therrien, 2008). Fourth, a weaker delayed effect was a desired change in level and/or trend between baseline and follow-up, but does not meet the criteria of non-overlapping data (>80%) and/or clinical weaker

\(^1\) Singh and his colleagues (2007b) found that the intervention phase in a mindfulness study could act as a training phase, therefore the predicted effect might occur in the follow-up phase as a delayed effect. This current research study expected that same pattern of change occurring in follow-up. Thus, a delayed effect and a weaker delayed effect were used by this study to capture desired change that might occur after the training in intervention phase.
effects were a more liberal application of the criteria, which increase the practical significance. Again, moderate to minimal effectiveness would be indicated (Banda & Therrien). Although these two effects have utility in understanding the performance of the IMAG, this liberal application however increased the possibility of Type I error.

**Determining a functional relationship.** The next step in the analysis was to determine whether a functional relationship existed between the intervention and the dependent variable. A functional relationship was established through vertical analyses across cohorts to assess for three demonstrations of effects created by the manipulation of the independent variable, and across at least three time periods (Barlow, Nock, & Hersen, 2009). For the purposes of this study, a functional relationship was established through both basic and delayed effects across the cohorts. In other words, one participant from three different cohorts needed to show basic effects or change in the intervention phase, or one participant from three different cohorts needed to show delayed effects or change in the follow-up phase. Thus, evidence of three participants’ changes at three different points of time per scale of measurement needed to be shown for a functional relationship to be present.

Given this study utilized four different types of effects, there were two different types of functional relationships that could be assessed. First, *a functional relationship* was established through either three basic effects over three different cohorts, or three delayed effects over three different cohorts; this was the strongest evidence of a functional relationship. Second, *a weaker functional relationship* was established through either three basic and weaker basic effects, or three delayed and weaker delayed
effects; this provided a liberal application of criteria to establish a functional relationship. Thus, these two types of functional relationships allowed both a strict and a liberal application of the many indicators and criteria to answer the three research questions and understand the effectiveness of the IMAG.

**Within-Subject Analyses of Variance**

Within-subject Analysis of Variance Analysis (ANOVA) with post-hoc comparisons were used to compare pre-group, mid-group, end-group, and post-group measurements on all of the dependent variables to address the following research question:

- Did the IMAG create statistically significant ($\alpha = 0.05$) differences between scores on the dependent-variable measurements at pre-group, mid-group, end-group, and post-group measurements?

- Effect sizes ($\eta^2$) for the various tests performed also were reported. If the IMAG did create statistically significant differences between the various phases of the intervention, post-hoc tests were used to determine in which phases the differences occurred.

Group-based descriptive, statistical, and effect size analyses were conducted for the various dependent variable scales to account for the possibility of chance variance occurring. Statistical analyses on pre- and post-intervention scores are standard procedures for assessing the effectiveness of clinical interventions. Providing group-based statistics in the context of a Small-N design is established by the literature as a viable way of summarizing and presenting data (e.g., Barreca et al., 2003; Crosbie, 1993).

For these data, within-subject ANOVAs (SPSS 17.0) were performed at four time points in the study: in the pre-group (i.e., mean of the last three data points in the baseline
phase), mid-group (i.e., the data point that fell in the middle of the intervention for a particular participant, generally between 3rd and 7th session), end-group (i.e., last data point in the intervention phase) and post-group (i.e., last data point in the follow-up phase). These particular time points were chosen for the following reasons.

**Pre-group measurement.** The pre-group measurement was chosen to be a mean of the last three data points in the baseline phase. Using the individual participant’s weekly sum scores for a particular scale or a particular composite score, the last three weeks in the baseline phase that had a sum score were averaged to create the mean used to represent the pre-group measurement. This mean score could account for a time period rather than a single point in time. It was a better indicator of the participant’s level on the various dependent measures prior to the intervention starting. All but one participant had at least three data points in the baseline phase. This participant misunderstood the directions about completing WQ in the baseline phase, so they only had one full WQ in the baseline phase; this single data point was used as the pre-group measurement for the ANOVAs for this participant.

**Mid-group measurement.** The mid-group measurement was a single data point taken at approximately the mid-point in the intervention for the participant. Using the individual participant’s weekly sum scores for a particular scale or a particular composite score, this mid-point was generally between the 3rd and the 7th week of the intervention phase. This data point was the mid-point in the participant’s own attendance and process with the IMAG. Other reasons for allowing this range follow: some of the participants did not complete the full ten weeks of the IMAG but did not drop-out or withdraw from the study (e.g., holidays at the end of the summer precluded attendance), some of the
participants did not complete all questionnaires provided (e.g., they forgot; the week was heavy with school tasks and assignments; missed a session due to sickness or prior engagement), and there was a mix-up in the questionnaire sequence such that the same partial WQ was completed two weeks in a row thus one set of measures was skipped. Thus, the 3rd to 7th week range was used to capture the mid-intervention point given the unique circumstance of each participant.

**End-group measurement.** The end-intervention measurement was a single data point taken from the last measurement in the intervention phase. This measurement was chosen because together with a pre-group measurement would be most like the traditional and often-reported pre-post tests for clinical effectiveness.

**Post-group measurement.** The follow-up measurement was the single data point taken from the last measurement in the follow-up phase. This measurement provides the best reference point of maintenance of gains, or long-term impact of the intervention. Due to inconsistent WQ completion in the follow-up phase, the post-group measurement occurred during varying weeks across this phase.

**Procedures.** The said time-period measurements (i.e., pre-group, mid-group, end-group, and post-group) were entered into a SPSS (17.0) file. A research assistant checked this data for errors or missing data (-99). Assumptions of sphericity and normalcy were tested. Two sets of within-subject ANOVAs, and post-hoc pairwise comparison with a Bonferroni adjustment were completed. Also, because of unequal time-frames between measurements, the most conservative significance criteria (e.g., lower bound) were applied. The first set of ANOVAs used three-time periods, or pre-group mean, mid-group and end-group; this set contained all 17 participants. The next
set of ANOVAs used four-time periods, or pre-group mean, mid-group, end-group, and post-group; this set contained only 11 participants due to the fact that not all participants completed WQs in the follow-up phase.

The addition of a group-based design remedies the possible challenge of Type II error in Small-N designs, which often do not offer sufficient power to detect differences in the data. Effect sizes or eta (SPSS 17.0) were reported to remedy the lower power in the design, and to provide a practical summary of the data and the differences between means. The criteria outlined by Cohen (2003) were used to determine the magnitude of the effect sizes: \( \eta^2 = 0.02 < 0.14 \) was a small effect; \( \eta^2 = 0.15 < 0.34 \) was a medium effect; and, \( \eta^2 = 0.35 < 0.99 \) was a large effect.

Summary tables for descriptive statistics and summary write-ups are provided for the various measurement scales and the composite scores. Statistical significance of differences (\( \alpha = 0.05 \)) between the various time points assists the argument that the intervention created the changes in the targeted areas. This group-based analyses strategy (i.e., within-subject ANOVAs, post-hoc comparisons, and effect sizes) supported an evidence-based assertion of intervention effectiveness.

**Qualitative Thematic Analysis**

A thematic analysis using the post-group interview data was used to address the following research question: what themes occurred in the post-group interviews regarding the participant’s successes and struggles with anxiety, mindfulness, and the group?

This qualitative thematic analysis used interview-based data that was collected in the follow-up phase. This interview data provided a dynamic qualitative picture of the participant’s own perspectives of their experiences of anxiety, mindfulness, the therapy
group, and their personal goals at the end of the intervention. Participant’s words and experiential reflections documented the changes or lack thereof. Much of the study focuses on changes in the area of anxiety and mindfulness; however this current analytic strategy allowed for unanticipated changes and challenges to be identified. Given the newness of the intervention, capturing the participant’s experience was crucial for an understanding of the intervention’s effectiveness or clinical relevance, anticipated or unanticipated. It also could support the intervention’s improvement and fortification.

Thematic analysis can be defined as a systematic procedure for making inferences from text (Boyatzis, 1998; Stemler, 2001), or as a “method for identifying, analyzing, and reporting patterns (themes) in data” (Braun & Clarke, 2006). Often cited qualities of thematic analysis is that it delineates the material to be used and coded; has rules about coding and categorizing; and, has methods of checking trustworthiness and authenticity claims (Boyastzis, 1998; Stemler, 2001). For the purposes of this study, the data analysis approach was an inductive thematic analysis (Boyastzis, 1998) as it did not begin with a pre-set list of categories or themes; the categories developed from the post-group interviews were developed from the text itself. ATLAS-ti (Buhr, 1995) was used to manage the material. The following is a description of the various steps taken in these thematic analyses.

**Step one.** The first step of analysis was an acknowledgment of the first coder’s prior knowledge of the data, the intervention, and the participants. More specifically, this coder recorded her beliefs and assumptions about the therapy group and the participant’s progress, her own experiences with anxiety and mindfulness, and her investment in the project’s success and what success meant. Possible biases or expectations that might
interfere with fully engaging with the data as it is were brought forth into consciousness. The points of this exercise were typed out in a list, and were referred to as coding and analysing proceeded. Additions to this list were made when a coder became aware of a bias or expectation in the ongoing process of coding or analysis.

Step one addressed two of the “major obstacles to effective thematic analysis” (Boyatzis, 1998, p.12). First, it addressed projection or an over-familiarity with the phenomenon. This over-familiarity could create biases that preclude the message contained in the data, and can impact the coder’s mood/style or the individual preparedness to engage in the tasks of coding and analysis. Secondly, it also provided a method for remaining open to the data, and to new and unintended findings. Through consciousness, this method challenged pre-conceived expectations that may interfere with understanding the participant’s reflections.

**Step two.** The second step of analysis entailed an open-coding strategy of transcribed post-group interviews. The coder thoroughly read each interview; one interview was worked with at a time.

Recording units were identified. Although the coder was ultimately interested in recording units related to anxiety, mindfulness, participant goals, the IMAG, and change (e.g., progress or non-progress), she attempted to stay open to what the material had to offer. Thus, the text was parsed into recording units, which broadly fell into these said categories; however, the coder was careful to use said-categories as a guide but not a pre-defined code or theme list. Once a segment of text was identified as a recording unit, a code representing its content was developed and tentatively applied. The code was a tag for the content essence of the chosen segment; a single word or brief phrase that captured
or represented the core content or message of the chosen segment was applied. The coder tentatively applied the code to the recording unit, thus creating a tentative list of within-interview codes for a participant. If the chosen segment of text contain more than one possible code, then the unit was parse such that a single code could capture the essence of the content.

**Step three.** This step was an extraction check. Approximately 25% of the text material was randomly chosen and given to a second coder. The second coder was given the task to code these segments with the broad categories, and place tentative codes that reflected the content of these randomly chosen interview segments. The coder and the second coder then compared (1) the choice of the segment and (2) the content of the segment. A percentage of agreement was formulated. If agreement is high in both areas (80%), then the first coder continued onto the next step. It is was not, then the first coder returned to re-select and re-code the text material. This step is then repeated until sufficiently high agreement is found.

**Step four.** This step entailed creating themes from the codes and their corresponding text selection. Once all of the interviews were open-coded as per Step Two, the tentative codes and their respective text selections were assessed for similar content and meaning. A theme was developed to be sufficiently broad so as to capture meaning similarities within and across interviews, and yet specific enough to inform about the participants’ perspectives. The themes required a minimum of 25% participant involvement to be included (Butterfield, Borgen, Amundson, & Maglio, 2005). This process was intended to (a) reduce the number of codes in a specific category to a set of themes, and (b) create a framework of meaning and content across participants.
Once the theme was created, a title and definition for the theme was developed. The definition captures the essence of the theme’s content, a description of how to know when the theme occurs, and inclusion and possible exclusion criteria for the theme (Boyatzis, 1998). The theme was then represented by this definition and title.

**Step five.** Once the set of themes with definitions and titles were created, the interviews were individually re-read to ensure that the themes matched the contexts of the total interview. Given the themes were developed based on de-contextualized segments, this step returned the themes back to the context of the whole interview from which segments were taken. If the theme did not match, then the segment, initial open-code, and the segment’s placement in the particular theme was re-assessed.

**Step six.** This step was the sorting check. It used a second coder to sort the pre-identified segments into their corresponding themes. This process entailed the second coder familiarizing himself with the themes and corresponding definitions and titles. Approximately 25% of the total interview segments were randomly chosen, and given to the second coder. The second coder then placed these segments into the pre-determined themes. A percentage of agreement between this placement and the actual theme was calculated. If the agreement was above 80%, then the first and second coders collaboratively resolved these differences. If the agreement was below 80% for a theme, then the first coder returned to Step Two to calibrate the theme’s definition and title. Once the theme was calibrated, the second coder was presented with the themes’ definitions and titles, including the calibrated definition and title, and a different 25% of randomly chosen segments, and then placed these segments into the themes.
Step seven. For each theme, exemplar interview segments were chosen to represent the participant’s words and perspectives, as they pertained to the theme’s content. Thus, the theme’s title, definition, and exemplar interview segments are used to represent the qualitative findings in Chapter 7.

Step eight. Once the themes were established, higher-order abstractions were sought amongst the themes for the purposes of organizing a comprehensive framework for the theme presentation. These higher-order abstractions or higher-order groupings were created by reading the themes, and finding commonalities amongst the definitions of the themes. In addition to providing a framework for the themes, these groupings served to simplify the total number of themes presented across the interviews, and created a thematic structure to provide information from the participants on how to strengthen the IMAG.

Participant and Group Practice Analyses

The final analyses applied Frequency and Descriptive statistics (SPSS 17.0) to WQ questions related to (a) technique-use and (b) stress- and anxiety-events. These data were used to address the following research questions.

  a) What types of stress and anxiety events confronted the participant’s on a weekly basis?
  b) How often and for how long did the participant’s practice the skills and techniques taught in the intervention?
  c) Which skills and techniques were practiced?

Each WQ included questions related to whether the participant practiced the techniques taught in the intervention, what they practiced, how many days they practiced,
and what the average duration of practice was. This analysis used frequency and descriptive statistics to assess the type, frequency, and duration of practice techniques (e.g., meditation, breathing exercises, mindfulness skills) used by the participants across the intervention and follow-up phases. This analysis entailed the raw data being coded into 14 pre-determined mindfulness practice categories, entered into an Excel spreadsheet, transitioned into a SPSS (17.0) file, and checked for errors. A SPSS (17.0) Frequency and Descriptive statistics were run.

Additionally, the WQ included questions related to the frequency and type of stressful and anxiety-based events that the participant encountered in the week prior to the completing of the questionnaire. Again, these answers were coded into 10 pre-determined stress and anxiety categories, entered into an Excel spreadsheet, transitioned into a SPSS (17.0) file, and checked for errors. A SPSS (17.0) Frequency and Descriptive statistics were run.

Summaries for the individual participant, the cohort, as well as for the total group were provided.

**Summary**

This chapter overviewed the methods used in this study. It described the study design, and the logic for this design. The chapter then reviewed the process for enlisting the particular participants and these participants’ various characteristics. It continued on to describe the independent variable, or the IMAG and its sessions. It also discussed the leader’s training. The chapter then reviewed the dependent variables, and the data production processes. It overviewed the two versions of the WQ, the practice and context questions, and specific scales of measurement used to assess the three dependent
variables. It then continued to discuss the post-group interviews. To complete this current chapter, the four analyses and their corresponding research questions were reviewed.

The results of these four analyses are outlined and reviewed in the next four chapters, with each chapter reviewing a respective analysis. Chapter 4: Participant and Group Practice Analyses outlined the practices and skills the participants used over the intervention and follow-up phases. Chapter 5: Small-N Visual Analysis examined the results of the main methodology of this study. Chapter 6: Group-Based Within-Subject Analysis, a gold standard therapy outcome research method, showed the results of the multiple ANOVAs. Finally, Chapter 7: Thematic Analysis outlined the themes developed from the post-group interviews. Taken together, these four chapters reviewed the results for the current research study.
CHAPTER FOUR: PARTICIPANT AND GROUP PRACTICE ANALYSES

This is the first of four chapters reviewing the results. The chapter begins with the research questions guiding the analyses of the group’s, cohort’s, and participant’s mindfulness practice, as well as the types of stressors and anxiety-causing events in the participants’ week. Next is a description of data being used in this investigation. Finally, the results are presented at the group, cohort, and participant levels. A summary of the chapter is provided.

Research Questions

The research questions guiding these analyses were:

1. How often and for how long did the participants practice the mindfulness skills and techniques taught in the intervention?
2. Which mindfulness skills and techniques were practiced?
3. What types of stress and anxiety events confronted the participant’s on a weekly basis?

Data Used in the Analyses

The data to address the above were five questions the participants completed at the beginning of the full and partial weekly questionnaires (WQ). These questions were related to (a) mindfulness practices and techniques used during the week, and (b) stressful or anxiety-causing events during the week. All of the data reported upon was from the WQs that were completed by the participants, and submitted in various weeks across the study.

The mindfulness-based questions inquired first about the number of practice days over the past week, and second about how many total practice minutes per day were
completed; ranges, averages and standard deviation are provided for the various analyses. The third question asked about which mindfulness exercises or skills were practiced. It should be noted that the mindfulness skills and techniques were taught as the intervention progressed, thus the participants had differing exposure and time to practice the various techniques. The mindfulness skills and techniques were coded as one of 14 categories.

The two anxiety-causing or stress-based questions inquired if there was a particularly stressful or anxiety-causing event in the past week, and if so, what the nature of the event was. These events were coded as one of 10 categories.

**Group, Cohorts, and Individual Practice Analyses**

Both the group, and the cohort and the individual participant analyses are presented below. The group analysis is the composite of all 17 participants. The cohort analyses are the composites of the participants in a particular cohort (i.e., Cohort 1, Cohort 2, Cohort 3, and Cohort 4). This operates as an overview, and corresponds to the cohort and general assessments of the Small-N Visual analyses. The group analysis also corresponds to the within-subject ANOVAs. The individual analysis or a participant analysis also is presented. This corresponds to the Small-N Visual analyses of the respective participants; this current analysis might help identify differences between participants and their individual approaches to various practices of the intervention.

**Group Practice Analysis**

This group analysis is a summation of all participants for a particular phase.

**Mindfulness practice.** In the intervention phase, the 17 participants reported practicing mindfulness techniques and skills between 0 to 7 days per week, with a weekly average of 4.2 days (SD: 1.6), and with a mode of 5.0 days of practice per week.
Mindfulness practice per day was reported between 0 to 60 minutes, with a daily average of 18.9 minutes (SD: 11.1), and mode of 20 minutes of practice in a day. During the intervention phase, the rank order list of mindfulness techniques and practices used by the participants was: (1) mindful meditation, (2) mindful movements/yoga, (3) breathing exercises, (4) body scan, (5) Radical Acceptance, (6) mindful walking, (7) What/How skills, (8) mindful eating, (9) Wise Mind skills, (10) emotional regulation, and (11) loving kindness/metta meditation.

In the follow-up phase, the 12 participants who participated in this phase reported practicing mindfulness techniques or skills between 0 to 7 days per week, with a weekly average of 2.8 days (SD: 1.8), and mode of 3.0 days of practice per week. Mindfulness practice per day was reported between 0 to 60 minutes, with a daily average of 21.1 minutes (SD: 12.5), and mode of 20 minutes of practice in a day. During the follow-up phase, the rank order list of mindfulness techniques and practices was: (1) mindful meditation, (2) mindful movements/yoga, (3) body scan, (4) breathing exercises, (5) Radical Acceptance, (6) mindful walking, (7) What/How skills, (8) Wise Mind skills, and (9) loving kindness/metta meditation.

**Anxiety events.** The participants reported stressful or anxiety-causing events across the study, or in all three phases of the study. Following is a rank order list of stressful and/or anxiety-causing events experienced by participants: (1) multiple stressful or anxiety-causing events, (2) school-related events, (3) work-related events, (4) family-related events, (5) social-related events, (6) relationship-related events, (7) health-related events, and (8) friend-related events.
Cohort and Individual Participant Analyses

The following reports the cohort and individual participant’s experiences with mindfulness techniques and skills practice, and stressful and anxiety-causing events the individual participants confronted.

Cohort 1. This is the summation of the five participants in Cohort 1 for a particular phase.

Mindfulness practice. In the intervention phase, they reported practicing between 0 and 7 days per week, with a weekly average of 4.6 days (SD: 1.5), and for a reported total of 155 days of mindfulness practice. The duration of mindfulness practice per day was reported between 0 to 55 minutes, with a daily average of 17.8 minutes (SD: 9.3). The mindfulness techniques and skills reported as practiced across the intervention phase were: meditation, breathing, mindful movement/yoga, body scan, mindful eating, Radical Acceptance, Wise Mind skills, Mindfulness skills, and mindful walking.

In the follow-up phase, they reported practicing between 0 and 5 days per week, with a weekly average of 2.6 days (SD: 1.4), and for a reported total of 26 days of mindfulness practice. The duration of mindfulness practice per day was reported between 0 to 60 minutes, with a daily average of 24.2 minutes (SD: 15.8). The mindfulness techniques and skills reported as practiced across the intervention phase were: mindful movement/yoga, meditation, Radical Acceptance, Mindfulness skills, and breathing.

Anxiety events. The participants reported stressful or anxiety-causing events across the study, or in all three phases of the study. Following is a rank order list of stressful and/or anxiety-causing events experienced by Cohort 1: (1) multiple-events, (2)
work-related events, (3) family-related events, (4) relationship-related events, (5) social-related events, (6) friends-related events, and (7) health-related events.

**Participant 1.** This participant completed four WQ in the baseline phase, six WQ in the intervention phase, and none in the follow-up phase.

**Mindfulness practice.** In the intervention phase, Participant 1 reported practicing five of six weeks, from three to seven days per week, with a weekly average of 5.0 days (SD: 1.6), and for a reported total of 25 days of mindfulness practice. The duration of mindfulness practice per day was reported between 15 to 25 minutes, with a daily average of 20.0 minutes (SD: 3.5). There was no follow-up phase data. The mindfulness techniques and skills reported as practiced across the intervention phase were: meditation during four of the weeks, breathing exercises during three of the weeks, body scan during two of the weeks, mindful movement/yoga during two of the weeks, and mindful eating during one of the weeks.

**Anxiety events.** When considering the total time participating in the study, Participant 1 reported five weeks containing stressful or anxiety-causing events: two weeks had work-related events; two weeks had socially-related events; and, one week had multiple stressful or anxiety-causing events. Four weeks were reported as not containing stressful or anxiety-causing events.

**Participant 2.** This participant completed seven WQ in the baseline phase, ten WQ in the intervention phase, and none in the follow-up phase.

**Mindfulness practice.** In the intervention phase, Participant 2 reported practicing 10 of the 10 weeks, between two to seven days per week, with a weekly average of 5.1 days (SD: 1.4), and for a reported total of 51 days. The duration of mindfulness practice
per day was reported between 4 to 25 minutes, with a daily average of 17.4 minutes (SD: 6.6). There was no follow-up phase data. The mindfulness techniques and skills reported as practiced in the intervention phase were: breathing exercises during eight of the weeks, meditation during five of the weeks, mindful movement/ yoga during five of the weeks, body scan during four of the weeks, mindful walking during one of the weeks, and mindful eating during one of the weeks.

Anxiety events. When considering the total time participating in the study, Participant 2 reported six weeks containing stressful or anxiety-causing events: four weeks had work-related events and two weeks had multiple stressful or anxiety-causing events. Four weeks were reported as not containing any stressful or anxiety-causing events. Participant 2 reported a challenge resulting in substantial distress; towards the end of the intervention phase, they were referred to specialized treatment.

Participant 3. This participant completed four WQ in the baseline phase, six WQ in the intervention phase, and five WQ in the follow-up phase.

Mindfulness practice. In the intervention phase, Participant 3 reported practicing two of the six weeks, between three to six days per week, with a weekly average of 4.5 days (SD: 2.1), and for a reported total of nine days. The duration of mindfulness practice per day was reported between five to seven minutes, with a daily average of 6.0 minutes (SD: 1.4). The mindfulness techniques and skills reported as practiced across the intervention phase were: breathing exercises during two of the weeks, and Wise Mind skills during one of the weeks.

During the five follow-up phase weeks reported on, Participant 3 practiced between three to five days per week, with a weekly average of 3.75 days (SD: 1.0).
Practice per day was reported as lasting between 15 to 20 minutes, with a daily average of 19.0 minutes (SD: 2.2). The mindfulness techniques and skills reported as being practiced in the follow-up phase were: mindful movements/yoga during five of the weeks, meditation during four of the weeks, and breathing exercises during one of the weeks.

Anxiety events. When considering the total time participating in the study, Participant 3 reported two weeks containing stressful or anxiety-causing events: one week had work-related events and one week had health-related events. Two weeks were reported as not containing stressful or anxiety-causing events. Participant 3 reported two longstanding challenges, which preceded the study.

Participant 4. This participant completed three WQ in the baseline phase, eight WQ in the intervention phase, and three WQ in the follow-up phase.

Mindfulness practice. In the intervention phase, Participant 4 reported practicing seven of the eight weeks, between 0 to six days per week, with a weekly average of 3.5 days (SD: 1.9), and for a reported total of 28 days. The duration of mindfulness practice per day was reported between 0 to 50 minutes, with a daily average of 16.3 minutes (SD: 14.8). The mindfulness techniques and skills reported as being practiced across the intervention phase were: breathing exercises during four of the weeks, What/How skills during two of the weeks, meditation during one of the weeks, Radical Acceptance during one of the weeks, and mindful eating during one of the weeks.

During the three follow-up phase weeks reported on, Participant 4 practiced between 0 and two days per week, with a weekly average of 1.0 days (SD: 1.4). The duration of the mindfulness practice per day was reported between 0 and 30 minutes, with
a daily average of 13.3 minutes (SD: 15.3). The mindfulness techniques and skills reported as practiced across the follow-up phase were: What/How skills during one of the weeks, meditation during one of the weeks, and Radical Acceptance during one of the weeks.

**Anxiety events.** When considering the total time participating in the study, Participant 4 reported that all 14 weeks contained stressful or anxiety-causing events: three of the weeks had family-related events and eleven of the weeks had multiple stressful or anxiety-related events.

**Participant 5.** This participant completed three WQ in the baseline phase, nine WQ in the intervention phase, and four WQ in follow-up phase.

**Mindfulness practice.** In the intervention phase, Participant 5 reported practicing nine of the nine weeks, between four to six days per week, with a weekly average of 4.7 days (SD: 0.9), and for a reported total of 42 days. The duration of mindfulness practice per day was reported between 10 to 30 minutes, with a daily average of 21.1 minutes (SD: 7.4). The mindfulness techniques and skills reported as practiced across the intervention phase were: mindful movement/yoga during eight of the weeks, meditation during eight of the weeks, body scan during three of the weeks, Wise Mind skills during one of the weeks, breathing exercises during one of the weeks, and Radical Acceptance during one of the weeks.

During the four follow-up phase weeks reported on, Participant 5 practiced between one to three days per week, with a weekly average of 2.3 days (SD: 1.0). The duration of mindfulness practice per day reported between 20 to 60 minutes, with a daily average of 38.8 minutes (SD: 17.5). The mindfulness techniques and skills reported as
practiced across the follow-up phase were: mindful movement/yoga during four of the weeks, and meditation during two of the weeks.

**Anxiety events.** When considering the total time participating in the study, Participant 5 reported that eleven weeks contained stressful or anxiety-causing events: three of the weeks had relationship-related events, one of the weeks had school-related events, one of the weeks had work-related events, one of the weeks had family-related events, one of the weeks had friend-related events, and four of the weeks had multiple stressful or anxiety-related events. Five weeks were reported as having no stressful or anxiety-causing events present.

**Cohort 2.** This is the summation of the two participants in Cohort 2 for a particular phase.

**Mindfulness practice.** In the intervention phase, they reported practicing between 1 and 6 days per week, with a weekly average of 4.1 days (SD: 1.4), and for a reported total of 98 days of mindfulness practice. The duration of mindfulness practice per day was reported between 7 to 40 minutes, with a daily average of 18.3 minutes (SD: 8.9). The mindfulness techniques and skills reported as practiced across the intervention phase were: meditation, body scan, breathing, Radical Acceptance, breathing, and skills, and loving kindness meditation.

In the follow-up phase, they reported practicing between 2 and 5 days per week, with a weekly average of 3.5 days (SD: 1.2), and for a reported total of 21 days of mindfulness practice. The duration of mindfulness practice per day was reported between 5 to 30 minutes, with a daily average of 20.0 minutes (SD: 10.6). The mindfulness techniques and skills reported as practiced across the Intervention phase were: mindful
movement/ yoga, meditation, Radical Acceptance, loving kindness meditation, and breathing.

**Anxiety events.** The participants reported stressful or anxiety-causing events across the study, or in all three phases of the study. Following is a rank order list of stressful and/or anxiety-causing events experienced by Cohort 2: (1) work-related events, (2) school-related events, (3) multiple events, and (4) family-related events.

**Participant 6.** This participant completed eight WQ in the baseline phase, twelve WQ in the intervention phase, and six WQ in the follow-up phase. In the intervention phase, Group 2 (Participants 6 and 7) skipped two weeks, however the participants completed questionnaires for the missed weeks. Therefore, Cohort 2 participants have twelve, not ten weeks of intervention data.

**Mindfulness practice.** In intervention phase, Participant 6 reported practicing twelve of the twelve weeks, between two to six days per week, with a weekly average of 4.7 days (SD: 1.2), and for a reported total of 56 days. The duration of mindfulness practice per day was reported between 10 to 30 minutes, with a daily average of 17.1 minutes (SD: 8.6). The mindfulness techniques and skills that were reported as practiced across the intervention phase were: meditation during ten of the weeks, breathing exercises during six of the weeks, mindful movement/yoga during five of the weeks, body scan during four of the weeks, Radical Acceptance during one of the weeks, metta/loving kindness during one of the weeks, and mindful eating during one of the weeks.

During the six follow-up phase weeks that were reported on, Participant 6 practiced between two and five days per week, with a weekly average of 3.5 days (SD:
1.2). The duration of mindfulness practice per day was reported between five to 30 minutes, with a daily average of 20.0 minutes (SD: 10.6). The mindfulness techniques and skills that were reported as practiced across the follow-up phase were: meditation during four of the weeks, body scan during three of the weeks, What/How skills during two of the weeks, breathing exercises during one of the weeks, Radical Acceptance during one of the weeks, and metta/loving kindness during one of the weeks.

**Anxiety events.** When considering the total time participating in the study, Participant 6 reported thirteen weeks containing stressful or anxiety-causing events: six of the weeks had work-related events, two of the weeks had school-related events, one of the weeks had a family-based event, one of the weeks had a relationship-based event, and two of the weeks had multiple stressful or anxiety-related events. Thirteen weeks were reported to not contain stressful or anxiety-causing events.

During the follow-up phase at approximately Week 45, Participant 6 reported dealing with extreme anxiety causing events, which were social, relationship, and academic in nature. These events caused a return to pre-intervention or the baseline phase levels.

**Participant 7.** This participant completed seven WQ in the baseline phase, twelve WQ in the intervention phase, and none in follow-up phase. In the intervention phase, Group 2 skipped two weeks, however the participants (Participants 6 and 7) completed the corresponding questionnaires. Therefore, Cohort 2 participants have twelve, not ten weeks of intervention phase data.

**Mindfulness practice.** In the intervention phase, they reported practicing twelve of the twelve weeks, between one to six days per week, with a weekly average of 3.5
days (SD: 1.4), and for a reported total of 42 days. The duration of mindfulness practice per day was reported between 7 and 40 minutes, with a daily average of 19.7 minutes (SD: 9.3). The mindfulness techniques and skills reported as practiced across the intervention phase were: meditation during seven of the weeks, mindful movement/yoga during seven of the weeks, body scan during six of the weeks, breathing exercises during four of the weeks, Radical Acceptance during two of the weeks, What/How skills during one of the weeks, and mindful eating during one of the weeks.

**Anxiety events.** When considering the total time participating in the study, Participant 7 reported only one week as containing stressful or anxiety-causing events that were work-related. Eleven weeks were reported as not containing stressful or anxiety-causing events. In the intervention phase, Participant 7 reported the onset of a condition that made meditation difficult.

**Cohort 3.** This is the summation of the six participants in Cohort 3 for a particular phase.

**Mindfulness practice.** In the intervention phase, they reported practicing between 1 and 7 days per week, with a weekly average of 4.5 days (SD: 1.7), and for a reported total of 219 days of mindfulness practice. The duration of mindfulness practice per day was reported between 5 to 60 minutes, with a daily average of 16.7 minutes (SD: 10.6). The mindfulness techniques and skills reported as practiced across the intervention phase were: meditation, breathing, body scan, mindful movement/yoga, Radical Acceptance, mindful walking, and mindful eating.

In the follow-up phase, they reported practicing between 2 and 5 days per week, with a weekly average of 3.7 days (SD: 1.2), and for a reported total of 22 days of
mindfulness practice. The duration of mindfulness practice per day was reported between 8 to 30 minutes, with a daily average of 20.5 minutes (SD: 9.7). The mindfulness techniques and skills reported as practiced across the intervention phase were: meditation, Wise mind skills, Radical Acceptance, mindful movement/yoga, mindful walking, loving kindness meditation, and breathing.

**Anxiety events.** The participants reported stressful or anxiety-causing events across the study, or in all three phases of the study. Following is a rank order list of stressful and/or anxiety-causing events experienced by Cohort 3: (1) school-events, (2) multiple events, (3) work-related events, (4) family-related events, (5) social-related events, (6) health-related events, (7) relationship-related events, and (8) friend-related events.

**Participant 8.** This participant completed seven WQ in the baseline phase, nine WQ in the intervention phase, and none in follow-up. This participant underwent the therapy as a single participant due to emergency scheduling conflicts. For this participant, the study timeline for Group 3 was used.

**Mindfulness practice.** In intervention phase, Participant 8 reported practicing six of the nine weeks, between one to six days per week, with a weekly average of 3.2 days (SD: 1.7), and for a reported total of 19 days. The duration of mindfulness practice per day was reported between 10 to 30 minutes, with a daily average of 21.7 minutes (SD: 7.5). The mindfulness techniques and skills that were reported as practiced across the intervention phase were: meditation during three of the weeks, breathing exercises during three of the weeks, body scan during three of the weeks, mindful movement/yoga during one of the weeks, and mindful walking during one of the weeks.
Anxiety events. When considering the total time participating in the study, Participant 8 reported nine weeks containing stressful or anxiety-causing events: three of the weeks had relationship-related events, two of the weeks had work-related events, one of the weeks had a school-based event, one of the weeks had a friend-based event, and two of the weeks had a multiple stressful or anxiety-causing event. Six weeks were reported not to have stressful or anxiety-related events.

Participant 9. This participant completed seven WQ in the baseline phase, eight WQ in the intervention phase, and none in follow-up phase.

Mindfulness practice. In the intervention phase, Participant 9 reported practicing eight of the eight weeks, between two to seven days per week, with a weekly average of 4.5 days (SD: 2.3), and for a reported total of 36 days. The duration of mindfulness practice per day was reported between 5 to 60 minutes, with a daily average of 16.4 minutes (SD: 19.9). The mindfulness techniques and skills that were reported as practiced across the intervention phase were: meditation during three of the weeks, mindful movement/yoga during three of the weeks, breathing exercises during two of the weeks, body scan during two of the weeks, What/How skills during two of the weeks, Radical Acceptance during two of the weeks, and mindful walking during one of the weeks.

Anxiety events. When considering the total time participating in the study, Participant 9 reported eleven weeks containing stressful or anxiety-causing events: four of the weeks had work-related events, one of the weeks had social-related events, one of the weeks had a health-based event, and five of the weeks had multiple stressful or
anxiety-causing events. Only one week was reported to have no stressful or anxiety-related events.

**Participant 10.** This participant completed three WQ in baseline phase, eight WQ in the intervention phase, and two WQ in the follow-up phase.

**Mindfulness practice.** In intervention phase, Participant 10 reported practicing eight of the eight weeks, between three to seven days per week, with a weekly mean of 4.6 days (SD: 1.3), and for a reported total of 37 days. The duration of mindfulness practice per day was reported between 10 to 45 minutes, with a daily mean of 20.6 minutes (SD: 12.1). The mindfulness techniques and skills that were reported as practiced across the intervention phase were: breathing exercises during four of the weeks, body scan during four of the weeks, What/How skills during four of the weeks, meditation during three of the weeks, Radical Acceptance during two of the weeks, mindful movement/yoga during one of the weeks, and mindful walking during one of the weeks.

During the two follow-up weeks reported on, Participant 10 practiced between three to four days per week, with a weekly average of 3.5 days (SD: 0.7). The duration of mindfulness practice per day was reported between 25 to 30 minutes, with a daily average of 27.5 minutes (SD: 3.5). The mindfulness techniques and skills that were reported as practiced across the follow-up phase were: meditation during two of the weeks, body scan during one of the weeks, Wise Mind during two of the weeks, and loving kindness/metta during one of the weeks.

**Anxiety events.** When considering the total time participating in the study, Participant 10 reported five weeks containing stressful or anxiety-causing events: three of
the weeks had school-related events, one of the weeks had family-related events, and one of the weeks had social-based events. Eight weeks were reported to not contain stressful or anxiety-causing events.

**Participant 11.** This participant completed seven WQ in the baseline phase, nine WQ in the intervention phase, and two in the follow-up phase.

**Mindfulness practice.** In the intervention phase, Participant 11 reported practicing eight of the nine weeks, between three to seven days per week, with a weekly average of 4.8 days (SD: 1.5), and for a reported total of 38 days. The duration of mindfulness practice per day was reported between 5 to 25 minutes, with a daily average of 18.1 minutes (SD: 7.5). The mindfulness techniques and skills reported as practiced across the intervention phase were: meditation during seven of the weeks, mindful movement/yoga during three of the weeks, breathing exercises during two of the weeks, Radical Acceptance during one of the weeks, body scan during one of the weeks, mindful eating during one of the weeks, and mindful walking during one of the weeks.

During the two follow-up weeks reported on, Participant 11 practiced between three to five days per week, with a weekly average of 4.0 days (SD: 1.4). The duration of mindfulness practice per day was reported between 20 to 30 minutes, with a daily average of 25.0 minutes (SD: 7.1). The mindfulness techniques and skills that were reported as practiced across the follow-up phase were: meditation during two of the weeks, Wise Mind skills during one of the weeks, and Radical Acceptance during one of the weeks.

**Anxiety events.** When considering the total time participating in the study, Participant 11 reported eight weeks containing stressful or anxiety-causing events: two of the weeks had family-related events, one of the weeks had health-related events, and five
of the weeks had multiple stressful or anxiety-related events. Nine weeks were reported as not containing stressful or anxiety-causing events.

Towards the end of the intervention phase, Participant 11 reported adding a second strategy to deal with a recurrent challenge. This participant mentioned that the mindfulness practices allowed for the early acknowledgment of this recurrent challenge.

**Participant 12.** This participant completed six WQ in baseline phase, nine WQ in the intervention phase, and one WQ in the follow-up phase.

**Mindfulness practice.** In the intervention phase, Participant 12 reported practicing nine of the nine weeks, between two to six days per week, with a weekly average of 3.2 days (SD: 1.3), and for a reported total of 29 days. The duration of mindfulness practice per day was reported between 8 to 20 minutes, with a daily average of 17.3 minutes (SD: 4.4). The mindfulness techniques reported as practiced across the intervention phase were: mindful movements/yoga during six of the weeks, meditation during four of the weeks, breathing exercises during three of the weeks, body scan during one of the weeks, and What/How skills during one of the weeks.

During the one follow-up week reported on, Participant 12 practiced two days per week, with daily practice reported as lasting ten minutes. Breathing exercises were the only mindfulness technique and skill reported as practiced during the one week of the follow-up phase.

**Anxiety events.** When considering the total time participating in the study, Participant 12 reported nine weeks containing stressful or anxiety-causing events: seven of the weeks had work-related events, one of the weeks had family-related events, and
one of the weeks had a social-based event. Seven weeks were reported to not contain stressful or anxiety-causing events.

**Participant 13.** This participant completed seven WQ in the baseline phase, ten WQ in the intervention phase, and one WQ in the follow-up phase.

**Mindfulness practice.** In the intervention phase, Participant 13 reported practicing ten of the ten weeks, between four to seven days per week, with a weekly average of 6.0 days (SD: 1.1), for a reported total of 60 days. The duration of mindfulness practice per day was reported between 5 to 15 minutes, with a daily average of 9.0 minutes (SD: 2.7). The mindfulness techniques and skills reported as practiced across the intervention phase were: meditation during six of the weeks, body scan during five of the weeks, Radical Acceptance during five of the weeks, breathing exercises during four of the weeks, mindful movements/yoga during one of the weeks, and mindful walking during one of the weeks.

During the one follow-up week reported on, Participant 13 practiced five days per week. Practice per day was reported as lasting eight minutes. The mindfulness techniques reported as practiced across the follow-up phase were Radical Acceptance and mindful walking.

**Anxiety events.** When considering the total time participating in the study, Participant 13 reported eleven weeks containing stressful or anxiety-causing events: nine of the weeks had school-related events, and two of the weeks multiple stressful or anxiety-causing events. Seven weeks were reported to not contain stressful or anxiety-causing events.
**Cohort 4.** This is the summation of the three participants in Cohort 4 for a particular phase.

**Mindfulness practice.** In the intervention phase, they reported practicing between 1 and 7 days per week, with a weekly average of 3.4 days (SD: 1.5), and for a reported total of 75 days of mindfulness practice. The duration of mindfulness practice per day was reported between 7 to 60 minutes, with a daily average of 26.0 minutes (SD: 14.1). The mindfulness techniques and skills reported as practiced across the intervention phase were: meditation, mindful movement/ yoga, body scan, breathing, mindful walking, emotional regulation skills, Radical Acceptance, Mindfulness skills, and Wise Mind skills.

In the follow-up phase, they reported practicing between 0 and 7 days per week, with a weekly average of 2.4 days (SD: 2.1), and for a reported total of 44 days of mindfulness practice. The duration of mindfulness practice per day was reported between 0 to 45 minutes, with a daily average of 9.4 minutes (SD: 12.0). The mindfulness techniques and skills reported as practiced across the Intervention phase were: mindful movement/ yoga, meditation, body scan, breathing, mindful walking, and Radical Acceptance.

**Anxiety events.** The participants reported stressful or anxiety-causing events across the study, or in all three phases of the study. Following is a rank order list of stressful and/or anxiety-causing events experienced by Cohort 4: (1) multiple-events, (2) school-related events, (3) social-related events, (4) health-related events, (5) work-related events, and (6) family-related events.
**Participant 14.** This participant completed seven WQ in the baseline phase, eight WQ in the intervention phase, and four WQ in the follow-up phase.

*Mindfulness practice.* In the intervention phase, Participant 14 reported practicing eight of the eight weeks, between two to seven days per week, with a weekly average of 3.6 days (SD: 1.8), and for a reported total of 29 days. The duration of mindfulness practice per day was reported between 10 to 30 minutes, with a daily average of 20.6 minutes (SD: 7.8). The mindfulness techniques and skills that were reported as practiced in the intervention phase were: meditation during seven of the weeks, mindful movements/yoga during six of the weeks, mindful walking during three of the weeks, breathing exercises during two of the weeks, and emotional regulation during one of the weeks.

During the four follow-up weeks reported on, Participant 14 practiced between 0 to three days per week, with a weekly average of 0.8 days (SD: 1.5). The duration of mindfulness practice per day was reported between 0 to 20 minutes, with a daily average of 6.7 minutes (SD: 11.5). The mindfulness techniques and skills reported as practiced in the follow-up phase were: mindful movements/yoga during one of the weeks, mindful walking during one of the weeks, and breathing exercises during one of the weeks.

*Anxiety events.* When considering the total time participating in the study, Participant 14 reported seven weeks containing stressful or anxiety-causing events: three of the weeks had school-based events, and four of the weeks had multiple stressful or anxiety-causing events. Twelve weeks were reported to not contain stressful or anxiety-causing events.
Participant 15. This participant completed ten WQ in the baseline phase, nine WQ in the intervention phase, and four WQ in the follow-up phase.

Mindfulness practice. In the intervention phase, Participant 15 reported practicing seven of the nine weeks, between 0 to five days per week, with a weekly average of 4.5 days (SD: 0.6), and for a reported total of 18 days. The duration of mindfulness practice per day was reported between 15 to 20 minutes, with a daily average of 16.3 minutes (SD: 2.5). Mindfulness techniques and skills were reported as practiced across the intervention phase were: mindful movements/yoga during five of the weeks, meditation during three of the weeks, breathing exercises during five of the weeks, and emotional regulation during two of the weeks.

During the four follow-up phase weeks reported on, Participant 15 practiced between four to seven days per week, with a weekly average of 5.5 days (SD: 1.7). The duration of mindfulness practice per day was reported between 15 to 20 minutes, with a daily average of 16.3 minutes (SD: 2.5). Mindfulness techniques and skills that were reported as practiced across the follow-up phase were: mindful movements/yoga during three of the weeks, breathing exercises during two of the weeks, body scan during one of the weeks, Radical Acceptance during one of the weeks, mindful meditation during one of the weeks, and mindful walking during one of the weeks.

Towards the end of the intervention phase at approximately Week 27, Participant 15 reported a positive shift in health.

Anxiety events. When considering the total time participating in the study, Participant 15 reported fourteen weeks containing stressful or anxiety-causing events: ten of the weeks had school-related events, two of the weeks had a family-based event, two
of the weeks had health-related events, and one of the weeks had a work-based event. Eight weeks were reported to not contain stressful or anxiety-causing events.

**Participant 16.** This participant completed three WQ in the baseline phase, eight WQ in the intervention phase, and five WQ in the follow-up phase.

**Mindfulness practice.** In the intervention phase, Participant 16 reported practicing eight of the eight weeks, between two to five days per week, with a weekly average of 3.1 days (SD: 1.1), and for a reported total of 25 days. The duration of mindfulness practice per day was reported between 7 to 60 minutes, with a daily average of 31.5 minutes (SD: 15.7). Mindfulness techniques that were reported as practiced across the intervention phase were: meditation during six of the weeks, mindful movements/yoga during five of the weeks, body scan during three of the weeks, mindful walking during two of the weeks, breathing exercises during one of the weeks, Radical Acceptance during one of the weeks, What/How skills during one of the weeks, and Wise Mind skills during one of the weeks.

During the five follow-up weeks reported on, Participant 16 practiced between 0 and four days per week, with a weekly average of 2.2 days (SD: 1.5). The duration of mindfulness practice per day was reported between 0 to 45 minutes, with a daily average of 25.0 minutes (SD: 16.6). Mindfulness techniques and skills that were reported as practiced across the follow-up phase were: mindful movements/yoga during four of the weeks, meditation during two of the weeks, and body scan during one of the weeks.

**Anxiety events.** When considering the total time participating in the study, Participant 16 reported eleven weeks containing stressful or anxiety-causing events: two of the weeks had school-related events, one of the weeks had a social-based event, and
eight of the weeks had multiple stressful or anxiety-causing events. Two weeks were reported to not contain stressful or anxiety-causing events.

Participant 17. This participant completed one WQ in the baseline phase, two WQ in the intervention phase, and five WQ in the follow-up phase. Participant 17 reported some confusion about how to complete the questionnaires. This participant’s data was not used in the Visual analysis because of too few baseline data points to create a usable trend.

Mindfulness practice. In the intervention phase, Participant 17 reported practicing two of the two weeks, between one to two days per week with a weekly average of 1.5 days (SD: 0.7), and for a reported total of three days. The duration of mindfulness practice per day was reported between 30 and 60 minutes, with a daily average of 45.0 minutes (SD: 21.2). Mindfulness techniques and skills that were reported as practiced across the intervention phase were: body scan during one of the weeks, Radical Acceptance during one of the weeks, and breathing exercises during one of the weeks.

During the five follow-up phase weeks reported on, Participant 17 practiced between one to two days, with a weekly average of 1.6 days (SD: 0.5). The duration of mindfulness practice per day was reported between 20 and 30 minutes, with a daily average of 24.0 minutes (SD: 5.5). Mindfulness techniques and skills that were reported as practiced across the follow-up phase were: meditation during four of the weeks, body scan during four of the weeks, Radical Acceptance during one of the weeks, and mindful movements/yoga during one of the weeks.
**Anxiety events.** When considering the total time participating in the study, Participant 17 reported all eight weeks to contain stressful or anxiety-causing events: two of the weeks had family-related events, one of the weeks had school-related events, one of the weeks had a work-based event, and four of the weeks had multiple stressful or anxiety-causing events.

**Summary**

The group and each participant analysis showed an application of the techniques and skills taught in the Integrative-Mindfulness Anxiety Group (IMAG). The group and each participant also indicated differences in the anxiety-causing and stressful events they each faced.

When reviewing the group analyses for mindful practice, the formal mindful techniques (i.e., meditation, mindful movement/yoga, body scan) were in the top four techniques practiced; Radical Acceptance, a cognitive-based skill, was the exception as it was ranked third. Interestingly, the body-based practices (e.g., meditation, breathing, mindful movement/yoga, body scan, mindful walking) were in the top six skills and techniques used. Most of the cognitive-based skills were ranked in the lower half of the list of techniques and skills used.

When reviewing the group analyses for stressful or anxiety-causing events, the category of *multiple-events* is most frequent. This particular category meant that participant mentioned several categories (e.g., school event, work event, family event) in a single week. Excluding the multiple category, the highest ranked single categories were school-based and work-based events.
Individual Participant Analyses Summary

The following mindfulness practice and technique summaries review the intervention phase first, and then the follow-up phase. The weekly averages of practice days and the daily averages of practice minutes are compared across these two phases. Finally, the stressful and anxiety-causing events are examined and summarized.

**Intervention phase.** When reviewing the individual participants, eleven participants reported practice in all of their reported-upon weeks in intervention phase. Six participants did not practice in every reported week. This would mean that the majority of participants practiced mindful techniques and skills in weeks that they completed questionnaires.

**Average days of practice.** This summary reports on how many days on average a participant practiced in a reported-upon week in intervention phase. One participant (Participant 13) had a weekly average of six days of practice in a reported-upon week. Two participants (Participants 1 and 2) had between an average of five and six days of practice. Seven participants (Participants 3, 5, 6, 9, 10, 11, and 15) had between an average of four and five days of practice. And, all but one participant (Participant 17) reported over an average of three days of practice in a reported week. At the participant level during the intervention phase, the majority of participants practiced over an average of 4 days in a week.

**Average minutes of practice.** This summary reports on how many minutes on average a participant practiced in a day reported-upon in the intervention phase. All but two participants (Participants 3 and 13) had on average more than 15 minutes per practice day. Seven participants (Participants 1, 5, 8, 10, 14, and 16) had on average more than 20
minutes per practice day. Two participants (Participants 16 and 17) had on average more than 25 minutes per practice day. Over twenty minutes of practice would be important, as the two formal practice routines (i.e., body scan and the mindful movements/yoga) were each approximately 20 minutes in length.

**Number of techniques used.** In terms of using and integrating the various techniques and skills in their practices or lives, the participants experimented with a selection. All participants reported practicing with over two techniques in the intervention phase homework. All but two participants (Participants 3 and 17) reported over three techniques used for homework. Three participants (Participants 4, 14, and 15) reported four techniques used for homework practice. Three participants (Participants 1, 8, and 12) reported five techniques used for homework practice. Three participants (Participants 2, 5, and 13) reported six techniques used for homework practice. Five participants (Participants 6, 7, 9, 10, and 11) reported seven techniques used for homework practice. One participant (Participant 16) recorded eight techniques used for homework practice. The participants integrated several of the techniques and skills into their homework practice. Some participants experimented with many of the techniques and skills used, and others used far fewer.

**Top used techniques.** This summary reports on the most used techniques in homework practice. Nine participants (Participants 1, 6, 7, 8, 9, 11, 13, 14, and 16) reported meditation as the top practiced technique. Four participants (Participants 2, 3, 4, and 10) reported breathing exercises as the top technique practiced. Three participants (Participants 5, 12, and 15) had mindful movement/yoga as the top technique practiced. Interestingly, these are primarily technique-based practices, with two of these techniques
being formal meditation practices. One participant (Participant 17) did not seem to have a top-practiced intervention as three techniques and skills were only used once.

**Follow-up phase.** When reviewing the individual participants, twelve participants reported practice in the follow-up phase. Six participants did not submit questionnaires in this phase therefore implementation and practice data is not available.

**Average days of practice.** This summary reports on how many days on average a participant practiced in a reported upon week in the Follow-up phase. Two participants (Participants 13 and 15) had on average over five days of practice in a reported-upon week. Only one participant (Participant 12) had on average between four and five days of practice in a reported upon week. Three participants (Participants 3, 6, and 10) had on average between three and four days of practice in a reported-upon week. Three participants (Participants 4, 12, and 16) had on average between two and three days of practice in a reported week. Three participants (Participants 4, 14, and 17) had less than an average of two days of practice in a reported week. There was a range in the participant’s practice routines in the follow-up phase.

**Average minutes of practice.** This summary reports on how many minutes on average a participant practiced in a day reported-upon in the follow-up phase. Four participants (Participants 5, 10, 11, and 16) reported averages of 25 minutes or more in a day of practice. Two participants (Participants 6 and 17) practiced on average between 20 and 24 minutes in a day. Two participants (Participants 3 and 15) practiced on average between 15 and 19 minutes in a day. Two participants (Participants 4 and 12) practiced on average between 10 and 14 minutes in a day. Two participants (Participants
13 and 14) practiced on average less than 10 minutes in a day. Over half of the participants in the follow-up phase practiced 20 minutes or more in a reported-upon day.

**Number of techniques used.** In terms of using and integrating the various techniques and skills in their practices or lives, the participants experimented with a variety. Three participants (Participants 6, 10, and 15) used over three techniques. Six participants (Participants 3, 4, 11, 14, and 16) used three techniques. Two participants (Participants 5 and 13) used two techniques. One participant (Participant 12) used only one technique. The number of techniques used in the follow-up phase was greatly streamlined or fewer in number, when compared to the intervention phase.

**Top used techniques.** This summary reports on the most used techniques in follow-up phase practice. Five participants (Participants 3, 5, 14, 15, and 16) had mindful movements/ yoga as the top technique practiced. Four participants (Participants 6, 10, 11, and 17) had meditation as the top technique practiced. The shift in rank order might be because yoga instruction and classes are available from several sources (e.g., community centres, gyms, fitness centres).

**Stressful or Anxiety-causing Events Summary**

In terms of stress and anxiety-causing events, participants had different durations of time in the study; therefore the individual number of stress or anxiety-based events will not be summarized. However, thirteen participants (Participants 1, 2, 3, 4, 5, 6, 8, 9, 12, 13, 15, 16, and 17) had at least, if not more weeks with stressors or anxiety-causing events in them, than not. Thus, the majority of participants often faced difficult weeks and without much respite from stressful or anxiety-causing events.
In terms of what the participants dealt with, eleven participants (Participants 1, 2, 4, 5, 6, 8, 9, 11, 13, 14, and 16) had *multiple-events* in a reported upon week. As mentioned above, the multiple events category meant that a participant reported dealing with multiple stressful or anxiety-causing events in a given week. Thus, a participant might deal with a school-based event, a health-based event, and a family-based event all in one week. Thus, for many, there was a complexity in terms of how stressful or anxiety-causing their lives were.

As for single stressful or anxiety-causing events, five participants (Participants 1, 2, 6, 7, 9, and 12) had *work-events* as the top stress or anxiety-causing event. Five participants (Participants 10, 13, 14, 15, and 16) had *school* as the top stress or anxiety-causing event. Three participants (Participants 4, 11, and 17) had *family* as the top stress or anxiety-causing event. Two participants (Participants 5 and 8) had *relationships* as the top stress or anxiety-causing event. Thus, most participants dealt with many stressful or anxiety-causing events, other than school-based events.

**Conclusions**

The summary of these analyses answered the aforementioned research questions of what was practiced, what the frequency and duration of practice was, and what the participant’s dealt with in terms of stressful and anxiety-causing events. The group and individual analyses of duration and frequency of mindful techniques and skills practice and anxiety-causing events helped portray the participant’s use of the various techniques and skills learned in the intervention, and the participant’s challenges with difficult events in their lives.
Understanding the implementation and practice of the various participants also helped frame the results of the next three chapters, which each differentially assessed the effectiveness of the IMAG through success in mindfulness acquisition and the decrease of anxiety symptoms. Triangulating this chapter’s analyses with the next three chapters helped to uncover if the practices are helpful, and if so, then which practices or contexts were most supportive, and which created difficulty.
CHAPTER FIVE: SMALL-N ANALYSES RESULTS

This is the second of the four result chapters. This chapter reviewed the visual analyses of the 13 multiple baseline design graphs, one for each of the scales of measurement used in this study. This chapter begins by outlining the research questions guiding this Small-N analyses. Next, a section reviews the data and indicators of change and the functional relationship criteria being used in the analysis. Finally, the results of the visual analyses and their summaries are presented for each of the scales of measurement. These results are organized according to the three dependent variables: general clinical outcome, anxiety, and mindfulness. A general summary for this chapter also is provided.

Research Questions

The research questions guiding these analyses were:

a. Is there a functional relationship between the IMAG and an increase in mindfulness, as seen by qualities of consciousness, awareness, attention, non-reactivity, and non-judgment among university or college students who self-report anxiety?

b. Is there a functional relationship between the IMAG and a decrease in the symptoms generally associated with anxiety (e.g., worry, physical, cognitive, affective symptoms) among university or college students who self-report anxiety?

c. Is there a functional relationship between the IMAG and increased well being as measured by therapy outcome in university or college students who self-report anxiety?
Review of the Data and Procedures of the Visual Analysis

The Small-N, visual analyses were completed using the weekly and monthly data of the full and partial questionnaires, which the participants completed throughout the baseline, intervention, and follow-up phases. Due to a variety of reasons, not all participants completed all scheduled questionnaires; some participants reported missing a session, forgetting to complete a questionnaire for a particular week, quitting completing the questionnaires in the follow-up phase, or being confused about which questionnaire to complete.

The results of this chapter are presented in sections corresponding to three main dependent variables: general clinical outcome (i.e., OQ-45.2), anxiety (i.e., STAI, PSWQ-PW, and BAI), and mindfulness (i.e., MAAS, and FF). In addition to the individual scales, both the anxiety and the mindfulness variables have a composite scale, which is the combination of the individual scales measuring the respective dependent variable. Each scale and composite score has a multiple baseline across cohorts graph (Please see Figures 5.1 - 5.13) and a corresponding write-up, which reviews the total group’s, the respective cohort’s, and each individual participant’s performance. The total group’s progress is reported using the grand means of the summed scores in a phase across all participants; the cohort’s progress is reported using the grand means of the summed scores in a phase across participants in a particular cohort (i.e., Cohort 1, 2, 3, or 4). The group and the cohort results are not graphed due to differing time each participant spent in the baseline and follow-up phases; thus, these analyses compare only the levels (i.e., means and standard deviations) of the baseline and intervention phases. The individual participant’s progress is the analysis of each participant’s performance
across the study; this progress is graphed and analyzed using all indicators described below. Thus, the analyses of the total group, cohorts, and individual progress for each scale were reported.

**Indicators of change.** The following briefly reviews the indicators used to assess change; these indicators were more thoroughly outlined in the Methodology Chapter. Lundervold and Belwood (2000) outlined several visual indicators of change to be used in Small-N research. The first visual indicator was *level*. Level for a phase was indicated by providing the mean of the data in a phase, and the range of this data in this phase. The levels were compared across phases to assess for change in the direction. The second visual indicator was *trend*, or the pattern across time of the dependent variable. The trend might be increasing or ascending (i.e., an upward trend), decreasing or descending (i.e., a downward trend), or staying the same (i.e., a stable trend). The third visual indicator was the *slope* or the magnitude or steepness of a trend in a phase. This allows for a statement about the degree of change. These three indicators were the basis for the Small-N design’s visual analysis. There were three additional indicators included in this study to increase the thoroughness and rigor of the assessment of the group’s, the cohort’s, or the participant’s change over a baseline.

The fourth indicator is *non-overlapping data*, or the similarity of trend, slope, and level across phases. Non-overlapping data analysis provides a percentage of scores in intervention and follow-up phases that do not overlap with baseline scores. A standard of 80% of non-overlapping data between the baseline and either the intervention or follow-up phases was used to assess change (Banda & Therrien, 2008). Fifth, *clinically significant change* was also used as an indicator. For the OQ-45.2, the clinical cut-off for
the non-clinical range (i.e., below the sum score of 64) was used. All other scales of measurement used a clinical cut-off calculated from a difference of two standard deviations (i.e., \(+{-}2SD\)) between the mean of baseline (i.e., \(\bar{X}_{bl}\)) and either the mean of the intervention phase (i.e., \(\bar{X}_{in}\)) or the mean of the follow-up phase (i.e., \(\bar{X}_{fu}\)) (Jacobson & Truax, 1992). The notation of \((\bar{X}_{(in;fu)} < \bar{X}_{bl} + \pm 2SD_{bl})\) or \((\bar{X}_{(in;fu)} > \bar{X}_{bl} + \pm 2SD_{bl})\) outlines the criterion required for clinical significance in a particular analysis and the subscript on the \(\bar{X}_{(in;fu)}\) indicates which phase means are being compared to the clinical significance standard (i.e., \(\bar{X}_{bl} + \pm 2SD_{bl}\)). Finally, *variability* or the degree of data deviation around a best fit line was monitored (Barlow, Nock, & Hersen, 2009); thus, the standard deviation for a respective range of scores in a phase was provided to assess this criteria. Unlike the prior two indicators, variability has no agreed upon standard, thus was made through a visual judgment.

**Determining an effect.** The above six indicators were used in order to determine if a desired change or an effect was evidenced. There were four types of effects assessed: a basic effect, a weaker basic effect, a delayed effect, and a weaker delayed effect. The basic effects (i.e., basic effect and the weaker basic effect) were determined if there was a demonstration in the intervention phase of a clear pattern of change in the dependent variable after the manipulation of the independent variable. The basic effect used the main six indicators, with the change having to meet the standards established for non-overlapping data and clinical significance. The weaker basic effect also used the main six indicators, but was more liberal in regards to meeting the non-overlapping data and clinical significance standards. Thus, a weaker basic effect did not have to meet the strict standards set by the non-overlapping data and clinical significance indicators.
Two types of delayed effects were determined if there was a demonstration in the follow-up phase of a clear pattern of change or the maintenance of change in the dependent variable after the manipulation of the independent variable. First, the delayed effect used the main six indicators, with the change having to meet the standards established for non-overlapping data and clinical significance. Second, the weaker delayed effect used the main six indicators outlined above, but was more liberal in regards to meeting the non-overlapping data and clinical significance standards. A weaker delayed effect did not have to meet the strict standards set by the non-overlapping data and clinical significance criteria.

Therefore, this study used basic effects, weaker basic effects, delayed effects, and weaker delayed effects as evidence to establish the presence of a functional relationship.

**Functional relationship criteria.** A functional relationship was established through vertical analyses across cohorts to assess for three demonstrations of effects created by the manipulation of the independent variable, and across at least three different time periods (Barlow, Nock, & Hersen, 2009). There were two types of functional relationships being evaluated: a functional relationship and a weaker functional relationship. A functional relationship was evidenced by either three basic effects at three different points of time, or three delayed effects at three different points of time. A weaker functional relationship allowed a weaker basic effect or a weaker delayed effect to be used as a demonstration of change at minimally one of the three different points of time mentioned above. Further, a functional relationship (or a weaker functional relationship) documents experimental control, as three cohorts, or three participants in different cohorts show change in either the intervention phase, or the follow-up phase.
Thus, the functional relationship and the weaker functional relationship were used as evidence of clinical change created by the IMAG.

Visual Analyses of the Multiple Baseline Graphs

The following presents the results of the visual analyses of the multiple baseline graphs for the scales of measurements used in this study. These results are presented in the categories of the three dependent variables: general clinical outcome, anxiety, and mindfulness.

General Clinical Outcome Measure

The general clinical outcome variable was composed of only one measure: the Outcome Questionnaire 45.2. This scale assessed general clinical outcome or clinical symptoms. Following is the group, cohort, and individual analyses for this scale.

**Outcome Questionnaire-45.2 (OQ-45.2: Lambert et al., 1996).** Figure 5.1 shows the weekly sum scores for the 16 participants. The OQ-45.2 assesses clinical outcomes or symptom-levels. This scale has a clinical cut-off score of 64, meaning that sum scores under 64 are in a non-clinical range, and scores over 64 are in a clinical range. This cut-off is shown on Figure 5.1 as a gray dotted lined. Given the non-clinical range, the clinical significance analysis was not completed. For the OQ-45.2, the optimal trend is a descending trend, or a decrease in symptoms overtime. Additionally, a change of more than 14-points in the sum score of the OQ-45.2 is considered a reliable change; stated differently, more than a 14-point decrease between sum-scores from baseline, to intervention or follow-up would indicate a reliable decrease in symptoms.
Figure 5.1. Multiple baseline design across cohorts graph for the OQ-45.2’s sum scores of the 16 participants. The OQ-45.2 measures clinical symptoms. Data above the gray dotted line is in the clinical range, and data below is in the non-clinical range.
**Total group.** This analysis combined the summed scores across participants within a phase to create a grand mean for the phase. The levels of these phase grand-means were then compared. No trend analysis was completed.

During baseline, overall, the 16 participants’ clinical symptoms had a mean of 72.9 (range: 17.0 – 120.0; SD: 20.9). In intervention, the participants’ symptom levels decreased in the desired direction to a mean of 67.4 (range: 27.0 – 121.0; SD: 20.4). Although follow-up did not have the full complement of participants, with only 11 of 16 participants completing scales in this phase, the symptom levels further decreased to a mean of 61.7 (range: 23.0 – 114.0; SD: 23.4), a score within the non-clinical range. Caution however should be used when comparing follow-up to the other phases, as missing participants preclude a definitive interpretation of the comparison across phases. Although there were minor decreases in mean levels, these were not substantive enough to show a basic effect, or a delayed effect in the overall symptom levels for the total group.

A summary of the levels of clinical outcome symptoms for each cohort and the individual participants in the respective cohorts is presented below.

**Cohort 1.** During baseline, clinical symptoms for Cohort 1 had a mean of 94.5 (range: 75.0 – 120.0; SD: 14.17). In intervention, Cohort 1’s symptom levels decreased

2. When a group’s or cohort’s follow-up mean is missing participants in the calculation, a comparison of means across phases is not possible. Therefore regardless of the change in level, no delayed effects or weaker delay effects can be evidenced.
in the desired direction to a mean of 86.5 (range: 48.0 – 121.0; SD: 21.4). Although follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s symptom levels further decreased to a cohort-mean of 80.8 (range: 55.0 – 114.0; SD: 19.5). Although there were decreases in Cohort 1’s symptoms, these changes were not substantive enough to show either a basic effect, or a delayed effect.

*Participant 1.* During baseline, Participant 1’s clinical symptoms were in the clinical range, with a mean of 84.8 (range: 75 – 95; SD: 7.2), and showed a slightly descending trend. During intervention, Participant 1’s clinical symptoms continued the decreasing trend into the non-clinical range, producing a mean of 61.3 (range: 48 – 69; SD: 9.7). There were no follow-up data for this participant. There were 100% non-overlapping data between baseline and intervention. Given the descending trend in baseline, there was no basic effect evidenced across baseline and intervention phases.

*Participant 2.* During baseline, Participant 2 showed clinical symptoms in the clinical range, with a mean of 111.9 (range: 99 – 120; SD: 7.5), and an overall slightly decreasing trend. During intervention, Participant 2 evidenced a small decrease in symptom level to a mean of 107.6 (range: 77 – 119; SD: 14.7), but still within the clinical range. There were no follow-up data for this participant. There were 20% non-overlapping data between baseline and intervention phases. Due to the participant’s lack of clinical progress and high scores, they were referred to an external therapeutic resource towards the end of the intervention phase. There was no basic effect demonstrated.

*Participant 3.* During baseline, Participant 3 showed a symptom level in the clinical range, with a mean of 83.8 (range: 82 – 85; SD: 1.3). In intervention, Participant
Participant 3’s clinical symptom level decreased to a mean of 78.3 (range: 72 – 88; SD: 6.3), with a slightly decreasing trend. However, this overall level remained in the clinical range. During follow-up, Participant 3’s symptom level decreased slightly to a mean of 75.8 (range: 72 – 79; SD: 3.3), again remaining in the clinical range. There were 67% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. However, Participant 3 did not achieve change into the non-clinical range. Thus, there was neither a basic effect, nor a delayed effect shown.

Participant 4. During baseline, Participant 4 displayed a symptom level in the clinical range, with a mean of 98.3 (range: 95 – 103; SD: 4.2). In intervention, Participant 4’s symptom level evidenced a slight increase to a mean of 100.9 (range: 84 – 121; SD: 12.9). Participant 4’s follow-up symptom level showed an additional increase to a mean of 110.3 (range: 106 – 114; SD: 4.0). There were 37.5% non-overlapping data between baseline and intervention phases, and no non-overlapping data between baseline and follow-up phases. Participant 4 reported a pile-up of stressors involving school, work, and family problems, which may have resulted in the deterioration in symptom levels across the intervention and follow-up phases. There was neither a basic effect, nor a delayed effect shown.

Participant 5. During baseline, Participant 5 showed a symptom level in the clinical range, with a mean of 81 (range: 80 – 82; SD: 1.0). During intervention, Participant 5 evidenced a decrease in symptom level to a mean of 67.1 (range: 51 – 77; SD: 8.8), with an overall descending trend into the non-clinical range. During follow-up, Participant 5’s symptom level decreased slightly to a mean of 65 (range: 55 – 81; SD:
Although the mean level remained in the clinical range, a decreasing trend across the follow-up phase entered the non-clinical range by the end of the phase. There were 100% non-overlapping data between the baseline and intervention phases, and 75% non-overlapping data between baseline and follow-up phases. Participant 5’s symptom levels reached the non-clinical range, with minimal overlapping data. There was a weaker basic effect, and a weaker delayed effect evidenced.

**Cohort 2.** During baseline, clinical symptoms for Cohort 2 had a mean of 70.7 (range: 55.0 – 88.0; SD: 8.8). In intervention, Cohort 2’s symptom levels decreased in the desired direction to a mean of 66.2 (range: 53.0 – 79.0; SD: 8.5). Although the follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, the symptom level increased to a mean of 68.2 (range: 51.0 – 95.0; SD: 18.1). The symptom levels for Cohort 2 were relatively stable across the study, therefore neither a basic effect nor a delayed effect was observed in Cohort 2’s symptom levels across the phases.

**Participant 6.** During baseline, Participant 6’s symptom level was in the clinical range, with a mean of 70.6 (range: 63 – 78; SD: 4.8). In intervention, Participant 6’s symptom level decreased to a mean of 66.9 (range: 53 – 79; SD: 10.1), with a trend that descended into the non-clinical range. During follow-up, Participant 6’s symptom level again remained in the clinical range, with a mean of 68.2 (range: 51 – 95; SD: 18.1). There were 41.7% non-overlapping data between baseline and intervention phases, and 50% non-overlapping data between baseline and follow-up phases. The first half of the follow-up trend was stable in the non-clinical range; Participant 6 reported an academic and personal event at Week 46 that may have shifted this trend upwards back into the
clinical range. Although Participant 6’s symptoms levels were in the non-clinical range at times during intervention and follow-up phases, there was no basic effect or delayed effect evidenced.

Participant 7. During baseline, Participant 7 showed a symptom level in the clinical range, with a mean of 70.7 (range: 55–88; SD: 12.4), and a descending trend. In intervention, Participant 7’s symptom level decreased to a mean of 65.4 (range: 54–73; SD: 6.8), and was somewhat stable around the clinical cut-off. There were no follow-up data. There were 16.7% non-overlapping data between baseline and intervention phases. Thus, no basic effect was shown.

Cohort 3. During baseline, Cohort 3’s clinical symptom levels had a mean of 65.9 (range: 17.0–96.0; SD: 20.5). In intervention, Cohort 3’s symptom levels decreased into the non-clinical range with a mean of 54.8 (range: 27.0–90.0; SD: 15.8). Although follow-up did not have the full complement of participants, with only 4 of 6 participants completing scales in this phase, Cohort 3’s symptom levels further decreased to a mean of 38.3 (range: 23.0–52.0; SD: 9.6). The decrease in symptom levels at intervention for Cohort 3 evidenced a basic effect. There however was no delayed effect shown.

Participant 8. During baseline, Participant 8’s symptom level was in the non-clinical range, with a mean of 36.7 (range: 17–52; SD: 12.7). In intervention, Participant 8’s symptom level remained in the non-clinical range, with a mean of 36.9 (range: 27–50; SD: 8.1). There were no follow-up data for this participant. Given the very low scores in baseline, there were no non-overlapping data between baseline and intervention phases. Thus, no basic effect was shown.
Participant 9. During baseline, Participant 9’s symptom level was in the clinical range, with a mean of 82.7 (range: 63 – 96; SD: 11.9), and a variable, ascending trend. In intervention, Participant 9’s symptom level decreased and ranged around the clinical cut-off, with a mean of 64.3 (range: 52 – 82; SD: 10.6), and a variable trend. Participant 9 had no follow-up data. There were 71.4% non-overlapping data between the baseline and intervention phases. Although Participant 9’s symptom levels showed overlap with the baseline data, the intervention symptom level decreased to the clinical cut-off. Thus, there was a weaker basic effect shown.

Participant 10. During baseline, Participant 10’s symptom level had a mean of 60.0 (range: 45 – 83; SD: 20.2). During intervention, Participant 10’s symptom level decreased slightly to a mean of 56.4 (range: 31 – 90; SD: 20.4), with a trend that showed an early spike then descended to the non-clinical range. During follow-up, Participant 10’s symptom level remained in the non-clinical range, with a mean-level of 36.5 (range: 34 – 39; SD: 3.5). There were 25% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. The minimal change in level between baseline and intervention phases did not evidence a basic effect. However, Participant 10’s clinical symptom levels showed a decrease, with no overlapping data from baseline to follow-up, thus there was a delayed effect shown.

Participant 11. During baseline, Participant 11’s symptom level was in the clinical range, with a mean of 73.9 (range: 46 – 93; SD: 15.7), and a descending trend. During intervention, Participant 11’s symptom level decreased to a mean of 65.4 (range: 35 – 81; SD: 14.9), but had an ascending trend. During follow-up, Participant 11’s
symptom level descended into the non-clinical range, with a mean of 33 (range: 23 – 43; SD: 14.1). There were 14.3% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. Although there was a decrease in Participant 11’s symptom levels, a decrease of symptoms was shown baseline, therefore neither a basic nor a delayed effect was evidenced.

**Participant 12.** During baseline, Participant 12’s symptom level was in the non-clinical range, with a mean of 59.3 (range: 42 – 74; SD: 13.6), and a descending trend. In intervention, Participant 12’s symptom level remained primarily in the non-clinical range, with a mean of 51.4 (range: 42 – 70; SD: 8.4), and variable yet descending trend. Participant 12 had a single follow-up probe of 39, which was in the non-clinical range. There were 11.1% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. Although Participant 12 displayed a decrease in symptom levels, this decrease began in baseline. Therefore, a statement of either a basic effect or a delayed effect cannot be made.

**Participant 13.** During baseline, Participant 13 showed a symptom level in the clinical range, with a mean of 78.9 (range: 75 – 84; SD: 3.0). In intervention, Participant 13’s symptom level decreased to a mean of 58.8 (range: 38 – 76; SD: 13.5), and eventually descended into the non-clinical range at the end of the phase. Participant 13 had a single follow-up probe of 52, which was in the non-clinical range. There were 90% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. Participant 13’s symptom levels showed both a basic effect, and a delayed effect.
**Cohort 4.** During baseline, Cohort 4’s clinical symptom levels were in the non-clinical range, with a mean of 64.1 (range: 29.0 – 98.0; SD: 18.5). In intervention, Cohort 4’s symptom levels slightly increased to a mean of 65.5 (range: 47.0 – 85.0; SD: 12.5). In follow-up, their clinical symptom levels decreased into the non-clinical range, with a mean of 51.0 (range: 31.0 – 77.0; SD: 18.1). Thus, there was a delayed effect evidenced.

**Participant 14.** During baseline, Participant 14 showed a symptom level in the clinical range, with a mean of 80.3 (range: 64 – 86; SD: 7.4), and an ascending trend. In intervention, Participant 14’s symptom level remained in the clinical range, with a mean of 77.6 (range: 71 – 85; SD: 5.2), and an initially ascending trend that shifted slightly to trend downward. In follow-up, Participant 14’s symptom level remained stable in the clinical range, with a mean of 75 (range: 73 - 77; SD: 1.8). There were no non-overlapping data both between the baseline and intervention phases, and between baseline and follow-up phases. There was neither a basic effect nor a delayed effect shown.

**Participant 15.** During baseline, Participant 15’s symptom level was in the non-clinical range, with a mean of 50.5 (range: 29 – 63; SD: 9.8). In intervention, Participant 15’s symptom level increased to a mean of 61.6 (range: 47 – 78; SD: 11.9). The intervention trend initially ascended from the non-clinical into the clinical range, and then shifted downward back into the non-clinical range. Participant 15 reported a shift in health in the middle of the intervention phase; this would explain the ascension into the clinical range, followed by a decrease into the non-clinical range. In follow-up, Participant 15’s symptom level was in the non-clinical range, with a mean 40.3 (range:
Given the lower score in baseline, there were no non-overlapping data between baseline and intervention phases, and baseline and follow-up phases. Thus, no basic effects or delayed effects were evidenced.

**Participant 16.** During baseline, Participant 16's symptom level showed a mean of 76.3 (range: 49 – 98; SD: 25.0), with an ascending trend. In intervention, Participant 16’s symptom level decreased to a mean of 57.3 (range: 47 – 76; SD: 9.0), with a descending trend into the non-clinical range. During follow-up, Participant 16’s symptom level decreased further within the non-clinical range, with a mean of 38.2 (range: 31- 42; SD: 4.4). There were 12.5% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. Although there were overlapping data between baseline and intervention, there also was desired change in both level and trend. Thus, a weaker basic effect and a delayed effect were shown.

**OQ45.2 Summary.** The OQ-45.2 measures general clinical outcome and symptom levels. When reviewing clinical symptom reduction across baseline and intervention phases, Cohort 3 and Participant 13 evidenced basic effects. Participants 5, 9, and 16 showed weaker basic effects. When reviewing symptom reduction across baseline and follow-up phases, Cohort 4, and Participants 10, 13, and 16 evidenced delayed effects. Participant 5 showed a weaker delayed effect. Thus, there was change in clinical symptom levels for some cohorts and participants.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of
seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

For the OQ 45-2, there were no functional relationships shown at the cohort levels. There was one weaker functional relationship from weaker basic effects (see Participants 5, 13, and 16), and one weaker functional relationship from the delayed effects (see Participants 5, 13, and 16).

**Summary general clinical outcome measure.** The following reviews the basic and delayed effects, and the corresponding functional relationship for cohorts and individual participants.

At the cohort level, there was one basic effect, and one delayed effect across the general clinical outcome measure.

At the individual participant level, Participant 13 had a basic effect in the general clinical outcome measure. Participants 5, 9, and 16 had a weaker basic effect in the general clinical outcome measure. Again, at the individual participant level, Participants 10, 13, and 16 each showed a delayed effect in the general clinical outcome measure. Participant 5 evidenced a weaker delayed effect.

There were two weaker functional relationships demonstrated between the IMAG and the general clinical outcome measure; one was assessed from weaker basic effects, and the other from weaker delayed effects.
Anxiety Measures

This next section displays the findings from the four anxiety scales of measurement, and the composite anxiety score. Please refer to Figure 5.2 – Figure 5.6 for the Level and Trend graphs for the anxiety measures.

**Composite Anxiety Score (CAS).** Figure 5.2 shows the sum scores for the 16 participants. The CAS is a combination of the four scales measuring anxiety. This composite scale has a range of 309, with a minimum score of 40 and a maximum score of 349. As the composite scores get larger, anxiety increases. Thus, the optimal trend is a decreasing trend, which would indicate that anxiety is progressively decreasing over time.

**Total group.** During baseline, the anxiety levels for all 16 participants had a mean of 201.3 (range: 123.9 – 267.1; SD: 39.1). In intervention, the participants’ anxiety decreased to a mean of 180.1 (range: 115.4 – 262.8; SD: 40.0). Only 11 of 16 participants completed scales in follow-up. In follow-up, these participants’ anxiety further decreased to a mean of 146.8 (range: 83.8–249.3; SD: 46.53). As can be seen, these means decreased, showing lower levels of anxiety across the phases. Although there was a decrease in anxiety, the change in the participants’ anxiety levels did not meet clinical significance ($\bar{X}_{(in, fu)} < 123.1$). Thus, there was neither a basic effect nor delayed effect observed.

A summary of the levels of anxiety for each cohort and the individual participants in the respective cohorts is presented below.

3. The notation denotes the criteria of clinical significance; the means at intervention and follow-up would need to be less than 123.1 in order to qualify as clinically significant.
Figure 5.2. Multiple baselines across cohorts and phases for the Anxiety Composite’s sum scores of the 16 participants. The Composite Anxiety Scale is a combination of the sum scores of the four anxiety measures used in the study. Lower scores represent lower amounts of this anxiety measure.
**Cohort 1.** During baseline, Cohort 1’s anxiety levels had a mean of 238.5 (range: 180.0 – 294.0; SD: 28.8). In intervention, Cohort 1’s anxiety levels decreased to a mean of 208.3 (range: 143.0 – 272.0; SD: 44.9). Although the follow-up phase did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s anxiety levels further decreased to a mean of 186.7 (range: 142.0 – 264.0; SD: 43.2). As can be seen, these means decreased, showing lower levels of anxiety across the phases. However, Cohort 1’s change in anxiety levels did not meet clinical significance ($\bar{X}_{(in,fu)} < 180.9$). Thus, there were no basic or delayed effects observed.

**Participant 1.** During baseline, Participant 1’s anxiety level had a mean of 228.3 (range: 189 – 260; SD: 34.3), with a descending trend. During intervention, Participant 1’s anxiety level decreased to a mean of 162.5 (range: 143 – 182; SD: 27.6). There were no follow-up data. There were 50% non-overlapping data between baseline and intervention phases. Although Participant 1’s anxiety decreased between baseline and intervention, this change did not meet the criteria for clinical significance ($\bar{X}_{(in)} < 159.7$). Although there was a decrease in the anxiety level, the decreasing trend in baseline and the overlapping data show that there was no basic effect present.

**Participant 2.** During baseline, Participant 2’s anxiety level had a mean of 267.1 (range: 256 – 294; SD: 14.1). During intervention, Participant 2’s anxiety remained consistently elevated, with a mean of 262.8 (range: 249 – 272; SD: 8.7). There were 20% non-overlapping data between baseline and intervention phases. There were no follow-up data. The minimal change between baseline and intervention phases did not meet clinical significance ($\bar{X}_{(in)} < 238.9$). Thus, no basic effect was observed. This participant
worried extensively and intractably, and at end of this group was referred for specialized treatment.

**Participant 3.** During baseline, Participant 3’s anxiety level had a mean of 209.5 (range: 207 – 211; SD: 1.9). Across intervention, Participant 3’s anxiety level decreased to a mean of 170.0 (range: 164 – 175; SD: 5.6). During follow-up, Participant 3’s anxiety level maintained at a mean of 169.4 (range: 153 - 189; SD: 17.6). There were 100% non-overlapping data between both baseline and intervention phases, and baseline and follow-up phases. Participant’s 3 changes in anxiety levels at both intervention and follow-up met clinical significance ($\bar{X}_{(in;fu)} < 205.7$). Both a basic effect and a delayed effect were observed.

**Participant 4.** During baseline, Participant 4’s anxiety level had a mean of 248.7 (range: 248 – 249; SD: 1.0). Across intervention, Participant 4’s anxiety level remained elevated with a mean of 238.3 (range: 230 – 247; SD: 8.5). In follow-up, Participant 4’s anxiety level returned to the elevated level of baseline, with a mean of 249.3 (range: 233 – 264; SD: 15.6). There were 0% non-overlapping data between baseline and intervention phases, and 33% non-overlapping data between baseline and follow-up phases. Participant 4’s changes in anxiety level at follow-up met clinical significance ($\bar{X}_{(in;fu)} < 246.7$). Participant 4’s anxiety level remained consistently high with minimal changes across the phases. Thus, there were no basic or delayed effects evidenced.

**Participant 5.** In baseline, Participant 5’s anxiety level showed a mean of 213.7 (range: 204 – 222; SD: 9.1). During intervention, Participant 5’s anxiety level decreased to a mean of 177.2 (range: 155 – 209; SD: 22.2), and had a descending trend. In follow-up, Participant 5’s anxiety level further decreased to a mean of 153 (range: 142 – 165;
SD: 11.5). There were 80% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. The change in Participant 5’s anxiety levels at both intervention and follow-up phases met clinical significance ($\bar{X}_{(in;fu)} < 195.5$). There were both a basic effect and a delayed effect evidenced.

**Cohort 2.** During baseline, Cohort 2’s anxiety level had a mean of 194.6 (range: 165.0 – 246.0; SD: 24.8). During intervention, Cohort 2’s anxiety level decreased to a mean of 176.0 (range: 146.0 – 201.0; SD: 20.3). Although follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, Cohort 2’s anxiety level further decreased to a mean of 167.3 (range: 125.0 – 219.0; SD: 35.2). The decreases in Cohort 2’s anxiety scores did not however meet clinical significance ($\bar{X}_{(in;fu)} < 145$). There was neither a basic effect nor a delayed effect shown.

**Participant 6.** During baseline, Participant 6’s anxiety level had a mean of 178 (range: 165 – 187; SD: 6.7). In intervention, Participant 6’s anxiety level decreased to a mean of 149.9 (range: 108 – 198; SD: 33.1), with a slight decreasing trend. During follow-up, Participant 6’s anxiety level increased to a mean of 167.3 (range: 125 – 219; SD: 35.2). The follow-up trend initially descended, but then shifted upwards, returning to the baseline level; Participant 6 reported personal and academic events, which might have increased anxiety in follow-up. There were 71% non-overlapping data between baseline and intervention phases, and 33% non-overlapping data between baseline and follow-up phases. Decreases in Participant 6’s anxiety level in intervention met clinical significance ($\bar{X}_{(in;fu)} < 151.9$); however changes in anxiety during follow-up did not.
Although there were some overlapping data at intervention, there was a decrease in level and a change in trend. Thus, there was a weaker basic effect evidenced.

Participant 7. During baseline, Participant 7’s anxiety level had a mean of 213.6 (range: 181 – 246; SD: 24.4), with a descending trend. In intervention, Participant 7’s anxiety levels decreased to a mean of 185.6 (range: 161 – 201; SD: 15.7). There were no follow-up data. There were 40% non-overlapping data between baseline and intervention phases. The change in Participant 7’s anxiety level at intervention did not meet clinical significance ($\bar{X}_{(in)} < 164.8$). A health condition reported by Participant 7 in the early intervention phase may have affected the anxiety level. A basic effect was not shown.

Cohort 3. During the baseline phase, Cohort 3’s anxiety level had a mean of 188.9 (range: 100.0 – 267.0; SD: 44.5). In the intervention phase, Cohort 3’s anxiety level slightly decreased to a mean of 172.9 (range: 97.0 – 244.0; SD: 42.8). Although follow-up did not have the full complement of participants, with only 4 of 6 participants completing scales in this phase, Cohort 3’s anxiety level further decreased to a mean of 127.7 (range: 106.0 – 146.0; SD: 14.0). Although there was a decrease, the changes in Cohort 3’s anxiety levels did not meet clinical significance ($\bar{X}_{(in;fu)} < 99.9$). Thus, there was a change in levels, thus a weaker basic effect evidenced.

Participant 8. During baseline, Participant 8’s anxiety level had a mean of 138.6 (range: 100 – 166; SD: 27.4). In intervention, Participant 8’s anxiety level increased slightly to a mean of 145.5 (range: 117 – 183; SD: 27.5). Participant 8 had no follow-up data. The very low scores of 100 and 101 in baseline caused all data in intervention to overlap. Given that the mean in baseline is lower than the mean in intervention, clinical
significance was not calculated. Participant 8’s anxiety levels seemed to fluctuate yet remain low within and across phases. Thus, no basic effect was evidenced.

Participant 9. During baseline, Participant 9’s anxiety level had a mean of 222.4 (range: 168 – 252; SD: 27.7), with an ascending trend. During intervention, Participant 9’s anxiety level decreased to a mean of 185.3 (range: 146 – 225; SD: 39.5), and showed a descending trend. There were 33% non-overlapping data between baseline and intervention phases. The change in Participant 9’s anxiety level at intervention did not meet clinical significance ($\bar{X}_{(in)} < 167$). There were no follow-up data. Although there was considerable overlap between baseline and intervention phases, Participant 9’s anxiety level decreased in intervention and changed in trend. Thus, a weaker basic effect was shown.

Participant 10. During baseline, Participant 10’s anxiety level had a mean of 184.7 (range: 163 – 213; SD: 25.7). During intervention, Participant 10’s anxiety level maintained at a mean of 184.5 (range: 97 – 233; SD: 60.1), with a descending trend. Across follow-up, Participant 10’s anxiety level decreased to a mean of 112.5 (range: 106 - 119; SD: 9.2). There were 25% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. The change in Participant 10’s anxiety level at follow-up was clinically significance ($\bar{X}_{(in;fu)} <133.3$). Thus, a delayed effect was evidenced.

Participant 11. During baseline, Participant 11’s anxiety level had a mean of 238.6 (range: 193 – 267; SD: 28.9), with a decreasing trend. In intervention, Participant 11’s anxiety level decreased to a mean of 222.8 (range: 215 – 244; SD: 14.2). Across follow-up, Participant 11’s anxiety level decreased to a mean of 130.0 (range: 126 – 134;
SD: 5.7). There were no non-overlapping data between baseline and intervention phases, and yet 100% non-overlapping data between baseline and follow-up phases. The change in Participant 11’s anxiety level at follow-up was clinically significant ($\bar{X}_{(in;fu)} < 180.8$). However, given the descending trend at baseline, neither basic nor delayed effects were shown.

**Participant 12.** Across baseline, Participant 12’s anxiety level showed a mean of 155 (range: 109 – 193; SD: 29.4), with a descending trend. Across intervention, Participant 12’s anxiety level decreased to a mean of 132 (range: 117 – 143; SD: 11.1), with a slightly ascending trend. In follow-up, Participant 12’s single anxiety level was 135. There were no non-overlapping data between baseline and intervention, and no non-overlapping data between baseline and follow-up. The changes in Participant 12’s anxiety level at intervention or follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} < 96.2$). Although Participant 12 had lower levels of anxiety in intervention and follow-up, there were challenges with data overlapping with baseline, change not meeting clinical significance, and a descending baseline trend. Thus, there was neither a basic effect nor delayed effect evidenced.

**Participant 13.** During baseline, Participant 13’s anxiety levels showed a mean of 187.1 (range: 159 – 211; SD: 17.4), with a decreasing trend. In intervention, Participant 13’s anxiety levels decreased to a mean of 170.5 (range: 132 – 203; SD: 29.2). During follow-up, Participant 13’s anxiety level further decreased to 146. There were 25% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. The change in Participant 13’s anxiety level at follow-up met clinical significance ($\bar{X}_{(in;fu)} < 152.3$). Although Participant 13’s anxiety
levels consistently decreased in intervention and follow-up, there was a descending trend in baseline. Therefore, there was neither a basic effect nor a delayed effect evidenced.

**Cohort 4.** During baseline, Cohort 4’s anxiety level showed a mean of 167.4 (range: 87.0 – 258.0; SD: 50.6). During intervention, Cohort 4’s anxiety level decreased to a mean of 149.2 (range: 98.0 – 215.0; SD: 42.6). In follow-up, Cohort 4’s anxiety level further decreased to a mean of 111.2 (range: 64.0 – 195.0; SD: 46.4). The change in Cohort 4’s anxiety levels at intervention or follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} < 66.2$). There was a substantial change in level from baseline to follow-up. Thus, there was a weaker delayed effect shown.

**Participant 14.** During baseline, Participant 14’s anxiety level had a mean of 218 (range: 184 – 258; SD: 24.5). During intervention, Participant 14’s anxiety level decreased to a mean of 199.75 (range: 180 – 215; SD: 17.5), with a slightly descending trend. In follow-up, Participant 14’s anxiety level further decreased to a mean of 180 (range: 158 – 195; SD: 19.5). There were 25% non-overlapping data between baseline and intervention, and 33% non-overlapping data between baseline and follow-up. The changes in Participant 14’s anxiety levels at intervention and follow-up were not clinically significant ($\bar{X}_{(in;fu)} < 169$). Thus, neither a basic effect nor a delayed effect was evidenced.

**Participant 15.** During baseline, Participant 15’s anxiety level showed a mean of 123.9 (range: 87 – 147; SD: 21.7). Across intervention, Participant 15’s anxiety level increased to a mean of 140.8 (range: 119 – 176; SD: 27.4). As mentioned above, there was a shift in health for Participant 15, which may have temporarily increased anxiety levels in intervention. In follow-up, Participant 15’s anxiety level decreased to a mean of
88 (range: 64 – 103; SD: 21). There were no non-overlapping between baseline and intervention phases, and 33% non-overlapping data between baseline and follow-up phases. The changes in Participant 15’s anxiety levels at intervention and follow-up did not meet the criteria for clinical significance ($\bar{X}_{\text{(in;fu)}} < 80.5$). Neither a basic effect nor a delayed effect was observed.

**Participant 16.** During baseline, Participant 16’s anxiety level showed a mean of 194 (range: 167 – 227; SD: 30.4), with an ascending trend. In intervention, the anxiety level decreased to a mean of 115.4 (range: 98 – 152; SD: 24.6), with a slightly decreasing trend. Across follow-up, Participant 16’s anxiety level decreased further to a mean of 83.8 (range: 70 – 93; SD: 8.8). There were 100% non-overlapping data between both baseline and intervention phases, and between baseline and follow-up phases. The changes in Participant 16’s anxiety levels at both intervention and follow-up met clinical significance ($\bar{X}_{\text{(in;fu)}} < 133.2$). Anxiety symptoms decreased in intervention, and stabilized in follow-up. Both a basic effect and a delayed effect were evidenced.

**CAS summary.** The Composite Anxiety Scale is a combination of the four anxiety measures used in this study to assess anxiety. When reviewing anxiety reduction across baseline and intervention phases, Participants 3, 5, and 16 evidenced basic effects. And, Cohort 3, and Participants 6 and 9 evidenced weaker basic effects. When reviewing anxiety reduction across baseline and follow-up phases, Participants 3, 5, 10, and 16 evidenced delayed effects. Cohort 4 evidenced a weaker basic effect. Thus, there was some reduction in anxiety levels for some of the Cohorts and participants.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different
time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

At the level of the Cohort, there were only two weaker effects evidenced, therefore no functional relationships could be assessed. At the individual participant level, only one weaker functional relationship, from basic and weaker basic effects was evidenced (See Participants 3/5, 6/9, and 16). Only one functional relationship, from delayed effects was evidenced (See Participants 3/5, 10, and 16). Thus, out of a possible seven functional relationships, there were only two established: one weaker functional relationship and one functional relationship.

**Burns Anxiety Inventory (BAI: Burns & Eidelson, 1998).** The BAI is one of four scales measuring anxiety. This scale assesses anxiety symptoms over the past week, and has a range of 99, with a minimum score of 0 and a maximum score of 99. As the scores get larger, the anxiety symptoms levels increase. Thus, the optimal trend is a decreasing trend, which would indicate that anxiety symptoms are progressively decreasing over time. Figure 5.3 shows the sum scores across the 3 study phases for the 16 participants.

4. A weaker functional relationship is one established using three basic or delayed effects, with one of these basic or delayed effects being a weaker effect.

5. A functional relationship is one established using three basic or delayed effects, with none of these effects being weaker.
Figure 5.3. Burns Anxiety Inventory (BAI)

Figure 5.3. Multiple baselines across cohorts and phases for the Burns Anxiety Inventory’s sum scores for the 16 participants. The Burns Anxiety Inventory measures physical, emotional, and cognitive symptoms of anxiety. Lower scores represent lower amounts of these common anxiety symptoms.
**Total group.** During baseline, the anxiety symptom levels across all 16 participants had a mean of 31.4 (range: 4.0–73.0; SD: 17.5). In intervention, the participants’ anxiety symptom levels decreased to a mean of 27.2 (range: 4.0 – 69.0; SD: 15.0). Although follow-up did not have the full complement of participants, with only 11 of 16 participants completing scales in this phase, the participants’ anxiety symptoms levels further decreased to a mean of 19.8 (range: 2.0–51.0; SD: 13.8). Given the higher standard deviation, clinical significance was not completed. Thus, there was neither a basic effect nor a delayed effect evidenced at the total group level.

**Cohort 1.** During baseline, Cohort 1’s anxiety symptom levels showed a mean of 44.7 (range: 29.0 – 73.0; SD: 13.3). During intervention, Cohort 1’s anxiety symptoms slightly decreased to a mean of 36.2 (range: 15.0 – 62.0; SD: 13.2). Although follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s anxiety symptom levels further decreased to a mean of 30.3 (range: 17.0 – 45.0; SD: 12.0). The change in Cohort 1’s anxiety symptoms at intervention or follow-up did not meet clinical significance ($\bar{X}_{(in;fa)} < 18.1$). Thus, neither a basic effect, nor a delayed effect was shown by this cohort.

**Participant 1.** During baseline, Participant 1’s anxiety symptom level showed a mean of 52.2 (range: 31 – 73; SD: 17.1), with a decreasing trend. Across intervention, Participant 1’s anxiety symptom level decreased to a mean of 29.3 (range: 22 – 36; SD: 7.0). There were 66.7% non-overlapping data between baseline and intervention phases. The change in Participant 1’s anxiety symptoms at intervention did not meet clinical significance ($\bar{X}_{(in)} < 18$). There were no follow-up data. Although there was
improvement in the level of anxiety symptoms, the decreasing trend at baseline indicates that this improvement began in baseline. Thus, no basic effect was evidenced.

Participant 2. During baseline, Participant 2’s anxiety symptom level showed a mean of 46.6 (range: 37 – 66; SD: 10.6), with a decreasing trend. Across intervention, Participant 2’s anxiety symptom level increased to a mean of 55.8 (range: 51 – 62; SD: 4.3). There were no non-overlapping data between baseline and intervention phases. The change in Participant 2’s anxiety symptoms at intervention did not meet clinical significance ($X_{(in)}$<25.4). There were no follow-up data. This participant worried extensively and intractably, and towards the end of this group was referred to a clinical resource. Thus, neither a basic effect nor a delayed effect was evidenced.

Participant 3. During baseline, Participant 3’s anxiety symptom level had a mean of 52.3 (range: 47 – 65; SD: 8.6), with a descending trend. Across intervention, Participant 3’s anxiety symptom level decreased to a mean of 26.7 (range: 21 – 34; SD: 6.7), with an ascending trend. During follow-up, Participant 3’s anxiety symptom level increased slightly to a mean of 30.8 (range: 17- 45; SD: 15.9), with a descending trend. There were 100% non-overlapping data both between baseline and intervention phases, and between baseline and follow-up phases. Changes in Participant 3’s anxiety symptom levels at both intervention and follow-up phases met clinical significance ($X_{(in,fu)}$<35.1). Although there was clinically significant change over the phases, the changes in Participant 3’s anxiety symptoms started in baseline, and continued across the phases. Thus, neither a basic effect nor a delayed effect was shown.

Participant 4. During baseline, Participant 4’s anxiety symptom level showed a mean of 32 (range: 30 – 34; SD: 2). Across intervention, Participant 4’s anxiety
Symptom level increased to a mean of 36.8 (range: 30 – 43; SD: 5.1). During follow-up probes, the anxiety symptom level further increased to a mean of 38.3 (range: 31 – 45; SD: 7.0), with a descending trend. There were no non-overlapping data both between baseline and intervention, and between baseline and follow-up phases. The change in Participant 4’s anxiety symptoms at either intervention or follow-up did not meet clinical significance (\(\bar{X}_{(in;fu)}<28\)). Anxiety symptoms remained quite consistent, and at elevated levels across the three phases. Thus, neither a basic effect nor a delayed effect was evidenced.

**Participant 5.** During baseline, Participant 5’s anxiety symptom level showed a mean of 31.7 (range: 29 – 36; SD: 3.8). Across intervention, Participant 5’s anxiety symptom level decreased to a mean of 26 (range: 15 – 35; SD: 8.0), with a descending trend. During follow-up, Participant 5’s anxiety symptom level decreased to a mean of 21.7 (range: 18 – 24; SD: 3.2). There were 60% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. Participant 5’s anxiety symptoms levels in follow-up met clinical significance (\(\bar{X}_{(in;fu)}<24.1\)). Participant 5’s anxiety symptoms decreased during intervention and declined to clinically significant levels in the follow-up phase. Thus, a delayed effect was shown.

**Cohort 2.** During baseline, Cohort 2’s anxiety symptom levels showed a mean of 24.5 (range: 11.0 – 55.0; SD: 13.8). During intervention, Cohort 2’s anxiety symptom levels slightly decreased to a mean of 22.7 (range: 10.0 – 33.0; SD: 8.4). Although follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, Cohort 2’s anxiety symptom levels further decreased to a
mean of 12.2 (range: 6.0 – 24.0; SD: 6.8). The change in Cohort 2’s anxiety levels at intervention or follow-up did not meet clinical significance \( (\bar{X}_{(in;fu)} < 0) \). Thus, neither a basic effect nor a delayed effect was shown.

**Participant 6.** During baseline, Participant 6’s anxiety symptom level showed a mean of 14 (range: 11 – 17; SD: 2). In intervention, Participant 6’s anxiety symptom level increased slightly to a mean of 16 (range: 10 – 22; SD: 5.5). During follow-up, Participant 6’s anxiety symptom level minimally decreased to a mean of 12.2 (range: 6-24; SD: 6.8). There were 40% non-overlapping data between baseline and intervention phases, and 50% non-overlapping data between baseline and follow-up. Neither the symptom changes at intervention nor follow-up met clinical significance \( (\bar{X}_{(in;fu)} < 10) \). Participant 6’s anxiety symptoms remained relatively consistent across the three phases. Thus, neither a basic effect nor a delayed effect was evidenced.

**Participant 7.** During baseline, Participant 7’s anxiety symptom level displayed a mean of 36 (range: 23 – 52; SD: 10.4), with a descending trend. In intervention, Participant 7’s anxiety symptom level decreased to a mean of 29 (range: 23 – 33; SD: 3.8). Participant 7 had no follow-up data. There were no non-overlapping data between baseline and intervention. Changes in Participant 7’s anxiety symptoms in intervention did not meet clinical significance \( (\bar{X}_{(in;fu)} < 15.2) \). Participant 7’s anxiety symptoms remained consistent across the two phases, thus no basic effect was shown.

**Cohort 3.** During baseline, Cohort 3’s anxiety symptom levels showed a mean of 25.1 (range: 4.0 – 60.0; SD: 15.4). During intervention, Cohort 3’s anxiety symptoms slightly decreased to a mean of 23.0 (range: 4.0 – 69.0; SD: 15.6). Although follow-up did not have the full complement of participants, with only 4 of 6 participants completing
scales in this phase, Cohort 3’s anxiety symptoms further decreased to a mean of 13.0 (range: 7.0 – 17.0; SD: 3.3). The changes in Cohort 3’s anxiety symptoms at intervention or follow-up did not meet clinical significance ($\bar{X}_{(i:n;fu)} < 0$). Although there was a decrease in level at follow-up, missing the data of two participants in follow-up precluded a comparison to baseline, therefore neither a basic nor a delayed effect was shown.

**Participant 8.** During baseline, Participant 8’s anxiety symptom level had a mean of 13 (range: 4 – 25; SD: 7.16). In intervention, Participant 8’s anxiety symptom level increased slightly to a mean of 16.6 (range: 10 – 24; SD: 5.0). Participant 8 had no follow-up data. Given the very low score of 4 in baseline, all data in the intervention phase overlapped with baseline data. Participant 8’s lower mean and large standard deviation in baseline did not allow for clinical significance to be calculated. Anxiety symptoms remained low across the study, thus no basic effect was shown.

**Participant 9.** During baseline, Participant 9’s anxiety symptom level showed a mean of 31.4 (range: 14 – 51; SD: 11.7), with an ascending trend. Across intervention, Participant 9’s anxiety symptom level decreased to a mean of 27.0 (range: 20 – 39; SD: 10.4), with a descending trend. Participant 9 had no follow-up data. There were no non-overlapping data between baseline and intervention phases. The change in Participant 9’s anxiety symptoms at intervention did not meet clinical significance ($\bar{X}_{(i:n;fu)} < 8.6$). Participant 9’s anxiety symptoms remained consistent across the study, thus no basic effect was shown.

**Participant 10.** During baseline, Participant 10’s anxiety symptom level showed a mean of 37 (range: 20 – 56; SD: 18.1). During intervention, Participant 10’s anxiety symptom level maintained with a mean of 37.5 (range: 10 – 69; SD: 24.2), but evidenced
a descending trend. In follow-up, Participant 10’s anxiety symptom level decreased to a mean of 14.5 (14-15; SD: 0.7). There were 25% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. Given the large standard deviation in baseline, neither the changes in Participant 10’s anxiety symptoms at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)}<0.8$). Participant 10’s anxiety symptoms decreased across the intervention, and stabilized in follow-up. There was a decrease in level from baseline to follow-up, thus a weaker delayed effect was evidenced.

**Participant 11.** During baseline, Participant 11’s anxiety symptom level had a mean of 40.3 (range: 20 – 60; SD: 14.8), with a decreasing trend. In intervention, Participant 11’s anxiety symptom level decreased to a mean of 37.8 (range: 34 – 48; SD: 5.8). In follow-up, Participant 11’s anxiety symptom level further decreased to a mean of 15.0 (range: 13 – 17; SD: 2.8). There were no non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up phases. Given the large standard deviation in baseline, neither Participant 11’s symptom changes at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)}<10.7$). Although there was a decrease in Participant 11’s anxiety symptom levels, this decrease started in baseline, therefore neither a basic effect, nor a delayed effect was shown.

**Participant 12.** During baseline, Participant 12’s anxiety symptom level had a mean of 25.3 (range: 15 – 41; SD: 9.3), with a descending trend. In intervention, Participant 12’s anxiety symptom level decreased to a mean of 14.5 (range: 11 – 18; SD: 2.9). Participant 12’s single follow-up score was 13. There were 50% non-overlapping data between baseline and intervention, and 100% non-overlapping data with the single
score in follow-up. Given the large standard deviation in baseline, neither Participant 12’s changes in anxiety symptoms at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)}<6.7$). Participant 12’s anxiety symptoms decreased in baseline, and then stabilized in intervention. Thus, neither a basic nor a delayed effect was evidenced.

**Participant 13.** During baseline, Participant 13’s anxiety symptom level showed a mean of 10.1 (range: 6 – 15; SD: 3.0). In intervention, Participant 13’s anxiety symptom level decreased to a mean of 7.4 (range: 4 – 15; SD: 4.4). Participant 13’s single follow-up score was 7. There were 40% non-overlapping data between baseline and intervention phases, and no non-overlapping data between baseline and the follow-up score. Neither changes in Participant 13’s anxiety symptom level at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)}<4.1$). Participant 13’s anxiety symptoms remained consistently low across the phases, thus neither a basic effect, nor a delayed effect was evidenced.

**Cohort 4.** During baseline, Cohort 4’s anxiety levels showed a mean of 33.6 (range: 8.0 – 67.0; SD: 19.9). During intervention, Cohort 4’s anxiety level decreased to a mean of 25.0 (range: 7.0 – 53.0; SD: 15.5). In follow-up, Cohort 4’s anxiety levels further decreased to a mean of 17.9 (range: 2.0 – 51.0; SD: 16.6). The change in Cohort 4’s anxiety levels at intervention or follow-up did not meet clinical significance ($\bar{X}_{(in;fu)}<0$). Although Cohort 4’s change in levels did not meet clinical significance, there was a substantial change between baseline and follow-up. Thus, there was a weaker delayed effect.

**Participant 14.** During baseline, Participant 14’s anxiety symptom level showed a mean of 56 (range: 43 – 67; SD: 10.5). In intervention, Participant 14’s anxiety
symptom level decreased to a mean of 45.8 (range: 41 – 53; SD: 4.9). During follow-up, Participant 14’s anxiety symptom level further decreased to a mean of 41.0 (range: 24 – 51; SD: 14.8), with a descending trend. There were 40% non-overlapping data between baseline and intervention phases, and 33% non-overlapping data between baseline and follow-up phases. Neither Participant 14’s symptom changes at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)}<35$). Participant 14’s anxiety symptoms remained consistent across the study, with overlapping data in the baseline, and clinical significance not being met. Thus, neither a basic effect nor a delayed effect was evidenced.

Participant 15. During baseline, Participant 15’s anxiety symptom level had a mean of 17.6 (range: 8 – 26; SD: 6.3). Across intervention, Participant 15’s anxiety symptom level decreased slightly to a mean of 16.5 (range: 9 – 28; SD: 7.2). During follow-up, Participant 15’s anxiety symptoms further decreased to a mean of 7.7 (range: 2 – 13; SD: 5.5). There were no non-overlapping data between baseline and intervention phases, and 33% non-overlapping data between baseline and follow-up phases. Neither Participant 15’s change in symptoms at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)}< 5$). Participant 15 had consistently lower anxiety symptoms across the study, thus neither a basic effect, nor a delayed effect was shown.

Participant 16. During baseline, Participant 16’s anxiety symptoms displayed a mean of 42 (range: 27 – 56; SD: 14.5). Across intervention, Participant 16’s anxiety symptoms decreased to a mean of 14.4 (range: 7 – 20; SD: 5.1) with a slightly decreasing trend. During follow-up, Participant 16’s anxiety symptoms further decreased to a mean of 10.2 (range: 4 – 13; SD: 3.6). There were 100% non-overlapping data both between
baseline and intervention phases, and baseline and follow-up phases. Participant 16’s change in anxiety symptoms at follow-up met clinical significance ($\bar{X}_{\text{in;fu}} < 13$). Anxiety symptoms decreased over intervention phase, and stabilized at clinically significant levels in follow-up. Thus, a weaker basic effect, and a delayed effect were both shown.

**BAI summary.** The Burns Anxiety Inventory is a measure of anxiety symptoms. When reviewing anxiety symptom reduction across baseline and intervention phases, only Participant 16 displayed a weaker basic effect. When reviewing anxiety symptom reduction across baseline and follow-up phases, Participants 5 and 16 evidenced delayed effects. Cohorts 4 and Participant 10 displayed weaker delayed effects. Thus, there were changes for some of the cohorts and participants.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

In terms of a functional relationship between the BAI and the IMAG, there was only one weaker functional relationship documented from the weaker delayed and delayed effects (See Participants 5, 10, and 16).

**Penn State Worry Questionnaire- Past Week (PSWQ-PW: Stöber & Bittencourt, 1998).** Figure 5.4 shows the sum scores for the 16 participants. The
Figure 5.4. Multiple baselines across cohorts and phases for the *Penn State Worry Questionnaire - Past Week*’s sum scores for the 16 participants. The *Penn State Worry Questionnaire - Past Week* measures the anxiety symptom of worry that has occurred over the past week. Lower scores represent lower amounts of the worry anxiety quality.
PSWQ-PW is one of four scales measuring anxiety. This scale assesses worry over the past week, and has a range of 105, with a minimum score of 0 and a maximum score of 105. As the scores get larger, the worry levels increase. Thus, the optimal trend is a decreasing trend, which would indicate that worry is progressively decreasing over time.

**Total group.** During baseline, worry levels across all 16 participants had a mean of 60.6 (range: 35.6 – 85.7; SD: 14.7). In intervention, the participants’ worry levels decreased to a mean 51.7 (range: 23.6 – 86.8; SD: 16.9). During follow-up, only 11 of 16 participants completed scales in this phase. These participants’ worry levels further decreased to a mean of 42.4 (range: 15.8 – 82.7; SD: 16.55). Neither the change in the participants’ worry levels at intervention nor follow-up phases met clinical significance ($\overline{X}_{(in;fu)} < 31.2$). Thus, no basic effect or delayed effect were evidenced.

**Cohort 1.** During baseline, Cohort 1’s worry levels had a mean of 69.1 (range: 46.0 – 90.0; SD: 16.4). In intervention, Cohort 1’s worry levels decreased in the desired direction to a mean of 62.7 (range: 33.0 – 90.0; SD: 21.4). Although follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, the worry levels further decreased to a mean of 53.7 (range: 29.0 – 89.0; SD: 19.6). Neither the change in Cohort 1’s worry levels at intervention nor follow-up phases met clinical significance ($\overline{X}_{(in;fu)} < 36.3$). Thus, neither a basic effect nor a delayed effect was observed.

**Participant 1.** During baseline, Participant 1’s worry level showed a mean of 54.2 (range: 46 – 61; SD: 7.6), with a slightly decreasing trend. Across intervention, Participant 1’s worry level decreased to a mean of 37 (range: 35 – 39; SD: 2.0). There were 100% non-overlapping data between baseline and intervention phases. Changes in
Participant 1’s worry levels at intervention met clinical significance ($\bar{X}_{(in)} < 39.02$). There were no follow-up data. Although there was an improvement in worry levels, the slightly decreasing trend at baseline suggests that this improvement began in baseline and stabilized during intervention. Thus, there was no basic effect evidenced.

Participant 2. During baseline, Participant 2’s worry level had a mean of 84.6 (range: 78 – 90; SD: 4.39). Across intervention, Participant 2’s worry level remained consistently elevated, with a mean of 86.8 (range: 84 – 90; SD: 2.38). There were no non-overlapping data between baseline and intervention phases. Changes in Participant 2’s worry levels at intervention did not meet clinical significant levels ($\bar{X}_{(in)} < 75.82$). There were no follow-up data. This client worried extensively and intractably, and at end of this group was referred. Thus, there was no basic effect shown.

Participant 3. During baseline, Participant 3’s worry level showed a mean 49.8 (range: 48 – 52; SD: 1.70). Across intervention, Participant 3’s worry level remained consistent at a mean of 48.7 (range: 47 – 52; SD: 2.88). In follow-up, Participant 3’s worry level decreased slightly to a mean of 46 (range: 42- 51; SD: 3.81). There were 67% non-overlapping data between baseline and intervention, and 60% non-overlapping data between baseline and follow-up phases. Changes in Participant 3’s worry level at intervention did not met clinical significance ($\bar{X}_{(in;fu)} < 46.4$); however, the change in worry levels at follow-up did meet clinical significance. There were minimal differences in Participant 3’s worry levels across the phases, thus neither a basic effect nor a delayed effect was evidenced.

Participant 4. During baseline, Participant 4’s worry level showed a mean of 85.7 (range: 81 – 89; SD: 4.16), with an ascending trend. In intervention, Participant 4’s
worry level decreased to a mean of 79.2 (range: 73 – 89; SD: 6.02). During follow-up probes, Participant 4’s worry level increased somewhat to a mean of 82.7 (range: 78 – 89; SD: 5.69). There were 80% non-overlapping data between baseline and intervention phases, and 67% non-overlapping data between baseline and follow-up data. Neither the changes in Participant 4’s worry level at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} < 77.38$). Participant 4’s worry remained quite consistent at elevated levels across the three phases, thus neither a basic effect, nor a delayed effect was shown.

**Participant 5.** During baseline, Participant 5’s worry level showed a mean of 67.3 (range: 59 – 76; SD: 8.50), with a decreasing trend. Across intervention, Participant 5’s worry level decreased to a mean of 46 (range: 33– 66; SD: 13.45), with a descending trend. In follow-up, Participant 5’s worry level further decreased to a mean of 37.7 (range: 29 – 44; SD: 7.76). There were 80% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up phases. Change in Participant 5’s worry levels at both intervention and follow-up phases met clinical significance ($\bar{X}_{(in;fu)}< 50.3$). Although Participant 5’s worry decreased over both intervention and follow-up, the descending trend began in baseline and continued across the phases. Thus, a basic effect and a delayed effect were not evidenced.

**Cohort 2.** During baseline, Cohort 2’s worry levels had a mean of 62.5 (range: 50.0 – 79.0; SD: 10.0). In intervention, Cohort 2’s worry levels decreased in the desired direction to a mean of 54.8 (range: 38.0 – 68.0; SD: 8.9). Although the follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, the symptom level further decreased to a cohort-mean of 48.7 (range: 37.0 – 61.0; SD: 9.9). Neither change in Cohort 2’s worry levels at intervention nor follow-up
met clinical significance ($X_{(in;fu)} < 42.5$). Although Cohort 2’s worry levels decreased, these changes did not meet clinical significance. Therefore, neither a basic effect nor a delayed effect was evidenced.

**Participant 6.** During baseline, Participant 6’s worry level showed a mean of 55.5 (range: 50 – 67; SD: 5.81). In intervention, Participant 6’s worry level decreased to a mean of 49.6 (range: 38 – 60; SD: 8.38). During follow-up, Participant 6’s worry level decreased slightly to a mean of 48.7 (range: 37 – 61; SD: 9.89). There were 60% non-overlapping data between baseline and intervention, and 50% non-overlapping data between baseline and follow-up phases. Neither changes in worry levels at intervention nor follow-up met clinical significance ($X_{(in;fu)} < 43.88$). Participant 6’s worry level remained consistent across the three phases, thus no basic or delayed effects were evidenced.

**Participant 7.** During baseline, Participant 7’s worry level showed a mean of 70.6 (range: 58 – 79; SD: 7.18). In intervention, Participant 7’s worry level decreased to a mean of 60 (range: 53 – 64; 6.44), with a slightly descending trend. Participant 7 had no follow-up data. There were 40% non-overlapping data between baseline and intervention. Changes in Participant 7’s worry level in intervention did not meet clinical significance ($X_{(in)} < 56.21$). Participant 7’s worry levels remained consistent across the two phases, thus no basic effect was demonstrated.

**Cohort 3.** During baseline, Cohort 3’s worry levels had a mean of 58.4 (range: 17.0 – 84.0; SD: 17.5). In intervention, Cohort 3’s worry levels decreased to a mean of 51.9 (range: 20.0 – 78.0; SD: 18.2). Although the follow-up did not have the full complement of participants, with only 4 of 6 participants completing scales in this phase,
Cohort 3’s worry levels further decreased to a mean of 40.5 (range: 37.0 – 47.0; SD: 5.1). Changes in Cohort 3’s worry levels in intervention or follow-up did not meet clinical significance ($\bar{X}_{(in)} < 23.4$). Missing follow-up data precludes a comparison to baseline. Although Cohort 3’s worry levels decreased across the phases, these changes did not meet clinical significance, therefore neither a basic effect nor a delayed effect was observed.

**Participant 8.** During baseline, Participant 8’s worry level showed a mean of 40.6 (range: 17 – 56; SD: 16.20). In intervention, Participant 8’s worry level increased to a mean of 45.4 (range: 34 – 69; SD: 13.61). Participant 8 had no follow-up data. There were no non-overlapping data between baseline and intervention phases. Changes in Participant 8’s worry level in intervention did not meet clinical significance ($\bar{X}_{(in)} < 8.2$). Thus, no basic effect shown was shown.

**Participant 9.** During baseline, Participant 9’s worry level showed a mean of 66.7 (range: 41 – 77; SD: 12.00), with an ascending trend. Across intervention, Participant 9’s worry level decreased to a mean of 52 (range: 40 – 67; SD: 13.74), with a descending trend. Participant 9 had no follow-up data. There were 33% non-overlapping data between baseline and intervention. Changes in Participant 9’s worry level in intervention did not meet clinical significance ($\bar{X}_{(in)} < 42.7$). Although there was considerable overlap with baseline, worry decreased and the trend changed direction in intervention; therefore, a weaker basic effect was shown.

**Participant 10.** During baseline, Participant 10’s worry level showed a mean of 62.3 (range: 58 – 71; SD: 7.50). Across intervention, Participant 10’s worry level decreased to a mean of 57 (range: 30 – 72; SD: 18.65), with a descending trend. During
follow-up, Participant 10’s worry level further decreased to a mean of 37 (range: 37-37; SD: 0). There were 25% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. Change in Participant 10’s worry level at follow-up met clinical significance ($\bar{X}_{(in;fu)} < 47.3$).

Participant 10’s worry level decreased across phases, and evidenced a delayed effect.

**Participant 11.** During baseline, Participant 11’s worry level showed a mean of 72.3 (range: 56 – 83; SD: 8.73), with a slightly decreasing trend. Across intervention, Participant 11’s worry level decreased to a mean of 67.6 (range: 57 – 74; SD: 7.09), with a slightly decreasing trend. In follow-up, Participant 11’s worry level further decreased to a mean of 42.5 (range: 38 – 47; SD: 6.36). There were no non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. Change in Participant 11’s worry level at follow-up met clinical significance ($\bar{X}_{(in;fu)} < 54.84$). Although worry decreased across all the phases, this decrease began in baseline. Thus, neither a basic effect nor a delayed effect was demonstrated.

**Participant 12.** During baseline, Participant 12’s worry level showed a mean of 40.2 (range: 25 – 51; SD: 9.93), with a descending trend. Across intervention, Participant 12’s worry level decreased to a mean of 28.3 (range: 20 – 33; SD: 5.68), with a slightly ascending trend. Participant 12’s single follow-up probe evidenced an increase to a score of 37. There were 25% non-overlapping data between baseline and intervention phases, and no non-overlapping data with baseline and follow-up. Change in Participant 12’s worry level in intervention met clinical significance ($\bar{X}_{(in;fu)} < 28.34$); change in follow-up
however did not. Participant 12’s worry level decreased in baseline, then stabilized in intervention. Therefore, no basic or delayed effects were shown.

**Participant 13.** During baseline, Participant 13’s worry level showed a mean of 67.9 (range: 55 – 84; 11.08), with a decreasing trend. In intervention, Participant 13’s worry level decreased to a mean of 57.6 (range: 26 – 78; 21.78), again with a decreasing trend. In follow-up, Participant 13’s worry level further decreased to 47, as measured by a single score. There were 40% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up phases. Changes in Participant 13’s worry level did not meet clinical significance ($\bar{X}_{(in;fu)} < 45.74$). Although the worry level consistently declined, these changes did not meet clinical significance. Given that the worry level began to decline during baseline, neither a basic effect nor a delayed effect was shown.

**Cohort 4.** During baseline, Cohort 4’s worry levels had a mean of 47.7 (range: 20.0 – 76.0; SD: 15.5). In intervention, Cohort 2’s worry levels decreased in the desired direction to a mean of 37.1 (range: 15.0 – 56.0; SD: 14.1). During follow-up, Cohort 4’s worry levels further decreased to a mean of 26.8 (range: 8.0 – 47.0; SD: 18.1). Changes in Cohort 4’s worry levels did not meet clinical significance ($\bar{X}_{(in;fu)}<16.7$). Although the worry levels for Cohort 4 declined across the phases, these changes did not meet clinical significance. Therefore, a weaker delayed effect was observed.

**Participant 14.** During baseline, Participant 14’s worry level showed a mean of 62.4 (range: 54 – 76; SD: 8.32), with a decreasing trend. Across intervention, Participant 14’s worry level decreased to a mean of 52.2 (range: 49 – 55; SD: 2.95). During follow-up, Participant 14’s worry level further decreased to a mean of 45.3 (range: 44 – 47; SD: 8.32).
1.53). There were 40% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. Change in Participant 14’s worry level in follow-up met clinical significance ($\bar{X}_{(in;fu)} < 45.79$). Participant 14’s worry decreased in baseline, and then stabilized over the intervention and follow-up phases. Therefore, no basic effects or delayed effects were evidenced.

**Participant 15.** During baseline, Participant 15’s worry level showed a mean of 35.60 (range: 20 – 49; SD: 10.39). Across intervention, Participant 15’s worry level maintained, with a mean of 35.8 (range: 22 – 56; SD: 11.80). In follow-up, Participant 15’s worry level decreased to a mean of 26.8 (range: 15 – 35; SD: 10.4). There were no non-overlapping data between baseline and intervention, and 33% non-overlapping data between baseline and follow-up phases. Change in Participant 15’s worry levels in intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} < 14.8$). Although Participant 15’s worry level decreased in follow-up, the levels of intervention and follow-up phases did not reach clinical significance, and had considerable overlap with baseline. Thus, no basic or delayed effects were observed.

**Participant 16.** During baseline, Participant 16’s worry level showed a mean of 53.7 (range: 47 – 61; SD: 7.02), with an ascending trend. Across intervention, Participant 16’s worry level further decreased to a mean of 25 (range: 15 – 30; SD: 6.66), with a slightly decreasing trend. In follow-up, Participant 16’s worry level further decreased to a mean of 15.8 (range: 8 – 23; SD: 6.02). There were 100% non-overlapping data both between baseline and intervention, and between baseline and follow-up phases. Change at both intervention and follow-up met clinical significance ($\bar{X}_{(in;fu)} < 39.66$). Participant
16’s worry level decreased in the intervention, and then stabilized in follow-up. Thus, both a basic effect, and a delayed effect were shown.

**PSWQ-PW summary.** The Penn State Worry Questionnaire- Past Week assesses worry experienced over the last week. When reviewing worry reduction across baseline and intervention phases, only Participant 16 evidenced a basic effect. Participant 9 showed a weaker basic effect. When reviewing worry reduction across baseline and follow-up phases, Participants 10 and 16 evidenced delayed effects. Cohort 4 showed a weaker delayed effect. Thus, there was some reduction in worry levels at intervention and follow-up for some of the participants.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

At the level of the Cohort, there were no effects evidenced, therefore no functional relationships could be assessed. At the individual participant level, there were no functional relationships. Thus, no functional relationships could be established between the IMAG and worry reduction.

**State-Trait Anxiety Inventory- State (STAI-S: Spielberger, 1983).** Figure 5.5 shows the sum scores for the 16 participants. The STAI-S is one of four scales measuring anxiety. This scale assesses a current episode or experience of anxiety, and has a range of 60, with a minimum score of 20 and a maximum score of 80. As the scores get larger,
Figure 5.5. Multiple baselines across cohorts and phases for the State-Trait Anxiety Inventory - State Anxiety's sum scores for the 16 participants. The State-Trait Anxiety Inventory-State Anxiety measures current episode anxiety. Lower scores represent lower amounts of state anxiety.
the current experience of anxiety increases. Thus, the optimal trend is a decreasing trend, which would indicate that state anxiety is progressively decreasing over time.

**Total group.** During baseline, the 16 participants’ levels of state anxiety had a mean of 50.2 (range: 26.0 – 76.0; SD: 11.3). In intervention, participants’ state anxiety levels decreased to a mean of 45.7 (range: 24.0–69.0; SD: 9.0). During follow-up, only 11 of 16 participants completed scales in this phase. The state anxiety for these participants further decreased to a mean of 41.3 (range: 22.0–70.0; SD: 11.1). As can be seen, the overall means decreased, meaning lower levels of state anxiety across the study. However, neither the change in state anxiety at intervention nor follow-up met clinical significance ($\bar{X}_{(in,fu)} < 27.6$). Although there was change, there was no basic and delayed effects demonstrated.

**Cohort 1.** During baseline, state anxiety for Cohort 1 had a mean of 58.8 (range: 42.0 – 76.0; SD: 8.9). In intervention, Cohort 1’s state anxiety levels decreased in the desired direction to a cohort-mean of 46.9 (range: 35.0 – 61.0; SD: 6.9). Although the follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s levels of state anxiety maintained, with a mean of 47.3 (range: 40.0 – 64.0; SD: 7.8). Neither the change in Cohort 1’s state anxiety levels at intervention nor follow-up met clinical significance ($\bar{X}_{(in,fu)} < 41$). Cohort 1’s state anxiety decreased but did not meet clinically significance. Therefore, neither a basic effect nor a delayed effect was observed.

**Participant 1.** Across baseline, Participant 1’s level of state anxiety showed a mean of 60.0 (range: 50 – 70; SD: 8.3), with a decreasing trend. In intervention,
Participant 1’s state anxiety decreased to a mean level of 41.5 (range: 35 – 48; SD: 9.2). There were 100% non-overlapping data between baseline and intervention phases. The change in Participant 1’s state anxiety at intervention met clinical significance (\(\bar{X}_{(in)} < 43.4\)). There were no follow-up data. Although Participant 1’s state anxiety level suggest an improvement, this change started in baseline. Thus, no basic effect was shown.

**Participant 2.** During baseline, Participant 2’s state anxiety showed a mean of 61.4 (range: 42 – 76; SD: 12.4). Across intervention, Participant 2’s state anxiety decreased to a mean of 45.4 (range: 36 – 55; SD: 8.0). There were no follow-up data. There were 40% non-overlapping data between baseline and intervention phases. The changes in Participant 2’s state anxiety at intervention did not meet clinical significance (\(\bar{X}_{(in)} < 43.4\)). Although there was a decrease in levels across the two phases, this change in state anxiety was not clinically significant. Thus, no basic effect was demonstrated.

**Participant 3.** During baseline, Participant 3’s state anxiety level had a mean of 55.8 (range: 43 – 60; SD: 8.5). Across intervention, Participant 3’s state anxiety level decreased to a mean of 44.3 (range: 42 – 46; SD: 2.1). During follow-up, Participant 3’s state anxiety largely maintained, with a mean of 43.6 (range: 42- 47; SD: 2.1). There were 33% non-overlapping data between baseline and intervention, and 40% non-overlapping data between baseline and follow-up. The changes in Participant 3’s state anxiety scores at intervention and follow-up did not meet clinical significance (\(\bar{X}_{(in, fu)} < 38.8\)). Although there were decreases in levels across phases, these changes were not clinically significant, and had substantial overlap with baseline. Thus, neither a basic effect nor a delayed effect was shown.
Participant 4. Across baseline, Participant 4’s state anxiety showed a mean of 57.7 (range: 55 – 60; SD: 2.5), with a descending trend. In intervention, Participant 4’s state anxiety level decreased to a mean of 53 (range: 48 – 61; SD: 7.0), again with a descending trend. During follow-up, Participant 4’s state anxiety level rose slightly to a mean of 54.7 (range: 40 – 64; SD: 12.9) and evidenced an ascending trend. There were 67% non-overlapping data between baseline and intervention, and 33% non-overlapping between baseline and follow-up. The change in Participant 4’s state anxiety levels in intervention and follow-up did not meet clinical significance (\(\bar{X}_{(in;fu)} < 52.7\)). Participant 4’s state anxiety remained quite consistent across all three phases, thus neither a basic effect nor a delayed effect was evidenced.

Participant 5. During baseline, Participant 5’s state anxiety level showed a mean of 56.3 (range: 49 – 63; SD: 7.0). Across intervention, Participant 5’s state anxiety level decreased to a mean of 48.8 (range: 45 – 57; SD: 5.6). In follow-up, Participant 5’s state anxiety further decreased to a mean of 46.3 (range: 41 – 52; SD: 5.1). There were 75% non-overlapping data between baseline and intervention, and 50% non-overlapping between baseline and follow-up phases. The changes in Participant 5’s state anxiety in intervention and follow-up did not meet clinical significance (\(\bar{X}_{(in;fu)} < 42.3\)). Participant 5’s state anxiety remained relatively stable across intervention and follow-up phases, thus neither a basic effect nor a delayed effect was seen.

Cohort 2. During baseline, state anxiety levels for Cohort 2 had a mean of 48.3 (range: 36.0 – 62.0; SD: 8.9). In intervention, Cohort 2’s state anxiety decreased to a mean of 43.4 (range: 24.0 – 59.0; SD: 8.4). Although the follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase,
Cohorts 2’s state anxiety levels increased to a mean of 51.8 (range: 34.0 – 70.0; SD: 13.3). Neither the changes in state anxiety at intervention nor follow-up met clinical significance \( (\bar{X}_{\text{in, fu}} < 30.5) \). The state anxiety for Cohort 2 was relatively stable across the phases, therefore neither a basic effect nor a delayed effect was observed.

**Participant 6.** Across baseline, Participant 6’s state anxiety level showed a mean of 48.3 (range: 40 – 58; SD: 6.3). During intervention, Participant 6’s state anxiety level maintained at a mean of 48.3 (range: 38 – 59; SD: 6.9). Across follow-up, Participant 6’s state anxiety level increased slightly to a mean of 51.8 (range: 34 – 70; SD: 13.3). Participant 6’s state anxiety follow-up trend descended, then reversed and ascended at the midway point; this was reportedly due to stressors in week 46. There were 16.7% non-overlapping data between baseline and intervention phases, and 28.6% non-overlapping data between baseline and follow-up phases. The phase means were similar therefore clinical significance was not calculated. Participant 6’s state anxiety remained consistent across the phases, thus no basic or delayed effects were demonstrated.

**Participant 7.** During baseline, Participant 7’s state anxiety level showed a mean of 48.3 (range: 36 – 62; SD: 11.8), with a descending trend. Across intervention, Participant 7’s state anxiety level decreased to a mean level of 38.4 (range: 24 – 46; SD: 7.0). Participant 7 had no follow-up data. There were 14.3% non-overlapping data between baseline and intervention phases. Although there was a decrease in level, the change in Participant 7’s state anxiety did not meet clinical significance \( (\bar{X}_{\text{in}} < 24.7) \). Thus, there was no basic effect demonstrated.

**Cohort 3.** During baseline, state anxiety levels for Cohort 3 had a mean of 49.2 (range: 31.0 – 71.0; SD: 11.4). In intervention, Cohort 3’s state anxiety levels decreased
in the desired direction to a mean of 46.7 (range: 27.0 – 69.0; SD: 9.9). Although the follow-up did not have the full complement of participants, with only 4 of 6 participants completing scales in this phase, the state anxiety again decreased to a mean of 33.5 (range: 25.0 – 42.0; SD: 6.0); this missing data precludes comparison to baseline. However, neither the change in state anxiety at intervention nor follow-up met clinical significance ($\overline{X}_{(in;fu)} < 26.4$). The state anxiety for Cohort 3 decreased across the phases, but did not reach clinically significant levels. Therefore, neither a basic effect nor a delayed effect was observed.

**Participant 8.** During baseline, Participant 8’s state anxiety level had a mean of 38.7 (range: 31 – 45; SD: 5.7). Across intervention, Participant 8’s state anxiety increased slightly to a mean of 40 (range: 33 – 47; SD: 7.0). Participant 8 had no follow-up data. There were no non-overlapping data between baseline and intervention phases. Clinical significance was not calculated because of an increase in the intervention mean level. Thus, no basic effect was evidenced.

**Participant 9.** During baseline, Participant 9’s state anxiety level had a mean of 61.9 (range: 55 – 70; SD: 5.5). Across intervention, Participant 9’s state anxiety level decreased to a mean level of 50.0 (range: 38 – 58; SD: 8.3), with a variable yet generally decreasing trend. Participant 9 had no follow-up data. There were 60% non-overlapping data between baseline and intervention phases. Participant 9’s change in state anxiety level in intervention was clinically significant ($\overline{X}_{(in)} < 50.9$). Although there were 40% overlapping data between the baseline and intervention phases, Participant 9’s state anxiety decreased in intervention, thus a weaker basic effect was shown.
**Participant 10.** During baseline, Participant 10’s state anxiety level showed a mean of 38.7 (range: 38 – 40; SD: 1.2). Across intervention, Participant 10’s state anxiety level increased to a mean of 43.0 (range: 27 – 54; SD: 11.6). In follow-up, Participant 10’s state anxiety level decreased to a mean of 28.0 (range: 25 - 31; SD: 4.2). There were 25% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up phases. The change in Participant 10’s state anxiety at follow-up met clinical significance ($\bar{X}_{(in; fu)} < 36.3$). State anxiety for Participant 10 decreased significantly during follow-up, thus a delayed effect was shown.

**Participant 11.** During baseline, Participant 11’s state anxiety level displayed a mean of 59.3 (range: 46 – 71; SD: 8.2). Across intervention, Participant 11’s state anxiety level largely maintained at a mean of 60.8 (range: 53 – 69; SD: 6.7). In follow-up, Participant 11’s state anxiety level decreased to a mean of 33.5 (range: 30 – 37; SD: 4.9). There were no non-overlapping data between baseline and intervention, and yet 100% non-overlapping data between baseline and follow-up phases. Changes in Participant 11’s state anxiety at follow-up met clinical significance ($\bar{X}_{(in; fu)} < 42.9$). Participant 11’s state anxiety decreased significantly in follow-up; therefore, a delayed effect was shown.

**Participant 12.** During baseline, Participant 12’s state anxiety had a mean of 42.7 (range: 32 – 63; SD: 11.3), with an overall decreasing trend. Across intervention, Participant 12’s state anxiety level increased slightly to a mean of 45 (range: 39 – 49; SD: 4.3). In follow-up, Participant 12’s one state anxiety score evidenced a decrease to a score of 42. Due to lower scores in baseline, there were no non-overlapping data both between baseline and intervention, and between baseline and follow-up. Neither the
changes in Participant 12’s state anxiety at intervention nor follow-up phases met clinical significance ($\overline{X}_{(in;fu)} < 27.6$). State anxiety showed little change across the study; therefore, neither a basic effect nor a delayed effect was evidenced.

**Participant 13.** During baseline, Participant 13’s state anxiety level showed a mean of 47.1 (range: 41 – 52; SD: 3.5). Across intervention, Participant 13’s state anxiety level decreased to a mean of 41 (range: 32 – 51; SD: 7.9). In follow-up, Participant 13 evidenced a further decrease in state anxiety to score of 36. There were 50% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. Changes in Participant 13’s state anxiety at follow-up were clinically significance ($\overline{X}_{(in;fu)} < 40.1$). State anxiety declined in the intervention phase, and remained low in follow-up. Thus, a delayed effect was demonstrated.

**Cohort 4.** During baseline, state anxiety levels for Cohort 4 had a mean of 44.5 (range: 26.0 – 65.0; SD: 10.6). In intervention, Cohort 4’s state anxiety levels largely maintained at a mean of 44.1 (range: 25.0 – 57.0; SD: 11.0). During follow-up, Cohort 4’s state anxiety levels decreased to a mean of 35.1 (range: 22.0 – 48.0; SD: 8.0). However, neither the change in state anxiety levels at intervention nor follow-up met clinical significance ($\overline{X}_{(in;fu)} < 23.3$). The state anxiety for Cohort 4 decreased across the phases, but did not meet clinical significance. Therefore, a weaker delayed effect was demonstrated.

**Participant 14.** During baseline, Participant 14’s state anxiety had a mean of 51.6 (range: 39 – 65; SD: 7.9). Across intervention, Participant 14’s state anxiety decreased slightly to a mean of 48.7 (range: 38 – 57; SD: 9.7). In follow-up, Participant 14’s state anxiety again decreased to a mean of 44.3 (range: 38 – 48; SD: 4.5). There were 33%
non-overlapping data between baseline and intervention, and 25% non-overlapping data between baseline and follow-up phases. Neither changes in Participant 14’s state anxiety at intervention nor follow-up phases met clinical significance ($\bar{X}_{(in; fu)} < 35.8$). Participant 14’s state anxiety levels remained stable across the phases, thus no basic or delayed effects were shown.

**Participant 15.** During baseline, Participant 15’s state anxiety level showed a mean of 38 (range: 26 – 49; SD: 7.2). In intervention, Participant 15’s state anxiety increased to a mean of 45.3 (range: 32 – 53; SD: 11.6). As mentioned above, Participant 14 reported a shift in health, which might have temporarily increased anxiety symptoms during intervention. Across follow-up, Participant 15’s state anxiety decreased to a mean of 32.3 (range: 22 – 42; SD: 8.4). There were no non-overlapping data between baseline and intervention, and 25% non-overlapping data between baseline and follow-up phases. Neither changes in Participant 15’s state anxiety at intervention nor follow-up phases met clinical significance ($\bar{X}_{(in; fu)} < 23.6$). Thus, no basic or delayed effects were demonstrated.

**Participant 16.** During baseline, Participant 16’s state anxiety had a mean of 49.7 (range: 33 – 61; SD: 14.7), with an ascending trend. Across intervention, Participant 16’s state anxiety decreased to a mean of 39.8 (range: 25 – 56; SD: 12.8) with a decreasing trend. At follow-up, Participant 16’s state anxiety symptoms continued to decrease to a mean of 30.8 (range: 27 – 36; SD: 4.0). There were 25% non-overlapping data between baseline and intervention, and 66.7% non-overlapping data between baseline and follow-up phases. Changes in Participant 16’s state anxiety level at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in; fu)} < 20.3$). Although there was some overlap with
baseline, Participant 16’s state anxiety levels changed trend in intervention, and decreased in intervention and stabilized in follow-up phase. Therefore, both a weaker basic and a weaker delayed effect were evidenced.

**STAI-S summary.** The State-Trait Anxiety Inventory: State Anxiety was used to measure state anxiety or currently experienced anxiety. When reviewing state anxiety reduction across baseline and intervention phases, there were two weaker basic effects evidenced by Participants 9 and 13. When reviewing state anxiety reduction across baseline and follow-up phases, Participants 10, 11, and 13 evidenced delayed effects. Participant 16 evidenced a weaker delayed effect. Only Cohort 4 evidenced weaker delayed effect. Thus, there was some reduction in state anxiety at intervention and follow-up for some of the participants.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

At the level of the Cohort, there were no basic and delayed effects evidenced, therefore no functional relationships could be assessed. At the individual participant level, there also were no functional relationships documents. Thus, no functional relationships could be established between the IMAG and state anxiety reduction.

**State-Trait Anxiety Inventory- Trait (STAI-T: Spielberger, 1983).** Figure 5.6 shows the sum scores for the 16 participants. The STAI-T is one of four scales
Figure 5.6. State-Trait Anxiety Inventory- Trait Anxiety (STAI-T)

<table>
<thead>
<tr>
<th>Baseline Phase</th>
<th>Mindfulness-Based Intervention Phase</th>
<th>Follow-Up Phase</th>
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</thead>
<tbody>
<tr>
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<td><img src="image2" alt="Graph" /></td>
<td><img src="image3" alt="Graph" /></td>
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**Group One**
- Part.1
- Part.2
- Part.3
- Part.4
- Part.5

**Group Two**
- Part.6
- Part.7

**Group Three**
- Part.8
- Part.9
- Part.10
- Part.11
- Part.12
- Part.13

**Group Four**
- Part.14
- Part.15
- Part.16

*Figure 5.6. Multiple baseline design across cohorts graph for the State-Trait Anxiety Inventory- Trait Anxiety's sum scores of the 16 participants. The State-Trait Anxiety Inventory-Trait Anxiety measures a stable or general experience of anxiety. Lower scores represent lower amounts of trait anxiety.*
measuring anxiety. This scale assesses a general or stable experience of anxiety, and has a range of 60, with a minimum score of 20 and a maximum score of 80. As the scores get larger, the general experience of anxiety increases. Thus, the optimal trend is a decreasing trend, which would indicate that trait anxiety is progressively decreasing over time.

**Total group.** During baseline, the total group of 16 participants’ trait anxiety levels had a mean of 55.8 (range: 28 – 80; SD: 11.9). In intervention, the participants’ trait anxiety level decreased to a mean of 53.7 (range: 30–79; SD: 11.4). During follow-up, only 11 of 16 participants completed scales in this phase. For follow-up, the participants’ trait anxiety further decreased to a mean of 46.8 (range: 24–76; SD: 13.7). However, neither the changes in the participants’ trait anxiety at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} < 32.1$). Although the participants’ trait anxiety decreased over the study, these changes failed to meet clinical significance. Thus, neither a basic effect nor a delayed effect was evidenced.

**Cohort 1.** During baseline, levels of trait anxiety for Cohort 1 had a mean of 64.3 (range: 51.0 – 80.0; SD: 10.4). In intervention, Cohort 1’s trait anxiety levels decreased slightly to a mean of 62.4 (range: 43.0 – 79.0; SD: 12.33). Although the follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s trait anxiety decreased to a mean of 56.9 (range: 48.0 – 76.0; SD: 10.4). However, neither the changes in Cohort 1’s trait anxiety at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} < 43.5$). Although trait anxiety levels for Cohort 1 decreased, these changes did not meet clinical significance, therefore neither a basic effect nor a delayed effect was observed.
Participant 1. Across baseline, Participant 1’s trait anxiety level showed a mean of 56.5 (range: 53 – 59; SD: 2.6), with a slightly decreasing trend. During intervention, Participant 1’s trait anxiety level decreased to a mean level of 46 (range: 43 – 49; SD: 4.2). There were no follow-up data. There were 100% non-overlapping data between baseline and intervention phases. Change in Participant 1’s trait anxiety at intervention met clinical significance (ΔX < 51.3). Although there was improvement in Participant 1’s levels of trait anxiety, this improvement may have started in baseline; therefore, a basic effect was not shown.

Participant 2. During baseline, Participant 2’s trait anxiety level showed a mean of 74.6 (range: 69 – 80; SD: 4.2). Across intervention, Participant 2’s trait anxiety level remained consistently elevated, with a mean of 74.8 (range: 67 – 79; SD: 4.7). There were 20% non-overlapping data between baseline and intervention. Clinical significance was not calculated because baseline and intervention levels were the very similar. There were no follow-up data. The participant’s persistent health challenge may have kept the trait anxiety elevated. Thus, no basic effect was evidenced.

Participant 3. Across baseline, Participant 3’s trait anxiety level had a mean of 51.8 (range: 51 – 52; SD: 0.5). During intervention, Participant 3’s trait anxiety decreased slightly to a mean of 50.3 (range: 49 – 53; SD: 2.3). Across follow-up, Participant 3’s trait anxiety returned to baseline level, with a mean of 51.8 (range: 49 – 54; SD: 2.3). There were 67% non-overlapping data between baseline and intervention, and 40% non-overlapping data between baseline and follow-up phases. Clinical significance was not calculated because of the similarity of levels across the three phases. The
participant’s persistent health challenges may have kept the trait anxiety consistent across the phases. Thus, neither a basic effect nor a delayed effect was shown.

**Participant 4.** During baseline, Participant 4’s trait anxiety level showed a mean of 73.3 (range: 72 – 74; SD: 1.2). Across intervention, Participant 4’s trait anxiety level maintained, with a mean of 73 (range: 68 – 76; SD: 4.4). In follow-up, Participant 4’s trait anxiety remained at the same level, with a mean of 73.7 (range: 70 – 76; SD: 3.2). There were 33% non-overlapping data between baseline and intervention, and 33% non-overlapping data between baseline and follow-up. Clinical significance was not calculated due to the similarity of phase means. Participant 4’s trait anxiety remained consistent and quite elevated across the three phases for Participant 4. Thus, neither a basic effect nor a delayed effect was demonstrated.

**Participant 5.** Across baseline, Participant 5’s trait anxiety level had a mean of 58.3 (range: 52 – 63; SD: 5.7), with an ascending trend. In intervention, Participant 5’s trait anxiety level decreased slightly to a mean of 56.0 (range: 53 – 61; SD: 3.5), with a descending trend. Across follow-up, Participant 5’s trait anxiety level decreased to a mean of 50.8 (range: 48 – 55; SD: 3.1). There were no non-overlapping data between baseline and intervention, and 75% non-overlapping data between baseline and follow-up phases. Neither changes in Participant 5’s trait anxiety at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} < 46.9$). Although Participant 5’s trait anxiety remained consistent across the study, there was a desired shift in trend at intervention. Therefore, a weaker basic effect was shown.

**Cohort 2.** During baseline, Cohort 2’s trait anxiety levels displayed a mean of 59.5 (range: 50.0 – 63.0; SD: 3.4). In intervention, Cohort 2’s trait anxiety levels slightly
decreased in the desired direction to a mean of 55.6 (range: 46.0 – 62.0; SD: 5.4).

Although the follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, trait anxiety maintained at the intervention level, with a mean of 54.7 (range: 48.0 – 64.0; SD: 6.2). Cohort 2’s trait anxiety levels were stable across the phases, therefore neither a basic effect nor a delayed effect was observed.

Participant 6. During baseline, Participant 6’s trait anxiety level showed a mean of 60.3 (range: 56 – 62; SD: 2.2). Across intervention, Participant 6’s trait anxiety level decreased to a mean of 54.7 (range: 46 – 62; SD: 5.8), with a descending trend. In follow-up, Participant 6’s trait anxiety level maintained, with a mean of 54.7 (range: 48 – 64; SD: 6.2), with an increase to the baseline level at the middle of the follow-up phase.

There were 43% non-overlapping data between baseline and intervention, and 67% non-overlapping data between baseline and follow-up phases. The changes in Participant 6’s trait anxiety at intervention and follow-up phases met clinical significance ($\bar{X}_{(in;fu)} < 55.9$). Although there was considerable overlap with baseline data, Participant 6’s trait anxiety changes were clinically significant and there was a desired change in trend at intervention. Therefore, a weaker basic effect was documented.

Participant 7. Across baseline, Participant 7’s trait anxiety level had a mean of 58.7 (range: 50 – 63; SD: 4.5). During intervention, Participant 7’s trait anxiety level decreased slightly to a mean of 56.4 (range: 46 – 62; SD: 5.3). Participant 7 had no follow-up data. There were 14% non-overlapping data between baseline and intervention phases. The change in Participant 7’s trait anxiety level at intervention did not meet
clinical significance ($\bar{X}_{\text{in}} < 49.7$). Participant 7’s trait anxiety remained consistent across the study, thus no basic effect was evidenced.

**Cohort 3.** During baseline, Cohort 3’s trait anxiety levels had a mean of 56.2 (range: 35.0 – 71.0; SD: 9.6). In intervention, Cohort 3’s trait anxiety levels decreased in the desired direction to a mean of 50.9 (range: 30.0 – 71.0; SD: 10.2). Although the follow-up did not have the full complement of participants, with only 4 of 6 participants completing scales in this phase, Cohort 3’s trait anxiety further decreased to a mean of 40.5 (range: 29.0 – 56.0; SD: 8.9); the missing data precludes comparison to baseline. However, neither the change in trait anxiety at intervention nor follow-up met clinical significance ($\bar{X}_{\text{in,fu}} < 37.0$). Although Cohort 3’s trait anxiety decreased, these changes did not meet clinical significance; therefore neither a basic effect nor a delayed effect was demonstrated.

**Participant 8.** During baseline, Participant 8’s trait anxiety level had a mean of 46.3 (range: 42 – 50; SD: 3.0). Across intervention, Participant 8’s trait anxiety level decreased to a mean of 42.5 (range: 34 – 47; SD: 5.8), with a descending trend. Participant 8 had no follow-up data. There were 25% non-overlapping data between baseline and intervention phases. Change in Participant 8’s trait anxiety at intervention did not meet clinical significance ($\bar{X}_{\text{in}} < 40.3$). Participant 8’s trait anxiety remained consistent across the study, thus no basic effect was shown.

**Participant 9.** During baseline, Participant 9’s trait anxiety level showed a mean of 62.4 (range: 58 – 67; SD: 3.1), with a slight ascending trend. Across intervention, Participant 9’s trait anxiety level decreased to a mean of 57.2 (range: 48 – 63; SD: 6.1), with a descending trend. Participant 9 had no follow-up data. There were 40% non-
overlapping data between baseline and intervention. Change in Participant 9’s trait anxiety in intervention did not meet clinical significance ($\bar{X}_{(in)} < 56.2$). Although there was overlap with baseline, Participant 9’s trait anxiety level decreased in intervention phase, with a change in trend. Although there was no clinical significance and there was overlap, there was also a decrease in level and a change in trend. Thus, a weaker basic effect was shown.

**Participant 10.** During baseline, Participant 10’s trait anxiety level displayed a mean of 46.7 (range: 45 – 48; SD: 1.5). Across intervention, Participant 10’s trait anxiety level remained consistent, with a mean of 47.0 (range: 30 – 55; SD: 11.6), and a descending trend. In follow-up, Participant 10’s trait anxiety level decreased to a mean of 33.0 (29 - 37; SD: 5.7). There were 25% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up phases. The change in Participant 10’s trait anxiety at follow-up met clinical significance ($\bar{X}_{(in; fu)} < 43.7$). Trait anxiety for Participant 10 decreased to clinically significant levels during follow-up. Thus, a delayed effect was demonstrated.

**Participant 11.** During baseline, Participant 11’s trait anxiety level had a mean of 66.7 (range: 61 – 71; SD: 4.1). In intervention, Participant 11’s trait anxiety level decreased to a mean of 57.5 (range: 33 – 71; SD: 16.8). Across follow-up, Participant 11’s trait anxiety level further decreased to a mean of 39 (range: 38 – 40; SD: 1.4). There were 25% non-overlapping data between baseline and intervention, and 100% non-overlapping data baseline and follow-up phases. The change in Participant 11’s trait anxiety at follow-up met clinical significance ($\bar{X}_{(in; fu)} < 58.5$). Thus, a delayed effect was shown.
**Participant 12.** During baseline, Participant 12’s trait anxiety level had a mean of 46.8 (range: 35 – 54; SD: 6.7), with a descending trend. In intervention, Participant 12’s trait anxiety level decreased slightly a mean of 45 (range: 40 – 47; SD: 2.9). In follow-up, Participant 12’s single trait anxiety score showed a further decrease to 43. There were 25% non-overlapping data between baseline and intervention, and no non-overlapping data between baseline and follow-up. Neither changes in Participant 12’s trait anxiety at intervention nor follow-up met clinical significance (\( \bar{X}_{(in;fu)} < 33.4 \)). Participant 12’s trait anxiety remained consistent across the phases, thus no basic or delayed effects were evidenced.

**Participant 13.** During baseline, Participant 13’s trait anxiety level had a mean of 62 (range: 57 – 68; SD: 4.0), with a decreasing trend. Across intervention, Participant 13’s trait anxiety level decreased to a mean of 56 (range: 49 – 60; SD: 5.0). In follow-up, Participant 13’s single trait anxiety score remained stable with a score of 56. There were 50% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up phases. Neither the changes in Participant 13’s trait anxiety at intervention or follow-up met clinical significance (\( \bar{X}_{(in;fu)} < 54 \)). Although trait anxiety levels declined across intervention and remained lower in follow-up, these changes did not meet clinical significance. Thus, neither a basic effect nor a delayed effect was shown.

**Cohort 4.** During baseline, Cohort 4’s trait anxiety levels had a mean of 43.3 (range: 28.0 – 57.0; SD: 11.6). In intervention, Cohort 4’s trait anxiety levels remained consistent, with a mean of 44.0 (range: 31.0 – 58.0; SD: 8.9). During follow-up, Cohort 4’s trait anxiety levels decreased to a mean of 34.8 (range: 24.0 – 52.0; SD: 11.2).
However, neither the changes in Cohort 4’s trait anxiety at intervention nor follow-up met clinical significance ($X_{(in; fu)} < 20.1$). Cohort 4’s trait anxiety decreased in follow-up, but this change did not meet clinical significance. Therefore, a weaker basic effect was observed.

**Participant 14.** During baseline, Participant 14’s trait anxiety level had a mean of 56 (range: 54 – 57; SD: 1.2). In intervention, Participant 14’s trait anxiety level remained consistent, with a mean of 55 (range: 51 – 58; SD: 3.6). Across follow-up, Participant 14’s trait anxiety level decreased to a mean of 51 (range: 50 – 52; SD: 1.0). There were 40% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. Changes in Participant 14’s trait anxiety at follow-up met clinical significance ($X_{(in; fu)} < 53.6$). Except for the slight decrease in follow-up, trait anxiety remained stable across the phases. Thus, neither a basic effect nor a delayed effect was demonstrated.

**Participant 15.** During baseline, Participant 15’s trait anxiety level had a mean of 32.7 (range: 28 – 42; SD: 4.1). In intervention, Participant 15’s trait anxiety level increased to a mean of 38.7 (range: 34 – 41; SD: 4.0), with an ascending trend. As mentioned above, Participant 15 had a shift in health, which may have increased trait anxiety temporarily in intervention. Across follow-up, Participant 15’s trait anxiety level decreased to a mean of 27.5 (range: 24 – 36; SD: 5.7). There were no non-overlapping data between baseline and intervention, and 25% non-overlapping data between baseline and follow-up phases. Neither the changes in Participant 15’s trait anxiety at intervention nor follow-up met clinical significance ($X_{(in; fu)} < 24.5$). Participant 15’s trait anxiety was
consistent, although low, across the phases. Thus, no basic or delayed effects were demonstrated.

*Participant 16.* During baseline, Participant 16’s trait anxiety level had a mean of 48.7 (range: 44 – 53; SD: 4.5), with an ascending trend. Across intervention, Participant 16’s trait anxiety level decreased to a mean of 39.8 (range: 31 – 46; SD: 6.5), with a slightly decreasing trend. In follow-up, Participant 16’s trait anxiety further decreased to a mean of 28.8 (range: 25 – 33; SD: 2.9). There were 75% non-overlapping data between baseline and intervention, and 100% between baseline and follow-up phases. The changes in Participant 16’s trait anxiety at follow-up met clinical significance ($X_{(in;fu)}<39.7$). Participant 16’s trait anxiety decreased to a lower level in intervention, and significantly lower levels in follow-up, thus both a weaker basic effect and a delayed effect were shown.

**STAI-T summary.** The State-Trait Anxiety Inventory-Trait measures a person’s trait anxiety, or their general experience of anxiety. When reviewing trait anxiety reduction across baseline and intervention phases, Participants 5, 6, 9, and 16 evidenced weaker basic effects. When reviewing trait anxiety reduction across baseline and follow-up phases, Participants 10, 11, and 16 evidenced delayed effects. Cohort 4 evidenced a weaker delayed effect. Thus, there was a reduction in trait anxiety for some of the participants in intervention and follow-up.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships
from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

At the level of the Cohort, there was only one effect evidenced, therefore no functional relationships could be assessed. At the individual participant level, there was a weaker functional relationship assessed from the weaker basic effects of Participants 5, 6, and 16. Thus, only one weaker functional relationship could be established between the IMAG and trait anxiety reduction.

**Anxiety measures summary.** The following reviews the basic and delayed effects, and the corresponding functional relationship for cohorts and individual participants. At the cohort level, there was one weaker basic effect. Again at the cohort level, there were five weaker delayed effects across the anxiety measures.

At the individual participant level, there were four basic effects in the anxiety measures. Participant 16 evidenced two basic effects. Participants 3 and 5 each showed one basic effect. In addition, there were 10 weaker basic effects. Participant 9 showed four weaker basic effects; Participant 16 showed three, and Participant 6 showed two weaker effects; Participant 5 showed one weaker basic effects.

Again, at the individual participant level, there were 14 delayed effects in the anxiety measures. Participants 10 and 16 each had four delayed effects. Participants 5 and 11 each demonstrated two delayed effects. Participant 3 and 13 had one delayed effect. There were two weaker delayed effects: Participant 10 and 16.

There were four functional relationships demonstrated in the anxiety measures. There was one functional relationship established from delayed effects of the CAS measure (See Participants 3, 10, and 16). Additionally, there was one weaker functional
relationship established from the weaker basic effects of the CAS measure (See Participants 5, 6, and 16). There was one weaker functional relationship established from the weaker basic effects of the STAI-T measure (See Participants 5, 6, and 16). Finally, there was one weaker functional relationship established from the weaker delayed effects of the BAI (See Participants 5, 10, and 16). Thus, of the 35 possible functional relationships, there was one functional relationship and three weaker functional relationships.

**Mindfulness Measures**

This next section displays the findings from the six mindfulness scales of measurement, and the composite mindfulness score. Please refer to Figure 5.7 – Figure 5.13 for the Level and Trend graphs for these mindfulness measures.

**Composite Mindfulness Score (CMS).** Figure 5.7 shows the sum scores for the 16 participants. The CMS is a combination of the six scales measuring mindfulness. This composite scale has a range of 231, with a minimum score of 54 and a maximum score of 285. As the composite scores get larger, composite mindfulness increases. Thus, the optimal trend is an ascending trend, which would indicate that mindfulness is progressively increasing over time. Herein, the composite mindfulness is referred to as mindfulness.

**Total group.** During baseline, the 16 participants’ mindfulness levels had a mean of 161.8 (range: 60 – 258; SD: 41.0). In intervention, the participants’ mindfulness increased to a mean of 169.7 (range: 58 – 259; SD: 42.1). Only 11 of 16 participants completed scales in the follow-up phase. In follow-up, these participants’ mindfulness
Figure 5.7. Composite Sum Score of Mindfulness Measures

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<th>Baseline Phase</th>
<th>Mindfulness-Based Intervention Phase</th>
<th>Follow-Up Phase</th>
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Figure 5.7. Multiple baseline design across cohorts graph for the Composite Mindfulness Score's sum scores of the 16 participants. The Composite Mindfulness Score is the combination of the sum scores of the six mindfulness measures used in the study. Higher scores represent higher amounts of this mindful quality.
levels further increased to a mean of 191.5 (range: 76–251; SD: 42.3). Neither the changes in mindfulness at intervention nor follow-up met clinical significance ($\bar{X}_{\text{in;fu}} > 243.8$). Although mindfulness increased over the phases, the participants’ level changes failed to reach clinical significance. Neither a basic effect nor a delayed effect was evidenced.

**Cohort 1.** During baseline, Cohort 1’s mindfulness levels had a mean of 127.4 (range: 60.0 – 195.0; SD: 52.1). In intervention, Cohort 1’s mindfulness levels increased to a mean of 139.6 (range: 58.0 – 200.0; SD: 53.8). Although the follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s mindfulness levels further increased to a mean of 157.9 (range: 76.0 – 192.0; SD: 46.0). Neither the changes in Cohort 1’s mindfulness at intervention nor follow-up met clinical significance ($\bar{X}_{\text{in;fu}} > 231.6$). Although Cohort 1’s mindfulness increased across the phases, these changes were not clinical significant. Therefore, neither a basic effect nor a delayed effect was observed.

**Participant 1.** Across baseline, Participant 1’s mindfulness level had a mean of 156.8 (range: 139 – 181; SD: 17.6), with an ascending trend. In intervention, Participant 1’s mindfulness level increased, with a mean of 192.5 (range: 185 – 200; SD: 10.6). There were no follow-up data. There were 100% non-overlapping data between baseline and intervention. The changes in Participant 1’s mindfulness level at intervention met clinical significance ($\bar{X}_{\text{in}} > 192.0$). Although mindfulness increased over the phases, this change began in baseline, thus a basic effect was not demonstrated.

**Participant 2.** Across baseline, Participant 2’s mindfulness level had a mean of 68 (range: 60 – 81; SD: 9.0). In intervention, Participant 2’s mindfulness level increased
slightly to a mean of 71.8 (range: 58 – 81; SD: 9.8). There were no follow-up data. There was no non-overlapping data between baseline and intervention phases. The change in Participant 2’s mindfulness level at intervention was not clinically significant ($\bar{X}_{(in)} > 86.0$). Thus, no basic effect was observed.

**Participant 3.** During baseline, Participant 3’s mindfulness level had a mean of 177.8 (range: 169 – 182; SD: 5.9). Across intervention, Participant 3’s mindfulness level increased slightly to a mean of 183.0 (range: 181 – 186; SD: 2.6). In follow-up, Participant 3’s mindfulness level remained the same, with a mean of 184.0 (range: 176 - 192; SD: 6.7). There were 33% non-overlapping data between baseline and intervention, and 40% non-overlapping data between baseline and follow-up. Neither changes in Participant 3’s mindfulness at intervention nor follow-up met clinical significance ($\bar{X}_{(in, fu)} > 189.6$). Participant 3’s mindfulness levels remained consistent across intervention and follow-up phases. Therefore, neither a basic effect nor a delayed effect was evidenced.

**Participant 4.** During baseline, Participant 4’s mindfulness level had a mean of 97.3 (range: 94.0 – 102.0; SD: 4.2). Across intervention, Participant 4’s mindfulness level increased to a mean of 115.3 (range: 92.0 – 151.0; SD: 31.4), with an ascending trend. In follow-up, Participant 4’s mindfulness level decreased below baseline, with a mean of 87.3 (range: 76 – 103; SD: 14.0). There were 66.7% non-overlapping data between baseline and intervention, and 33% non-overlapping data between baseline and follow-up. The changes in Participant 4’s mindfulness at intervention were clinically significant ($\bar{X}_{(in, fu)} > 105.7$). Although there was overlap between baseline and
intervention phases, Participant 4’s mindfulness level at intervention increased to clinical significance. Thus, a weaker basic effect was documented.

**Participant 5.** During baseline, Participant 5’s mindfulness level showed a mean of 190.0 (range: 187 – 195; SD: 4.4). Across intervention, Participant 5’s mindfulness decreased to a mean of 183.5 (range: 175 – 189; SD: 6.2). In follow-up, Participant 5’s mindfulness levels remained consistent, with a mean of 185 (range: 182 – 187; SD: 2.6). There were no non-overlapping data between baseline and intervention, and between baseline and follow-up. Clinical significance was not calculated because baseline was higher than the two other phase levels. Participant 5’s mindfulness levels remained consistent over the study. Thus, neither a basic effect, nor a delayed effect was evidenced.

**Cohort 2.** During baseline, Cohort 2’s mindfulness levels had a mean of 162.5 (range: 134.0 – 179.0; SD: 15.1). In intervention, Cohort 2’s mindfulness levels increased in the desired direction to a mean of 173.4 (range: 141.0 – 202.0; SD: 17.6). Although the follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, Cohort 2’s mindfulness levels remained consistent, with a mean of 174.6 (range: 155.0 – 201.0; SD: 18.8). Neither the changes in Cohort 2’s mindfulness at intervention nor follow-up met clinical significance (\(\bar{X}_{in;fu}\)>192.7). Although Cohort 2’s mindfulness increased across the phases, these changes were not at clinically significant levels. Therefore, neither a basic effect nor a delayed effect was observed.

**Participant 6.** During baseline, Participant 6’s mindfulness level showed a mean of 152.3 (range: 134 – 168; SD: 13.6), with a slightly ascending trend. Across
intervention, Participant 6’s mindfulness level increased to a mean of 173.4 (range: 141 – 202; SD: 25.1), with an ascending trend. In follow-up, Participant 6’s mindfulness level remained consistent, with a mean of 174.6 (range: 155 – 201; SD: 18.8). There were 60% non-overlapping data between baseline and intervention, and 60% non-overlapping data between baseline and follow-up. Neither the changes in Participant 6’s mindfulness levels at intervention nor follow-up met clinical significance ($X_{(in;fu)} > 179.5$). Although Participant 6’s mindfulness levels improved across the phases, these changes initially started in baseline and did not meet clinical significance. Thus, neither a basic effect nor a delayed effect was shown.

**Participant 7.** During baseline, Participant 7’s mindfulness level showed a mean of 174.3 (range: 169 – 179; SD: 3.7). In intervention, Participant 7’s mindfulness remained consistent, with a mean of 173.4 (range: 165 – 185; SD: 8.0). Participant 7 had no follow-up data. There were no non-overlapping data between baseline and intervention phases. Clinical significance was not completed because the baseline level was higher than intervention level. Thus, no basic effect was shown.

**Cohort 3.** During baseline, Cohort 3’s mindfulness levels had a mean of 172.0 (range: 113.0 – 258.0; SD: 35.2). In intervention, Cohort 3’s mindfulness levels increased in the desired direction to a mean of 186.2 (range: 126.0 – 259.0; SD: 38.4). Although the follow-up did not have the full complement of participants, with only 4 of 6 participants completing scales in this phase, Cohort 3’s mindfulness levels further increased to a mean of 215.7 (range: 181.0 – 251.0; SD: 26.0). The changes in Cohort 3’s mindfulness levels at intervention and follow-up did not meet clinical significance ($X_{(in)} > 242.4$). Although Cohort 3’s mindfulness levels increased across the phases, they did not
reach a clinical significant level. Therefore, neither a basic effect nor a delayed effect was observed.

**Participant 8.** Across baseline, Participant 8’s mindfulness level had a mean of 154.3 (range: 145 – 170; SD: 9.3). In intervention, Participant 8’s mindfulness level remained consistent, with a mean of 155.3 (range: 145 – 175; SD: 13.5). Participant 8 had no follow-up data. There were 25% non-overlapping data between baseline and intervention. The changes in Participant 8’s mindfulness level at intervention did not meet clinical significance ($\bar{X}_{\text{in}} > 172.9$). Participant 8’s mindfulness levels remained consistent across the study, thus a basic effect was not evidenced.

**Participant 9.** Across baseline, Participant 9’s mindfulness level showed a mean of 168.2 (range: 147 – 198; SD: 17.2), with a descending trend. In intervention, Participant 9’s mindfulness level increased to a mean of 187.3 (range: 164 – 213; SD: 24.6), with an ascending trend. There were only 33% non-overlapping data between baseline and intervention. The changes in Participant 9’s mindfulness levels at intervention did not meet clinical significance ($\bar{X}_{\text{in}} > 202.6$). There were no follow-up data. Although Participant 9’s mindfulness level increased in intervention, this change had overlap with the baseline level and did not meet clinically significance. However, there was both an increase in level, and a change in trend. Thus, there was a weaker basic effect observed.

**Participant 10.** During baseline, Participant 10’s mindfulness level had a mean of 143.0 (range: 126 – 161; SD: 17.5). Across intervention, Participant 10’s mindfulness level increased to a mean of 165.8 (range: 126 – 223; SD: 42.0), with an ascending trend. In follow-up, Participant 10’s mindfulness level further improved to a mean of 230.5 (228
There were 50% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up phases. The change in Participant 10’s mindfulness level at follow-up met clinically significance ($\bar{X}_{(in;fu)}>178.0$). Participant 10’s mindfulness level increased to clinical significance during follow-up. Thus, a weaker basic effect and a delayed effect were evidenced.

**Participant 11.** During baseline, Participant 11’s mindfulness level had a mean of 139 (range: 113 – 165; SD: 17.6), with an ascending trend. Across intervention, Participant 11’s mindfulness level increased to a mean of 161.8 (range: 144 – 192; SD: 21.4), with a descending trend due to a high score early in the phase. In follow-up, Participant 11’s mindfulness level further increased to a mean of 189 (range: 181 – 197; SD: 11.3). There were 25% non-overlapping data between baseline and intervention, and 100% non-overlapping between baseline and follow-up. The change in Participant 11’s mindfulness level in follow-up met clinical significance ($\bar{X}_{(in;fu)}>174.2$). The changes at intervention and follow-up started in baseline, therefore neither a basic effect nor a delayed effect was evidenced.

**Participant 12.** Across baseline, Participant 12’s mindfulness level showed a mean of 237.2 (range: 223 – 258; SD: 12.6), with an ascending trend. During intervention, Participant 12’s mindfulness level increased to a mean of 246.5 (range: 228 – 259; SD: 13.3). In follow-up, Participant 12’s mindfulness level further increased to a mean of 251. There were 25% non-overlapping data between baseline and intervention, and no non-overlapping data between baseline and follow-up. Neither the changes in Participant 12’s mindfulness level at intervention nor follow-up met clinical significance.
(\(\bar{X}_{(in;fu)} > 262.4\)). Participant 12’s mindfulness levels remained consistently high across the phases. Thus, neither a basic effect nor a delayed effect was shown.

**Participant 13.** During baseline, Participant 13’s mindfulness level showed a mean of 183.1 (range: 172 – 194; SD: 7.7). Across intervention, Participant 13’s mindfulness level increased to a mean of 198.8 (range: 176 – 227; SD: 19.7). In follow-up, Participant 13’s mindfulness level further increased to a score of 204. There were 60% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. The changes in Participant 13’s mindfulness levels at both intervention and follow-up phase met clinical significance (\(\bar{X}_{(in;fu)} > 198.5\)). Thus, a weaker basic effect and a delayed effect were demonstrated.

**Cohort 4.** During baseline, Cohort 4’s mindfulness levels had a mean of 178.7 (range: 122.0 – 219.0; SD: 30.6). In intervention, Cohort 4’s mindfulness levels remained consistent, with a mean of 179.0 (range: 147.0 – 215.0; SD:21.2). In follow-up, Cohort 4’s mindfulness level increased to a mean of 212.8 (range: 166.0 – 243.0; SD: 32.0). Neither the changes in Cohort 4’s mindfulness levels at intervention nor follow-up met clinical significance (\(\bar{X}_{(in;fu)} > 239\)). Although there was an increase in Cohort 4’s mindfulness levels in follow-up, this change did not meet clinically significant levels. Therefore, a weaker delayed effect was observed.

**Participant 14.** During baseline, Participant 14’s mindfulness level had a mean of 158.7 (range: 153 – 169; SD: 5.9). Across intervention, Participant 14’s mindfulness level remained consistent, with a mean of 162.3 (range: 157 – 168; SD: 5.1). In follow-up, Participant 14’s mindfulness level showed a slight increase to a mean of 168.3 (range: 166 – 170; SD: 2.1). There were no non-overlapping data both between baseline and
intervention, and between baseline and follow-up phases. Neither the changes in Participant 14’s mindfulness levels at intervention nor follow-up met clinically significance ($\bar{X}_{\text{in;fu}} > 170.5$). Participant 14’s mindfulness levels remained consistent across the phases, thus a basic effect or a delayed effect were not shown.

**Participant 15.** Across baseline, Participant 15’s mindfulness level had a mean of 205.9 (range: 187 – 219; SD: 11.5). In intervention, Participant 15’s mindfulness level decreased to a mean of 190.75 (range: 179 – 215; SD: 27.4). A reported health change for Participant 15 may have made mindfulness practice more difficult in intervention. Across follow-up, Participant 15’s mindfulness level increased to a mean of 239.3 (range: 238–241; SD: 1.5). There were no non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up probes. The change in Participant 15’s mindfulness level at follow-up met clinical significance ($\bar{X}_{\text{in;fu}} > 228.9$). Thus, a delayed effect was evidenced.

**Participant 16.** During baseline, Participant 16’s mindfulness level showed a mean of 134.3 (range: 122 – 145; SD: 11.6), with a decreasing trend. In intervention, Participant 16’s mindfulness level increased to a mean of 181.3 (range: 147 – 203; SD: 25.7), with an ascending trend. Across follow-up, Participant 16’s mindfulness levels further increased to a mean of 229.2 (range: 220 – 243; SD: 10.9). There were 100% non-overlapping data both between baseline and intervention, and between baseline and follow-up. The changes in Participant 16’s mindfulness at both intervention and follow-up met clinical significance ($\bar{X}_{\text{in;fu}} > 157.5$). Participant 16’s mindfulness levels increased in intervention, and stabilized in follow-up. Thus, both a basic effect and a delayed effect were shown.
**CMS summary.** The Composite Mindfulness Scale is a combination of the six mindfulness measures used in this study to assess mindfulness. When reviewing increases in mindfulness across baseline and intervention phases, only Participant 16 evidenced a basic effect. Participants 4, 9, 10, and 13 showed weaker basic effects. When reviewing increases in mindfulness across baseline and follow-up phases, Participants 10, 13, 15, and 16 evidenced delayed effects. Cohort 4 showed a weaker delayed effect. Thus, there were increases in mindfulness for some of the participants.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

At the level of the Cohort, there was only one effect evidenced, therefore no functional relationships could be established. At the individual participant level, there was one weaker functional relationship established by basic and weaker basic effects (See Participants 4, 9, and 16). Thus, out of a possible seven functional relationships, one weaker functional relationship was established.

**Mindful Attentional Awareness Scale (MAAS: Brown & Ryan, 2003).** Figure 5.8 shows the sum scores for the 16 participants. The MAAS is one of six scales measuring mindfulness. This scale assesses dispositional attentional awareness. It has a range of 75, with a minimum score of 15 and a maximum score of 90. As the scores get larger, mindful attentional awareness levels increase. Thus, the optimal trend is an
Figure 5.8. Multiple baselines across cohorts and phases for the Mindfulness Attentional Awareness’s sum scores for the 16 participants. The Mindfulness Attentional Awareness Scale measures dispositional mindfulness. Higher scores represent higher amounts of this mindful quality.
increasing trend, which would indicate that the quality of mindful attentional awareness is progressively increasing over time.

**Total group.** During baseline, 16 participants’ awareness levels had a mean of 50.9 (range: 15 – 81; SD: 15.5). In intervention, the participants’ awareness remained constant, with a mean of 50.8 (range: 14 – 84; SD: 16.0). During follow-up, only 11 of 16 participants completed scales in this phase. Across follow-up, the participants’ awareness slightly increased to a mean of 55.1 (range: 19 – 82; SD: 16.2). The changes in the participants’ awareness at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 61.0$). The participants’ awareness showed little to no improvement across the phases. Thus, there were no basic or delayed effects observed.

**Cohort 1.** During baseline, Cohort 1’s attentional awareness levels had a mean of 37.5 (range: 15.0 – 59.0; SD: 17.8). In intervention, Cohort 1’s attentional awareness levels increased slightly to a mean of 41.8 (range: 14.0 – 76.0; SD: 19.8). Although follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s awareness level further increased to a mean of 48.5 (range: 19.0 – 61.0; SD: 14.4). The changes in Cohort 1’s awareness levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 73.1$). Although there were slight increases in Cohort 1’s awareness, the changes did not meet clinically significance. Thus, neither a basic effect nor a delayed effect was observed.

**Participant 1.** Across baseline, Participant 1’s attentional awareness level showed a mean of 48.6 (range: 39 – 54; SD: 6.2), with an ascending trend. Across intervention, Participant 1’s level of awareness increased to a mean of 62.0 (range: 59 - 65; SD: 3.0), with an ascending trend. There were 100% non-overlapping data between baseline and
intervention. The change in Participant 1’s awareness at intervention met clinical significance ($\bar{X}_{\text{in}} > 61.0$). There were no follow-up data. Although Participant 1’s attentional awareness increased over the study, this change began in baseline, and continued in intervention. Thus, no basic effect was shown.

**Participant 2.** Across baseline, Participant 2’s attentional awareness showed a mean of 18.0 (range: 15 – 22; SD: 2.7). During intervention, Participant 2’s awareness decreased slightly to a mean of 16.6 (range: 14 – 19; SD: 2.1). There were no non-overlapping data between baseline and intervention. Clinical significance was not completed due to the baseline level being higher than the intervention level. There were no follow-up data. Participant 2’s attentional awareness decreased over the study, or there was an increased consciousness of the lack of awareness. Regardless, no basic effect was shown.

**Participant 3.** During baseline, Participant 3’s attentional awareness level showed a mean of 54.8 (range: 47 – 58; SD: 5.2), with an ascending trend. Across intervention, Participant 3’s awareness decreased slightly, with a mean of 53.7 (range: 50 – 59; SD: 4.7). In follow-up, Participant 3’s attentional awareness remained consistent, with a mean of 56.4 (range: 50- 61; SD: 4.7). There were 33% non-overlapping data between baseline and intervention, and 40% non-overlapping data between baseline and follow-up. The changes in Participant 3’s attentional awareness at intervention and follow-up did not meet clinical significance ($\bar{X}_{\text{in},\text{fu}} > 65.2$). Participant 3’s awareness remained relatively constant across the study. The lowered intervention level might show increased consciousness in regards to the level of attentional awareness. Regardless, neither a basic effect nor a delayed effect was shown.
Participant 4. Across baseline, Participant 4’s awareness level showed a mean of 22.0 (range: 21 – 23; SD: 1.0), with a slightly increasing trend. In intervention, Participant 4’s attentional awareness increased to a mean of 38.6 (range: 19 – 76; SD: 22.2). The sum score of 76 was an extreme outlier in intervention. During follow-up, Participant 4’s attentional awareness decreased to a mean of 27.3 (range: 19 – 35; SD: 8.0). There were 80% non-overlapping data between baseline and intervention, and 66.7% non-overlapping data between baseline and follow-up phases. The changes in Participant 4’s attentional awareness at both intervention and follow-up met clinical significance ($\bar{X}_{(in, fu)} > 24.0$). Although awareness did increase and met clinical significance across the phases, the actual change across the phases of the study was minimal. Therefore, neither a basic effect nor a delayed effect was shown.

Participant 5. Across baseline, Participant 5’s awareness level showed a mean of 57.3 (range: 56 – 59; SD: 1.5). In intervention, Participant 5’s awareness decreased to a mean of 53.0 (range: 48 – 57; SD: 3.7). During follow-up, attentional awareness increased slightly to a mean of 56.3 (range: 55 – 57; SD: 1.2) returning to the baseline level. There were no non-overlapping data between baseline and intervention, and between baseline and follow-up. Clinical significance was not completed due to the baseline levels being higher than either intervention or follow-up levels. Participant 5’s awareness remained reduced and constant across the phases. The decreases in levels might be due to Participant 5 gaining an increased consciousness about mindfulness, meaning that attentional awareness is improved for the experience of mindfulness itself. Regardless, neither a basic effect nor a delayed effect was evidenced.
**Cohort 2.** During baseline, Cohort 2’s attentional awareness levels had a mean of 53.9 (range: 34.0 – 71.0; SD: 12.1). In intervention, Cohort 2’s awareness levels remained consistent, with a mean of 54.4 (range: 42.0 – 60.0; SD: 5.4). Although follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, Cohort 2’s awareness remained the same, with a mean of 54.6 (range: 48.0 – 59.0; SD: 4.1). The changes in Cohort 2’s attentional awareness levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)}>78.1$). Cohort 2’s attentional awareness levels were relatively consistent across the phases, therefore neither a basic effect nor a delayed effect was shown.

**Participant 6.** Across baseline, Participant 6’s attentional awareness showed a mean of 43.9 (range: 34 – 50; SD: 5.4), with an ascending trend. In intervention, Participant 6’s attentional awareness increased to a mean of 51.6 (range: 42 – 59; SD: 6.4), with an ascending trend. During follow-up, Participant 6’s attentional awareness increased further to a mean of 54.6 (range: 48 – 59; SD: 4.1). There were 60% non-overlapping data between baseline and intervention, and 80% non-overlapping between baseline and follow-up phases. Neither the change in Participant 6’s awareness at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)}>54.7$). Although Participant 6 evidenced increases in awareness over the phases, these gains began in the baseline phase, and did not meet clinical significance. Thus, neither a basic effect nor a delayed effect was observed.

**Participant 7.** Across baseline, Participant 7’s attentional awareness level showed a mean of 65.3 (range: 56 – 71; SD: 4.8). In intervention, Participant 7’s attentional awareness level decreased to a mean of 57.2 (range: 54 – 60; SD: 2.4). Participant 7 had
no follow-up data. There were no non-overlapping data between baseline and intervention phases. Clinical significance was not completed due to the baseline level being higher than the intervention levels. Overall, Participant 7’s attentional awareness levels decreased slightly over the phases. Participant 7 might have gained increased attentional awareness of mindfulness itself, and this might have caused the decrease in the intervention levels. Regardless, no basic effect was shown.

**Cohort 3.** During baseline, Cohort 3’s awareness levels had a mean of 52.9 (range: 31.0 – 81.0; SD: 11.3). In intervention, Cohort 3’s awareness levels remained consistent, with a mean of 54.1 (range: 25.0 – 84.0; SD: 14.6). Although the follow-up did not have the full complement of participants, with only 4 of 6 participants completing scales in this phase, Cohort 3’s awareness levels increased to a mean of 60.8 (range: 35.0 – 82.0; SD: 16.7). The changes in Cohort 3’s awareness levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)}>73.1$). Cohort 3’s attentional awareness had limited change, therefore did not meet clinical significant levels. Thus, neither a basic effect nor a delayed effect was demonstrated.

**Participant 8.** During baseline, Participant 8’s attentional awareness level had a mean of 52.1 (range: 47 – 59; SD: 3.9). Across intervention, Participant 8’s attentional awareness level decreased slightly to a mean of 49.2 (range: 45 – 53; SD: 3.3). Participant 8 had no follow-up data. There were no non-overlapping data between baseline and intervention. Clinical significance was not completed due to the baseline level being higher than the intervention level. Overall, mindful attentional awareness remained consistent over the study. Participant 8 also might have gained an increased
attentional awareness of mindfulness itself, which might have caused the decrease in the intervention level. Thus, no basic effect was shown.

**Participant 9.** Across baseline, Participant 9’s attentional awareness had a mean of 48.1 (range: 38 – 58; SD: 6.4), with a descending trend. During intervention, Participant 9’s attentional awareness increased to a mean of 59.0 (range: 51 – 68; SD: 8.5), with an ascending trend. Participant 9 had no follow-up data. There were 33% non-overlapping between baseline and intervention. The change in Participant 9’s awareness at intervention did not meet clinical significance ($\bar{X}_{(in)} > 60.9$). Although there was overlap, Participant 9’s awareness increased in intervention, and evidenced a desired change in trend. Thus, a weaker basic effect was shown.

**Participant 10.** Across baseline, Participant 10’s attentional awareness level showed a mean of 38.7 (range: 31 – 46; SD: 7.5). In intervention, Participant 10’s attentional awareness level increased slightly with a mean of 39.5 (range: 25 - 65; SD: 17.8), and an ascending trend. During follow-up, Participant 10’s attentional awareness level increased to a mean of 67 (range: 65- 69; SD: 2.8). There were 25% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. The change in Participant 10’s awareness at follow-up met clinical significance ($\bar{X}_{(in;fu)} > 53.7$). Participant 10’s mindful attentional awareness increased to significant levels in follow-up. Thus, a delayed effect was shown.

**Participant 11.** Across baseline, Participant 11’s attentional awareness level had a mean of 42.3 (range: 39 – 46; SD: 2.8). In intervention, Participant 11’s attentional awareness level remained constant, with a mean of 42.6 (range: 38 – 46; SD: 3.2). During follow-up, Participant 11’s attentional awareness level remained consistent, with
a mean of 41.5 (range: 35 – 48; SD: 9.2). There were no non-overlapping data between baseline and intervention, and 50% non-overlapping data between baseline and follow-up. The change in Participant 11’s attentional awareness at intervention and follow-up did not meet clinical significance ($\bar{X}_{\text{in;fu}} > 47.9$). Participant 11’s mindful attentional awareness levels remained consistent over the phases. Thus, neither a basic effect nor a delayed effect was shown.

**Participant 12.** Across baseline, Participant 12’s attentional awareness level showed a mean of 71.0 (range: 64.0 – 81.0; SD: 5.7), with an ascending trend. In intervention, Participant 12’s attentional awareness level further increased to a mean of 75.8 (range: 66.0 – 84.0; SD: 7.4), and with an ascending trend. In follow-up, Participant 12’s awareness level increased to 82.0. There were 25% non-overlapping data between baseline and intervention, and 100% non-overlapping between baseline and follow-up. Neither the changes in Participant 12’s awareness at intervention nor follow-up met clinical significance ($\bar{X}_{\text{in;fu}} > 82.4$). Participant 12’s increase in attentional awareness began in the baseline phase and continued across the intervention and follow-up phases. Thus, neither a basic effect, nor a delayed effect was shown.

**Participant 13.** Across baseline, Participant 13’s attentional awareness level showed a mean of 59.9 (range: 56 – 65; SD: 3.8). In intervention, Participant 13’s attentional awareness level remained constant, with a mean of 61.8 (range: 55 – 66; SD: 4.4). In follow-up, Participant 13’s awareness level increased to a score of 66 during one measurement. There were 20% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. Neither the changes in Participant 13’s awareness at intervention nor follow-up met clinical significance
(\(X_{in,fu}\) > 67.5). Participant 13’s awareness increased over the study, but not to significant levels. Thus, neither a basic effect, nor a delayed effect was shown.

**Cohort 4.** During baseline, Cohort 4’s attentional awareness levels showed a mean of 60.6 (range: 42.0 – 80.0; SD: 11.6). In intervention, Cohort 4’s attentional awareness levels decreased slightly, to a mean of 58.4 (range: 48.0 – 70.0; SD: 7.3). In follow-up, Cohort 4’s attentional awareness increased to a mean of 68.7 (range: 53.0 – 80.0; SD: 10.0). The changes in Cohort 4’s attentional awareness levels at intervention and follow-up did not meet clinical significance (\(X_{(in,fu)}\) > 83.8). Although there were increases in Cohort 4’s attentional awareness levels at follow-up, the changes did not meet clinical significance. Thus, neither a basic effect nor a delayed effect was demonstrated.

**Participant 14.** Across baseline, Participant 14’s attentional awareness level showed a mean of 53.9 (range: 50 – 62; SD: 4.3), with a decreasing trend. In intervention, Participant 14’s attentional awareness level remained consistent with a mean of 51.8 (range: 50 – 53; SD: 1.1). During follow-up, Participant 14’s attentional awareness level increased somewhat to a mean of 56.7 (range: 53 – 62; SD: 4.7). There were no non-overlapping data between baseline and intervention, and between baseline and follow-up phases. Neither the changes in Participant 14’s awareness at intervention nor follow-up met clinical significance (\(X_{(in,fu)}\) > 62.5). Participant 14’s attentional awareness remained consistent over the study. Thus, neither a basic effect nor a delayed effect was shown.

**Participant 15.** Across baseline, Participant 15’s attentional awareness level had a mean of 70.0 (range: 61 – 80; SD: 6.6). In intervention, Participant 15’s attentional
awareness level decreased to a mean of 61.5 (range: 51 – 68; SD: 5.6). During follow-up, Participant 15’s attentional awareness level increased to a mean of 79.0 (range: 78 – 80; SD: 1.0). There were no non-overlapping data both between baseline and intervention, and between baseline and follow-up phases. Neither the changes in Participant 15’s at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} > 83.2$). Participant 15’s awareness decreased in the intervention phase possibly due to a change in health. Mindfulness awareness increased in follow-up, but not to significant levels. Thus, neither a basic effect nor a delayed effect was shown.

Participant 16. Across baseline, Participant 16’s attentional awareness level had a mean of 44.3 (range: 42 – 49; SD: 4.0). In intervention, Participant 16’s attentional awareness level increased to a mean of 61.2 (range: 48 – 70; SD: 9.1). During follow-up, Participant 16’s attentional awareness level further increased to a mean of 69.8 (range: 62 – 78; SD: 7.0). There were 80% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. The changes in Participant 16’s attentional awareness levels at both intervention and follow-up phase met clinical significance ($\bar{X}_{(in;fu)} > 52.3$). Mindful attentional awareness significantly increased across the phases. Thus, both a basic effect and a delayed effect were evidenced.

**MAAS summary.** The Mindful Attentional Awareness Scale measures attentional awareness. When reviewing increases in mindful attentional awareness across baseline and intervention phases, only Participants 16 evidenced a basic effect. Participant 9 evidenced a weaker basic effect. When reviewing increases in mindful attentional awareness across baseline and follow-up phases, Participants 10 and 16 evidenced
delayed effects. None of the Cohorts evidenced basic or delayed effects. Thus, there were some increases in mindful awareness for some of the participants.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

At the level of the Cohort, there were no effects evidenced, therefore no functional relationships could be assessed. At the individual participant level, there were no functional relationships established. Thus, out of a possible seven functional relationships, none were established. Thus, there were no functional relationships established between the IMAG and increases in mindful awareness.

**Five Facet Mindfulness Questionnaire- Act with Awareness (FF-AA: Baer et al., 2006).** Figure 5.9 shows the sum scores for the 16 participants. The FF-AA is one of five sub-scales of the Five Facet Mindfulness Questionnaire. This scale assesses acting with awareness, and has a range of 32, with a minimum score of 8 and a maximum score of 40. As the scores get larger, acting with awareness levels increase. Thus, the optimal trend is an increasing trend, which would indicate that the mindfulness quality of acting with awareness is progressively increasing over time.

**Total group.** During baseline, the 16 participants’ acting with awareness levels showed a mean of 22.0 (range: 8.6 – 33.3; SD: 6.4). In intervention, the participants’ acting with awareness levels remained constant, with a mean of 22.6 (range: 9.8 – 35.0;
Figure 5.9. Multiple baselines across cohorts and phases for the *Five Facet Mindfulness Questionnaire: Acting with Awareness*’s sum scores for the 16 participants. The *Five Facet Mindfulness Questionnaire: Acting with Awareness* measures the mindful quality of acting with awareness. Higher scores represent higher amounts of this mindful quality.
SD: 6.2). During follow-up, only 11 of 16 participants completed scales in this phase. The participants’ acting with awareness levels increased to a mean of 26.7 (range: 13.3 – 40.0; SD: 7.4). However, neither the changes in acting with awareness at intervention nor follow-up met clinical significance ($X_{(in;fu)} > 34.8$). Although the participants’ acting with awareness levels increased slightly in follow-up, these increases did not meet a clinically significant level. Thus, neither a basic effect, nor a delayed effect was observed.

**Cohort 1.** During baseline, Cohort 1’s acting with awareness levels had a mean of 16.4 (range: 8.0 – 27.0; SD: 7.1). In intervention, Cohort 1’s acting with awareness levels increased slightly to a mean of 17.8 (range: 8.0 – 28.0; SD: 7.9). Although follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s acting with awareness further increased to a mean of 20.7 (range: 8.0 – 26.0; SD: 5.3). The changes in Cohort 1’s acting in awareness at intervention and follow-up did not meet clinical significance ($X_{(in;fu)} > 30.6$). Cohort 1’s acting with awareness was relatively consistent across the phases, therefore neither a basic effect nor a delayed effect was observed.

**Participant 1.** Across baseline, Participant 1’s acting with awareness level showed a mean of 20.5 (range: 18 – 22; SD: 1.7), with an ascending trend. Across intervention, Participant 1’s acting with awareness level increased to a mean of 25.5 (range: 23 – 28; SD: 3.5), with a descending trend. There were 100% non-overlapping data between baseline and intervention. The change in Participant 1’s acting with awareness at intervention met clinical significance ($X_{(in)} > 23.9$). There were no follow-up data. Thus, these data suggest that increases in the level of acting with awareness for
Participant 1 began in baseline, then reversed its trend in intervention. Thus, no basic effect was shown.

Participant 2. Across baseline, Participant 2’s acting with awareness level showed a mean of 8.6 (range: 8 – 12; SD: 1.5). In intervention, Participant 2’s acting with awareness level remained consistent, with a mean of 9.8 (range: 8 – 15; SD: 3.0). There were 20% non-overlapping data between baseline and intervention phases. The change in Participant 2’s acting with awareness at intervention did not meet clinical significance ($\overline{X}_{(in)} > 11.6$). There were no follow-up data. For Participant 2, acting with awareness levels remained consistently low across the study. Thus, there was no basic effect shown.

Participant 3. Across baseline, Participant 3’s acting with awareness level showed a mean of 22.3 (range: 20 – 23; SD: 1.5), with a slightly ascending trend. In intervention, Participant 3’s acting with awareness increased slightly, to a mean of 24.7 (range: 23 – 27; SD: 2.1). During follow-up, Participant 3’s acting with awareness showed little change with a mean of 23.4 (range: 20- 26; SD: 2.8). There were 66.7% non-overlapping data between baseline and intervention, and 60% non-overlapping data between baseline and follow-up. Neither the changes in acting with awareness in intervention nor follow-up met the criteria for clinical significance ($\overline{X}_{(in;fu)} > 25.3$).

Participant 3’s acting with awareness showed a slightly increasing trend during baseline, which levelled off during intervention and follow-up. Little to no improvements were seen across the phases. Consequently, there was no basic effect or delayed effect observed.
Participant 4. Across baseline, Participant 4’s acting with awareness level had a mean of 12 (range: 9 – 15; SD: 3.0). In intervention, Participant 4’s acting with awareness level decreased slightly to a mean of 10 (range: 8 – 12; SD: 2.0). During follow-up, Participant 4’s acting with awareness level increased somewhat to a mean of 13.3 (range: 8 – 17; SD: 4.7). There were no non-overlapping data between baseline and intervention, and 33% non-overlapping between baseline and follow-up. Neither the changes in acting with awareness level at intervention nor follow-up met criteria for clinical significance ($X_{(in;fu)}>18$). For Participant 4, acting with awareness levels remained consistently low across the study. The lower level in intervention might suggest an increase in consciousness about not acting with awareness. Regardless, neither a basic effect nor a delayed effect was observed.

Participant 5. Across baseline, Participant 5’s acting with awareness level had a mean of 25.7 (range: 25 – 27; SD: 1.2). In intervention, Participant 5’s acting with awareness level decreased slightly, with a mean of 24.5 (range: 24 – 25; SD: 0.6). Across follow-up, Participant 5’s acting with awareness decreased to a mean of 22.8 (range: 20 – 25; SD: 2.2). There were no non-overlapping data both between baseline and intervention, and baseline and follow-up phases. Clinical significance was not calculated because baseline levels were higher than the other phase levels. Participant 5 either had a decline in acting with awareness across the phases, or increased consciousness of a lack of acting with awareness. Regardless, neither a basic effect nor a delayed effect was observed.

Cohort 2. During baseline, Cohort 2’s acting with awareness levels showed a mean of 22.3 (range: 17.0 – 29.0; SD: 4.1). In intervention, Cohort 2’s acting with
awareness levels slightly increased, with a mean of 23.9 (range: 17.0 – 33.0; SD: 4.9). Although the follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, Cohort 2’s acting with awareness showed a slightly decrease to a mean of 21.7 (range: 16.0 – 32.0; SD: 5.5). The changes in Cohort 2’s awareness at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 30.5$). Cohort 2’s acting with awareness was relatively consistent across the phases, therefore neither a basic effect nor a delayed effect was observed.

**Participant 6.** Across baseline, Participant 6’s acting with awareness level showed a mean of 18.9 (range: 17 – 20; SD: 1.2). In intervention, Participant 6’s acting with awareness level increased to a mean of 23.6 (range: 16 – 32; SD: 6.7), with an ascending trend. Across follow-up, Participant 6’s acting with awareness level decreased somewhat to a mean of 21.7 (range: 16 – 32; SD: 5.5), with a slightly decreasing trend. There were 57.1% non-overlapping data between baseline and intervention, and 50% non-overlapping data between baseline and follow-up. Both the changes in Participant 6’s acting with awareness at intervention or follow-up met clinical significance ($\bar{X}_{(in;fu)} > 21.3$). Although there were some overlapping data, Participant 6’s level of acting with awareness were clinically significant at both intervention and follow-up, with an ascending trend at intervention. Thus, there was a weaker basic effect at intervention that did not hold through the follow-up phase.

**Participant 7.** Across baseline, Participant 7’s acting with awareness level showed a mean of 26.1 (range: 23 – 29; SD: 2.3). In intervention probes, Participant 7’s acting with awareness level decreased to a mean of 24.1 (range: 20 – 27; 2.5). Participant 7 had no follow-up data. There were no non-overlapping data between baseline and
intervention. Clinical significance was not calculated because the baseline levels were higher than the intervention levels. This decline in levels between baseline and intervention suggests that either Participant 7’s acting with awareness decreased, or this participant’s consciousness of a lack of acting with awareness increased. Thus, no basic effect was shown.

**Cohort 3.** During baseline, Cohort 3’s acting with awareness had a mean of 23.2 (range: 12.0 – 37.0; SD: 6.6). In intervention, Cohort 3’s acting with awareness remained consistent, with a mean of 24.2 (range: 10.0 – 39.0; SD: 7.5). Although the follow-up did not have the full complement of participants, with only 4 of 6 participants completing scales in this phase, Cohort 3’s acting with awareness increased to a mean of 30.5 (range: 23.0 – 40.0; SD: 6.3). The changes in Cohort 3’s acting with awareness at intervention and follow-up did not meet clinical significance ($X_{(in, fu)} > 36.4$). Although Cohort 3’s acting with awareness increased at follow-up, this change did not meet clinical significance. Therefore, neither a basic effect nor a delayed effect was shown.

**Participant 8.** Across baseline, Participant 8’s acting with awareness level had a mean of 21.9 (range: 14 – 33; SD: 6.4). In intervention, Participant 8’s acting with awareness level remained consistent, with a mean of 22.3 (range: 20 – 24; SD: 1.7). Participant 8 had no follow-up data. There were no non-overlapping data between baseline and intervention. The changes in Participant 8’s acting with awareness in intervention did not meet clinical significance criteria ($X_{(in)} > 34.7$). Thus, no basic effect was shown.

**Participant 9.** Across baseline, Participant 9’s acting with awareness level had a mean of 25.6 (range: 24 – 32; SD: 3.0), with a descending trend. In intervention,
Participant 9’s acting with awareness increased slightly to a mean of 27 (range: 23 – 30; SD: 2.9). Participant 9 had no follow-up data. There were no non-overlapping data between baseline and intervention phases. The change in Participant 9’s acting with awareness did not meet clinical significance criteria ($\bar{X}_{(in)} > 31.6$). For Participant 9, acting with awareness levels remained relatively consistent across the study. Thus, no basic effect was shown.

Participant 10. Across baseline, Participant 10’s acting with awareness level showed a mean of 21.3 (range: 18 – 27; SD: 4.9) with a decreasing trend. In intervention, Participant 10’s acting with awareness remained consistent, with a mean of 20.5 (range: 16 - 30; SD: 6.5), however an ascending trend was evidenced. Across follow-up probes, Participant 10’s acting with awareness increased to a mean of 33.5 (range: 33 - 34; SD: 1.0). There were 25% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. The change in Participant 10’s acting with awareness in follow-up met clinical significance ($\bar{X}_{(in;fu)} > 31.1$). Participant 10’s acting with awareness level decreased slightly in intervention, but the trend changed in the desired direction. Also, there was a significant increased in level at follow-up. Thus, both a weaker basic effect and a delayed effect were shown.

Participant 11. Across baseline, Participant 11’s acting with awareness level had a mean of 15.6 (range: 12 – 22; SD: 3.6). In intervention, Participant 11’s acting with awareness level increased slightly to a mean of 17 (range: 10 – 29; SD: 8.3). Across follow-up, Participant 11’s acting with awareness level further increased to a mean of 26.5 (range: 26 – 27; SD: 1.0). There were 25% non-overlapping data between baseline and intervention, and 100% non-overlapping between baseline and follow-up. The
change in Participant 11’s acting with awareness level at follow-up met clinical
significance ($\bar{X}_{(in;fu)}>22.8$). In follow-up, Participant 11’s acting with awareness level
stabilized, and reached clinical significance. Thus, a delayed effect was shown.

**Participant 12.** Across baseline, Participant 12’s acting with awareness level
showed a mean of 33.3 (range: 29 – 37; SD: 2.7), with a decreasing trend. In
intervention, Participant 12’s acting with awareness level increased slightly to a mean of
35 (range: 29 – 39; SD: 4.0), with an ascending trend. In follow-up, one measurement
showed that Participant 12’s acting with awareness further increased to a score of 40.
There were 20% non-overlapping data between baseline and intervention, and 100% non-
overlapping data between baseline and follow-up. The change in Participant 12’s acting
with awareness at follow-up met clinical significance ($\bar{X}_{(in;fu)}>38.7$). Participant 12’s
acting with awareness levels were consistently high across the phases, but showed an
increasing trend during intervention, which appeared to maintain at follow-up.
Therefore, a delayed effect was shown.

**Participant 13.** Across baseline, Participant 13’s acting with awareness showed a
mean of 21.9 (range: 19 – 24; SD: 1.9), with a decreasing trend. In intervention,
Participant 13’s acting with awareness remained consistent, with a mean of 21 (range: 16
– 28; SD: 4.7), but with an ascending trend. In follow-up, Participant 13’s acting with
awareness level further increased to a score of 23. There were 20% non-overlapping data
between baseline and intervention, and no non-overlapping data between baseline and
follow-up. The changes in Participant 13’s acting with awareness at intervention or
follow-up did not meet clinical significance ($\bar{X}_{(in;fu)}>25.7$). Although there was a shift in
trend in a desired direction at intervention, Participant 13’s level for acting with
awareness remained relatively consistent across the phases. Thus, neither a basic effect nor a delayed effect was evidenced.

Cohort 4. During baseline, Cohort 4’s acting with awareness showed a mean of 27.4 (range: 20.0 – 35.0; SD: 4.5). In intervention, Cohort 4’s acting with awareness levels decreased slightly to a mean of 25.6 (range: 19.0 – 31.0; SD: 3.7). Across follow-up, Cohort 4’s acting with awareness increased to a mean of 30.2 (range: 24.0 – 37.0; SD: 4.6). The changes in Cohort 4’s awareness levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in, fu)}>39.4$). Cohort 4’s acting with awareness levels remained relatively consistent over the phases, thus neither a basic effect nor a delayed effect was evidenced.

Participant 14. Across baseline, Participant 14’s acting with awareness level showed a mean of 24.7 (range: 24 – 26; SD: 0.8). In intervention, Participant 14’s acting with awareness level remained the same, with a mean of 24.7 (range: 24 – 26; SD: 1.2). Across follow-up, Participant 14’s acting with awareness level remained relatively the same, with a mean of 24.3 (range: 24 – 25; SD: 0.5). There were no non-overlapping data both between baseline and intervention, and between baseline and follow-up phases. Clinical significance was not calculated due to the lack of change in levels. Participant 14’s acting with awareness remained consistent across the study, thus neither a basic effect nor a delayed effect was evidenced.

Participant 15. During baseline, Participant 15’s acting with awareness level had a mean of 30.9 (range: 24 – 35; SD: 3.6). Across intervention, Participant 15’s acting with awareness level decreased to a mean of 24 (range: 19 – 29; SD: 5), with a descending trend. Across follow-up, Participant 15’s acting with awareness level
increased to a mean of 33.3 (range: 30 – 36; SD: 2.5). There were no non-overlapping data between baseline and intervention, and 25% between baseline and follow-up. The changes in Participant 15’s acting with awareness levels at intervention or follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 38.2$). Participant 15’s acting with awareness level decreased in intervention, yet increased to resume the high baseline level in the follow-up phase. Thus, neither a basic effect nor a delayed effect was evidenced.

**Participant 16.** Across baseline, Participant 16’s acting with awareness had a mean of 22.0 (range: 20 – 23; SD: 1.7). In intervention, Participant 16’s acting with awareness level increased to a mean of 27.2 (range: 23 – 31; SD: 3.9), with an ascending trend. Across follow-up, Participant 16’s acting with awareness level increased further, to a mean of 32.4 (range: 29 – 37; SD: 3.0). There were 60% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. The changes in Participant 16’s acting with awareness at both intervention and follow-up were clinical significance ($\bar{X}_{(in;fu)} > 25.5$). There were significant increases across the phases in acting in awareness for Participant 16. Thus, both a weaker basic and a delayed effect were shown.

**FF-AA summary.** The Five Facet Mindfulness Questionnaire- Acting with Awareness assesses the participant’s awareness while they proceed through their day. When reviewing acting with mindful awareness across baseline and intervention phases, Participants 6, 10, and 16 showed weaker basic effects. When reviewing acting with mindful awareness across baseline and follow-up phases, Participants 10, 11, 12, and 16 evidenced delayed effects. None of the Cohorts evidenced basic or delayed effects.
Thus, there was some increase in a few participants’ proclivity to act with awareness, particularly in follow-up.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

At the level of the Cohort, there were no effects evidenced, therefore no functional relationships was evidenced. At the individual participant level, there was one weaker functional relationship established by weaker basic effects (See Participants 6, 10, and 16). Thus, out of a possible seven functional relationships, one were established. Thus, there was one weaker functional relationship established between the IMAG and increases in mindful acting with awareness.

**Five Facet Mindfulness Questionnaire-Describing (FF-D: Baer et al., 2006).**

Figure 5.10 shows the sum scores for the 16 participants. The FF-D is one of five subscales in the Five Facet Mindfulness Questionnaire. This scale assesses mindful describing or articulating with words one’s experiences, thoughts, feelings, or sensations. It has a range of 32, with a minimum score of 8 and a maximum score of 40. As the scores get larger, mindful describe levels increase. Thus, the optimal trend is an increasing trend, which would indicate that the mindfulness quality of describing experiences, thoughts, or feelings is progressively increasing over time.
Figure 5.10. Multiple baselines across cohorts and phases for the Five Facet Mindfulness Questionnaire: Describing’s sum scores for the 16 participants. The Five Facet Mindfulness Questionnaire: Describing measures the mindful quality of describing experiences, thoughts, or feelings. Higher scores represent higher amounts of this mindful quality.
**Total group.** During baseline, the 16 participants’ levels of mindful describing showed a mean was 26.8 (range: 14 – 39; SD: 7.1). In intervention, the participants’ mindful describing levels remained constant, with a mean of 27.8 (range: 13.4 – 40.0; SD: 8.0). During follow-up, only 11 of 16 participants completed scales in this phase. The participants’ mindful describing levels slightly increased to a mean of 29.4 (range: 21.0 – 39.0; SD: 5.6). Neither the changes in mindful describing at intervention nor follow-up met clinical significance ($X_{(in;fu)} > 40.0$). The overall means for mindful describing remained relatively consistent over the study. Thus, neither a basic effect nor a delayed effect was demonstrated.

**Cohort 1.** During baseline, Cohort 1’s mindful describing levels had a mean of 21.5 (range: 8.0 – 33.0; SD: 6.9). In intervention, Cohort 1’s mindful describing levels increased to a mean of 24.1 (range: 8.0 – 34.0; SD: 8.4). Although follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s mindful describing levels further increased to a mean of 28 (range: 17.0 – 33.0; SD: 4.8). The changes in Cohort 1’s mindful describing levels at intervention and follow-up did not meet clinical significance ($X_{(in;fu)} > 35.3$). Although there were increases in Cohort 1’s describing levels, the changes did not meet the clinically significant level. Thus, neither a basic effect nor a delayed effect was observed.

**Participant 1.** Across baseline, Participant 1’s mindful describing level showed a mean of 22.3 (range: 19 – 27; SD: 3.6), with an ascending trend. In intervention, Participant 1’s mindful describing level increased to a mean of 26.5 (range: 26 – 27; SD: 0.7). There were no non-overlapping data between baseline and intervention. The change at Participant 1’s mindful describing at intervention did not meet clinical
significance ($\bar{X}_{(in)} > 29.5$). There were no follow-up data. Although Participant 1’s mindful describing levels slightly increased over the study, the change began in baseline, but stabilized in intervention. Thus, no basic effect was observed.

**Participant 2.** Across baseline, Participant 2’s mindful describing level showed a mean of 14.0 (range: 8 – 20; SD: 3.8). In intervention, Participant 2’s mindful describing level remained consistent, with a mean of 13.4 (range: 8 – 24; SD: 6.2), but with an ascending trend. There were 20% non-overlapping data between baseline and intervention phases. Clinical significance was not calculated because the baseline level was higher than intervention. There was no follow-up data. Participant 2’s mindful describing levels remained consistent over the study. Thus, no basic effect was evidenced.

**Participant 3.** Across baseline, Participant 3’s mindful describing level showed a mean 27.5 (range: 26 – 28; SD: 1.0). In intervention, Participant 3’s mindful describing level increased to a mean of 30.3 (range: 29 – 32; SD: 1.5). During follow-up, Participant 3’s mindful describing level decreased slightly to a mean of 29.2 (range: 28-31; SD: 1.6). There were 100% non-overlapping data between baseline and intervention, and 40% non-overlapping data between baseline and follow-up phases. The change in Participant 3’s mindful describing at intervention met clinical significance ($\bar{X}_{(in;fu)} > 29.5$). Although the change at intervention met many of the change criteria, Participant 3’s level of mindful describing showed only small improvements during intervention. Thus, neither a basic nor delayed effect was shown.

**Participant 4.** Across baseline, Participant 4’s mindful describing level showed a mean of 21 (range: 17 – 25; SD: 4.0), with an ascending trend. In intervention,
Participant 4’s mindful describing level increased somewhat to a mean of 23.3 (range: 22 – 26; SD: 2.3). During follow-up, Participant 4’s mindful describing level returned to the baseline level, with a mean of 21.0 (range: 17 – 24; SD: 3.6). There were 33% non-overlapping data between baseline and intervention, and no non-overlapping data between baseline and follow-up phases. Neither the changes in Participant 4’s mindful describing at intervention nor follow-up phases met clinical significance ($\bar{X}_{\text{in;fu}} > 29$). Participant 4’s mindful describing levels remained relatively consistent across the study. Thus, neither a basic effect nor a delayed effect was observed.

**Participant 5.** Across baseline, Participant 5’s mindful describing level showed a mean of 30.3 (range: 27 – 33; SD: 3.1), with a descending trend. During intervention, Participant 5’s mindful describing level increased slightly to a mean of 32 (range: 30 – 34; SD: 1.6). In follow-up, Participant 5’s mindful describing level remained consistent with the intervention phase, with a mean of 31.8 (range: 30 – 33; SD: 1.3). There were 25% non-overlapping data between baseline and intervention, and no non-overlapping data between baseline and follow-up phases. Neither the changes in Participant 5’s mindful describing at intervention nor follow-up met clinical significance ($\bar{X}_{\text{in;fu}} > 36.5$). Participant 5’s mindful describing levels remained consistently high over the study. Thus, neither a basic effect nor a delayed effect was observed.

**Cohort 2.** During baseline, Cohort 2’s mindful describing levels had a mean of 27.6 (range: 18.0 – 36.0; SD: 5.6). In intervention, Cohort 2’s mindful describing levels remained consistent, with a mean of 27.7 (range: 16.0 – 39.0; SD: 7.5). Although follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, Cohort 2’s levels of mindful describing decreased to a
mean of 23.5 (range: 21.0 – 25.0; SD: 1.4). Thus, mindful describing for Cohort 2 decreased across the phases. Therefore, neither a basic effect, nor a delayed effect was observed.

Participant 6. Across baseline, Participant 6’s mindful describing level showed a mean of 24.3 (range: 18 – 29; SD: 3.8), with an ascending trend. In intervention, Participant 6’s mindful describing level decreased to a mean of 21.6 (range: 16 – 25; SD: 3.6). Across follow-up, Participant 6’s mindful describing increased slightly to a mean of 23.5 (range: 21 – 25; SD: 1.4). There were no non-overlapping data both between baseline and intervention, and between baseline and follow-up phases. Neither the changes in Participant 6’s mindful describing at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} > 31.9$). Participant 6’s mindful describing remained relatively consistent over the study. Therefore, neither a basic effect nor a delayed effect was observed.

Participant 7. Across baseline, Participant 7’s mindful describing level showed a mean of 31.4 (range: 22 – 36; SD: 4.9). In intervention, Participant 7’s mindful describing level increased slightly to a mean of 33.9 (range: 27 – 39; SD: 4.6). Participant 7 had no follow-up data. There were 42.9% non-overlapping data between baseline and intervention. Neither changes in Participant 7’s mindful describing at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} > 40.0$). Overall, Participant 7’s mindful describing levels remained high and variable over the phases. Thus, a basic effect was not observed.

Cohort 3. During baseline, Cohort 3’s mindful describing levels had a mean of 31.9 (range: 17.0 – 40.0; SD: 7.2). In intervention, Cohort 3’s mindful describing levels
increased slightly to a mean of 33.4 (range: 14.0 – 40.0; SD: 8.0). Although the follow-up did not have the full complement of participants, with only 4 of 6 participants completing scales in this phase, Cohort 3’s mindful describing levels remained consistent at a mean of 34.2 (range: 28.0 – 40.0; SD: 4.6). Cohort 3’s mindful describing levels were relatively stable across the phases, therefore neither a basic effect nor a delayed effect was observed.

Participant 8. Across baseline, Participant 8’s mindful describing level had a mean of 21.7 (range: 17 – 24; SD: 2.4). During intervention, Participant 8’s mindful describing level decreased to a mean of 17.8 (range: 14 – 22; SD: 3.5). Participant 8 had no follow-up data. There were no non-overlapping data between baseline and intervention. Clinical significance was not calculated because the baseline level was higher than the intervention level. For Participant 8, mindful describing decreased over the study; or, Participant 8 might have become conscious of a lack of consistent mindful describing. Regardless, no basic effect was evidenced.

Participant 9. Across baseline, Participant 9’s mindful describing level had a mean of 34.1 (range: 31 – 38; SD: 3.1). During intervention, Participant 9’s mindful describing level decreased to a mean of 32.8 (range: 31 – 36; SD: 2.5). Participant 9 had no follow-up data. There were no non-overlapping data between baseline and intervention phases. Clinical significance was not calculated because the baseline level was higher than the intervention level. For Participant 9, mindful describing levels decreased over the study; or, Participant 9 might have become conscious of a lack of consistent mindful describing. Regardless, no basic effect was evidenced.
Participant 10. Across baseline, Participant 10’s mindful describing level showed a mean of 31.3 (range: 28 – 35; SD: 3.5), with a slight ascending trend. During intervention, Participant 10’s mindful describing level increased, with a mean of 37.3 (range: 34 - 40; SD: 3.2), and an ascending trend. Across follow-up, Participant 10’s mindful describing level further increased to a mean of 39.0 (38 - 40; SD: 1.4). There were 75% non-overlapping data between baseline and intervention phases, and 100% non-overlapping data between baseline and follow-up phases. The changes in Participant 10’s mindful describing in follow-up met clinical significance ($\bar{X}_{(in;fu)} > 38.3$). Although Participant 10’s mindful describing progressively increased over the phases, this change appears to have begun in baseline. Thus, neither a basic effect nor a delayed effect was evidenced.

Participant 11. Across baseline, Participant 11’s mindful describing level had a mean of 26.7 (range: 22 – 31; SD: 3.5), with an ascending trend. In intervention, Participant 11’s mindful describing level increased to a mean of 29.3 (range: 28 – 33; SD: 2.5). During follow-up, mindful describing level further increased to a mean of 31.5 (range: 31 – 32; SD: 0.7). There were 25% non-overlapping data between baseline and intervention phases, and 50% non-overlapping between baseline and follow-up phases. Neither the changes in Participant 11’s mindful describing levels at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} > 33.7$). Participant 11’s mindful describing increased over the study, but these improvements began in baseline and did not meet the change criteria. Thus, neither a basic effect nor a delayed effect was evidenced.

Participant 12. Across baseline, Participant 12’s mindful describing level showed a mean of 39.0 (range: 36 – 40; SD: 1.7). During intervention, Participant 12’s mindful
describing level remained elevated at a mean of 40 (range: 40 – 40; SD: 0.0). In follow-up, Participant 12’s mindful describing level decreased to 28. There were no non-overlapping data at intervention, and no non-overlapping data at follow-up phases. The change in Participant 12’s mindful describing level at intervention met clinical significance ($\bar{X}_{(in;fu)} = 40.0$). Mindful describing level was consistently high across baseline and intervention, but decreased in follow-up. Thus, neither a basic effect nor a delayed effect was evidenced.

Participant 13. Across baseline, Participant 13’s mindful describing level showed a mean of 39.0 (range: 33 – 40; SD: 2.6). In intervention, Participant 13’s mindful describing level remained elevated at a mean of 40.0 (range: 40 – 40; SD: 0.0). In follow-up, Participant 13’s mindful describing level decreased to 36. There were no non-overlapping data between baseline and intervention, and no non-overlapping data between baseline and follow-up phases. The changes in Participant 13’s mindful describing levels at intervention met clinical significance ($\bar{X}_{(in;fu)}=40.0$). Mindful describing was consistently high across baseline and intervention, but decreased in follow-up. Thus, neither a basic effect nor a delayed effect was evidenced.

Cohort 4. During baseline, Cohort 4’s mindful describing levels had a mean of 23.3 (range: 17.0 – 30.0; SD: 4.0). In intervention, Cohort 4’s mindful describing levels remained consistent at a mean of 22.5 (range: 17.0 – 29.0; SD: 3.3). In follow-up, Cohort 4’s mindful describing levels increased to a mean of 28.0 (range: 20.0 – 34.0; SD: 5.2). The changes in Cohort 4’s mindful describing levels at intervention or follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 31.3$). Thus, neither a basic effect nor a delayed effect was evidenced.
Participant 14. Across baseline, Participant 14’s mindful describing level showed a mean of 19.4 (range: 18 – 21; SD: 1.3). In intervention, Participant 14’s mindful describing level remained consistent, with a mean of 19.7 (range: 19 – 21; SD: 1.2). Across follow-up, Participant 14’s mindful describing level increased slightly to a mean of 21.0 (range: 20 – 22; SD: 1.2). There were no non-overlapping data between baseline and intervention phases, and 50% non-overlapping data between baseline and follow-up phases. Neither the changes in Participant 14’s mindful describing at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} > 22.0$). Participant 14’s mindful describing remained consistent across the study. Thus, neither a basic effect nor a delayed effect was evidenced.

Participant 15. Across baseline, Participant 15’s mindful describing level had a mean of 26.8 (range: 25 – 30; SD: 1.5). During intervention, Participant 15’s mindful describing level decreased to a mean of 21.3 (range: 20 – 23; SD: 1.5). Across follow-up, Participant 15’s mindful describing level increased to a mean of 30.0 (range: 28 – 32; SD: 2.3). There were no non-overlapping data between baseline and intervention phases, and 50% non-overlapping data between baseline and follow-up phases. Changes in Participant 15’s mindful describing level at follow-up met clinical significance ($\bar{X}_{(in;fu)} > 29.8$). Although Participant 15’s mindful describing slightly increased to a clinically significant level in follow-up, there was considerable overlap with the baseline level. Thus, neither a basic effect, nor a delayed effect was evidenced.

Participant 16. Across baseline, Participant 16’s mindful describing level had a mean of 20.7 (range: 17 – 24; SD: 3.5), with a descending trend. In intervention, Participant 16’s mindful describing level increased to a mean of 25.0 (range: 20 – 29; SD:
3.2), with an ascending trend. Across follow-up, Participant 16’s mindful describing level further increased to a mean of 32.0 (range: 30 – 34; SD: 1.9). There were 80% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. Changes in Participant 16’s mindful describing level at follow-up phase met clinical significance ($\bar{X}_{(in;fu)} > 27.7$). Mindful describing significantly increased in the follow-up phase in for Participant 16. Thus, a delayed effect was evidenced.

**FF-D summary.** The Five Facet Mindfulness Questionnaire- Describing is a measure that assesses describing one’s inner and outer experiences. When reviewing mindful describing across baseline and intervention phases, there were no basic effects or weaker basic effects. When reviewing mindful describing across baseline and follow-up phases, only Participant 16 evidenced a delayed effect.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

At the level of the Cohort, there were no effects evidenced, therefore no functional relationships could be assessed. At the individual participant level, there were no functional relationships established. Thus, out of a possible seven functional relationships, none were established. Thus, there were no functional relationships established between the IMAG and increases in mindful describing.
Five Facet Mindfulness Questionnaire- Non-judging of Inner Experience (FF-NJ: Baer et al., 2006). Figure 5.11 shows the sum scores for the 16 participants. The FF-NJ is one of five sub-scales of the Five Facet Mindfulness Questionnaire. This scale assesses non-judging of inner experiences, such as feelings, thoughts and images. It has a range of 32, with a minimum score of 8 and a maximum score of 40. As the scores get larger, non-judgment levels increase. Thus, the optimal trend is an increasing trend, which would indicate that the mindfulness quality of non-judging of inner experiences is progressively increasing over time.

**Total group.** During baseline, the 16 participants’ non-judging levels had a mean of 22.2 (range: 8.6 – 35.5; SD: 7.0). In intervention, the participants’ non-judging levels increased slightly to a mean at 24.4 (range: 9.8 – 34.8; SD: 7.0). During follow-up, 11 of 16 participants completed scales. The participants’ non-judging further increased to a mean of 28.1 (range: 8.7 – 40.0; SD: 9.5). Neither the changes of the participants’ non-judging levels at intervention nor follow-up met clinical significance ($\overline{X}_{(in;fu)} > 36.2$). The overall levels for the participants’ non-judging of inner experience increased over the phases, but did not meet clinically significant levels. Thus, there was no basic effect or delayed effect evidenced.

**Cohort 1.** During baseline, Cohort 1’s non-judging levels had a mean of 19.1 (range: 8.0 – 29.0; SD: 8.0). In intervention, Cohort 1’s non-judging levels remained consistent, with a mean of 20.1 (range: 8.0 – 36.0; SD: 8.3). Although the follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s non-judging levels decreased to a mean of 17.9 (range:
Figure 5.11. Multiple baselines across cohorts and phases for the Five Facet Mindfulness Questionnaire: Nonjudging of Inner Experience’s sum scores of the 16 participants. The Five Facet Mindfulness Questionnaire: Nonjudging of Inner Experience measures the mindful quality of not judging inner experiences, such as feelings, thoughts, and images. Higher scores represent higher amounts of this mindful quality.
Neither the changes in Cohort 1’s non-judging at intervention nor follow-up met clinical significance (\(X_{(in;fu)} > 35.1\)). Cohort 1’s non-judging levels decreased slightly across study phases; therefore neither a basic effect, nor a delayed effect was observed.

**Participant 1.** Across baseline, Participant 1’s non-judging level showed a mean of 25 (range: 22 – 29; SD: 3.2), with an ascending trend. In intervention, Participant 1’s non-judging level increased to a mean of 34.5 (range: 33 – 36; SD: 2.1). There were 100% non-overlapping data between baseline and intervention phases. The change in Participant 1’s non-judging level at intervention met clinical significance (\(X_{(in)} > 31.4\)). There were no follow-up data. Although Participant 1’s levels of non-judging of inner experiences improved over the phases, this change began in baseline. Thus, no basic effect was shown.

**Participant 2.** Across baseline, Participant 2’s non-judging level showed a mean of 8.6 (range: 8 – 12; SD: 1.5). Across intervention, Participant 2’s non-judging level remained consistent, with a mean of 9.8 (range: 8 – 12; SD: 1.8). There were no non-overlapping data between baseline and intervention phases. The changes of Participant 2’s non-judging level at intervention did not meet clinical significance (\(X_{(in;fu)} > 11.6\)). There were no follow-up data. Participant 2’s levels of non-judging of inner experience remained consistently low over the study. Thus, no basic effect was shown.

**Participant 3.** Across baseline, Participant 3’s non-judging level showed a mean of 21.0 (range: 21 – 21; SD: 0.0). During intervention, Participant 3’s non-judging level increased slightly to a mean of 22.7 (range: 20 – 24; SD: 2.3). Across follow-up,
Participant 3’s level of non-judging remained unchanged, with a mean of 22.4 (range: 20 - 25; SD: 2.1). There were 66.7% non-overlapping data between baseline and intervention, and 60% non-overlapping data between baseline and follow-up. Neither the changes of Participant 3’s non-judging at intervention nor follow-up met clinical significance ($\bar{X}_{\text{in, fu}} > 21.0$). Participant 3’s non-judging of inner experience levels remained consistent over the study. Thus, neither a basic effect nor a delayed effect was observed.

**Participant 4.** Across baseline, Participant 4’s non-judging level showed a mean of 25.7 (range: 23 – 29; SD: 3.0). In intervention, Participant 4’s non-judging level decreased to a mean of 19.3 (range: 17 – 24; SD: 4.0). Across follow-up, Participant 4’s non-judging level further decreased to a mean of 8.7 (range: 8 – 10; SD: 1.2). There were no non-overlapping data between baseline and intervention, and no non-overlapping data between baseline and follow-up phases. Due to the decreasing levels, clinical significance was not calculated. Non-judging of inner experience levels decreased across the study, or Participant 4 became progressively aware of the amount of mental judgment that was present. Accordingly, neither a basic effect nor a delayed effect was observed.

**Participant 5.** Across baseline, Participant 5’s non-judging level showed a mean of 26.3 (range: 25 – 28; SD: 1.5). In intervention, Participant 5’s non-judging level decreased to a mean of 24.5 (range: 23 – 25; SD: 1.0). During follow-up, Participant 5’s non-judging of inner experience level further decreased to a mean of 19.3 (range: 16 – 24; SD: 3.4). There were no non-overlapping data between baseline and intervention, and no non-overlapping data between baseline and follow-up phases. Clinical
significance was not calculated due to decreasing levels across the phases. Participant 5’s non-judging of inner experience levels decreased across the study, or Participant 5 progressively became aware of the amount of mental judgment that was present. Regardless, neither a basic effect nor a delayed effect was shown.

**Cohort 2.** During baseline, Cohort 2’s non-judging levels had a mean of 17.9 (range: 8.0 – 29.0; SD: 7.7). In intervention, Cohort 2’s non-judging levels increased in the desired direction to a mean of 20.0 (range: 9.0 – 31.0; SD: 9.0). Although follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, Cohort 2’s non-judging further increased to a mean of 23.5 (range: 17.0 – 30.0; SD: 4.6). Neither the changes of Cohort 2’s non-judging at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} > 33.3$). Cohort 2’s non-judging levels were relatively stable across the phases, therefore neither a basic effect nor a delayed effect was observed.

**Participant 6.** Across baseline, Participant 6’s non-judging level showed a mean of 25.1 (range: 22 – 29; SD: 2.7), with an ascending trend. In intervention, Participant 6’s non-judging level increased slightly to a mean of 27.7 (range: 24 – 31; SD: 2.8). During follow-up, Participant 6’s non-judging level decreased to a mean of 23.5 (range: 17 – 30; SD: 4.6), with a decreasing trend. There were 42.9% non-overlapping data between baseline and intervention, and 20% between baseline and follow-up. Neither the changes in Participant 6’s non-judging at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} > 30.5$). Participant 6’s non-judging of inner experience level increased slightly during intervention, however decreased to below baseline levels in follow-up. This decrease in non-judging in follow-up may be related to situational
challenges reported mid-follow-up phase, or an increased awareness of mental judging. Therefore, neither a basic effect nor a delayed effect was observed.

**Participant 7.** Across baseline, Participant 7’s non-judging level showed a mean of 10.6 (range: 8 – 12; SD: 1.4). Across intervention, Participant 7’s non-judging level remained consistent, with a mean of 11.1 (range: 9 – 14; SD: 1.9). Participant 7 had no follow-up data. There were 14.2% non-overlapping data between baseline and intervention phases. The changes in Participant 7’s non-judging at intervention phase did not meet clinical significance ($\bar{X}_{(in)} > 13.4$). For Participant 7, non-judging levels remained consistent across the study. Thus, a basic effect was not observed.

**Cohort 3.** During baseline, Cohort 3’s non-judging levels had a mean of 22.5 (range: 9.0 – 40.0; SD: 6.6). In intervention, Cohort 3’s levels increased in the desired direction to a mean of 26.0 (range: 16.0 – 37.0; SD: 6.2). Although follow-up did not have the full complement of participants, with only 4 of 6 participants completing scales in this phase, Cohort 3’s non-judging levels further increased to a mean of 33.6 (range: 31.0 – 40.0; SD: 3.6). The changes in Cohort 3’s non-judging at intervention and follow-up phases did not meet clinical significance ($\bar{X}_{(in, fu)} > 35.7$). Cohort 3’s non-judging levels increased over the phases, but not to clinical significant levels. Thus, neither a basic effect nor a delayed effect was observed.

**Participant 8.** Across baseline, Participant 8’s non-judging level had a mean of 29.1 (range: 19 – 40; SD: 7.6), with an ascending trend. In intervention, Participant 8’s non-judging level increased slightly to a mean of 32.0 (range: 27 – 36; SD: 3.9), but showed a decreasing trend across the phase. Participant 8 had no follow-up data. There were no non-overlapping data between baseline and intervention phases. The change in
Participant 8’s non-judging level at intervention phase did not meet clinical significance \((\bar{X}_{(in)} > 40)\). Participant 8’s non-judging of inner experience level increased in baseline, thus no basic effect was observed.

**Participant 9.** Across baseline, Participant 9’s non-judging level for Participant 9’s had a mean of 21.0 (range: 15 – 30; SD: 5.5), with a descending trend. In intervention, Participant 9’s non-judging level increased slightly to a mean of 22.2 (range: 16 – 25; SD: 3.8). Participant 9 had no follow-up data. There were no non-overlapping data between baseline and intervention. The changes in Participant 9’s non-judgment level at intervention did not meet clinical significance \((\bar{X}_{(in)} > 32)\). Participant 9’s non-judging of inner experience levels remained relatively consistent across the study, thus no basic effect occurred.

**Participant 10.** Across baseline, Participant 10’s non-judging level showed a mean of 22.3 (range: 21 – 24; SD: 1.2). In intervention, Participant 10’s non-judging level remained relatively the same, with a mean of 22.8 (range: 17 - 30; SD: 5.6), but an ascending trend across the phase. During follow-up, Participant 10’s non-judging level increased to a mean of 31.5 (range: 31 - 32; SD: 0.7). There were 25% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up phases. The change in Participant 10’s non-judging levels at follow-up met clinical significance \((\bar{X}_{(in;fu)} > 24.7)\). Participant 10’s non-judging had an ascending trend during intervention, which stabilized in follow-up where non-judging of inner experience reached clinically significant levels. Thus, there was a delayed effect.

**Participant 11.** Across baseline, Participant 11’s non-judging level had a mean of 16 (range: 9 – 21; SD: 4.6), with an ascending trend. In intervention, Participant 11’s
non-judging level increased to a mean of 23.8 (range: 19 – 31; SD: 5.3), but with descending trend. During follow-up, the non-judging level further increased to a mean of 36.5 (range: 33 – 40; SD: 4.9). There were 50% non-overlapping data between baseline and intervention, and 100% non-overlapping between baseline and follow-up. The change in Participant 11’s non-judging level in follow-up met the clinical significance ($\bar{X}_{(in;fu)} > 25.2$). Although Participant 11’s non-judging of inner experience levels increased across the phases and reached clinical significance in follow-up, this change began in the baseline phase. Thus, neither a basic effect, nor a delayed effect was observed.

**Participant 12.** Across baseline, Participant 12’s non-judging level showed a mean of 35.5 (range: 30 – 40; SD: 3.4). In intervention, Participant 12’s non-judging level decreased slightly to a mean of 34.8 (range: 32 – 37; SD: 2.2). In follow-up during one measurement, Participant 12’s non-judging level increased to 40. There were no non-overlapping data between baseline and intervention, and no non-overlapping data between baseline and follow-up. The change in Participant 12’s non-judging level in follow-up met clinical significance ($\bar{X}_{(in;fu)} = 40$). Participant 12’s levels of non-judging of inner experience remained consistently high across the phases. Thus, neither a basic effect nor a delayed effect was observed.

**Participant 13.** Across baseline, Participant 13’s non-judging levels showed a mean of 23.9 (range: 20 – 27; SD: 2.2), with a slightly descending trend. In intervention, Participant 13’s non-judging level increased to a mean of 29.6 (range: 20 – 37; SD: 6.7), with an ascending trend. In follow-up, Participant 13’s non-judging level further increased to a score of 32. There were 60% non-overlapping data between baseline and
intervention, and 100% non-overlapping data between baseline and follow-up. Changes in Participant 13’s non-judging levels at intervention and follow-up met clinical significance ($\bar{X}_{(in;fu)} > 28.3$). Participant 13’s non-judging of inner experience increased to clinically significant levels at both intervention and follow-up phases, and showed a change in trend between baseline and intervention. Thus, both a weaker basic effect and a delayed effect was shown.

**Cohort 4.** During baseline, Cohort 4’s non-judging levels had a mean of 24.0 (range: 13.0 – 30.0; SD: 5.0). In intervention, Cohort 4’s non-judging levels maintained, with a mean of 24.5 (range: 15.0 – 30.0; SD: 5.0). During follow-up, Cohort 4’s non-judging levels increased to a mean of 32.9 (range: 24.0 – 40.0; SD: 6.7). The change in Cohort 4’s non-judging at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 34.0$). Cohort 4’s non-judging levels increased at follow-up, but not to clinically significant levels. Thus, a weaker delayed effect was observed.

**Participant 14.** Across baseline, Participant 14’s non-judging level showed a mean of 22.9 (range: 20 – 24; SD: 1.7). In intervention, Participant 14’s non-judging level increased slightly, to a mean of 24.3 (range: 24 – 25; SD: 0.6). Across follow-up, Participant 14’s non-judging level maintained the same level with a mean of 24.0 (range: 24 – 24; SD: 0.0). There were no non-overlapping data both between baseline and intervention, and between baseline and follow-up phases. The change in Participant 14’s non-judging at intervention and following did not meet clinical significance ($\bar{X}_{(in;fu)} > 26.3$). Participant 14’s non-judging of inner experience levels remained highly consistent across the phases. Thus, neither a basic effect nor a delayed effect was shown.
**Participant 15.** Across baseline, Participant 15’s non-judging level had a mean of 27.7 (range: 24 – 30; SD: 2.0). In intervention, Participant 15’s non-judging level decreased to a mean of 24.0 (range: 15 – 30; SD: 7.9), but had an ascending trend. During follow-up, Participant 15’s non-judging level increased to a mean of 32.5 (range: 29 – 35; SD: 3.0). There were no non-overlapping data between baseline and intervention, and 75% non-overlapping data between baseline and follow-up. The change in Participant 15’s non-judging level at follow-up met clinical significance ($\bar{X}_{(in;fu)} > 31.7$). Although Participant 15’s non-judging of inner experience increased to a clinically significant level in follow-up, there were overlapping data with baseline. Thus, a weaker delayed effect was evidenced.

**Participant 16.** Across baseline, Participant 16’s non-judging level had a mean of 14.3 (range: 13 – 15; SD: 1.2). In intervention, Participant 16’s non-judging level increased to a mean of 27.6 (range: 17 – 38; SD: 7.6), with an ascending trend. Across follow-up, Participant 16’s non-judging level increased to a mean of 39.2 (range: 37 – 40; SD: 1.3). There were 100% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. Both of the changes in Participant 16’s non-judging at intervention and follow-up met clinical significance ($\bar{X}_{(in;fu)} > 16.7$). There were significant increases across the phases in non-judging of inner experiences for Participant 16. Thus, a basic effect and a delayed effect were shown.

**FF-NJ summary.** The Five Facet Mindfulness Questionnaire- Non-judging of Inner Experience is a measure that assesses the mindful quality of non-judgment of inner experiences. When reviewing increases in non-judgment inner experience across
baseline and intervention phases, only Participant 16 evidenced a basic effect. Only Participant 13 showed a weaker basic effect. When reviewing an increase in non-judging across baseline and follow-up phases, Participants 10, 13, and 16 evidenced delayed effects. Cohort 4 and Participant 15 showed a weaker delayed effect. Thus, there were some increases in the non-judgment of inner experiences for some of the participants across the phases.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

At the level of the Cohort, there was one effect evidenced, therefore no functional relationships assessed. At the individual participant level, there were neither basic effects nor delayed effects evidenced at three different points in time, or across the participants in the three separate cohorts. Thus, out of a possible seven functional relationships, there were none established. Thus, no functional relationships were established between the IMAG and an increased in non-judgment of inner experience.

**Five Facet Mindfulness Questionnaire- Non-Reactivity to Inner Experience (FF-NR: Baer et al., 2006).** Figure 5.12 shows the sum scores for the 16 participants. The FF-NR is one of five sub-scales of the Five Facet Mindfulness Questionnaire. This scale assesses non-reactivity to inner experiences. It has a range of 28, with a minimum score of 7 and a maximum score of 35. As the scores get larger, non-reactivity to inner
Figure 5.12. Multiple baselines across cohorts and phases for the *Five Facet Mindfulness Questionnaire: Nonreactivity to Inner Experience* (FF-NR)’s sum scores for the 16 participants. The *Five Facet Mindfulness Questionnaire: Nonreactivity to Inner Experience* measures the mindful quality of non-reactivity to inner experiences, such as thoughts, feelings, and images. Higher scores represent higher amounts of this mindful quality.
experience levels increase. Thus, the optimal trend is an ascending trend, which would indicate that the mindfulness quality of non-reactivity to inner experience is progressively increasing over time.

**Total group.** During baseline, the 16 participants’ non-reactivity levels had a mean of 14.9 (range: 7 – 25; SD: 4.6). In intervention, the participants’ non-reactivity increased slightly to a mean of 17.5 (range: 7 – 29; SD: 5.4). During follow-up, only 11 of 16 participants completed scales. The participants’ levels of non-reactivity further increased albeit slightly to a mean of 20.9 (range: 7 – 30; SD: 5.8). The changes in the participants’ non-reactivity at intervention or follow-up, however did not meet clinical significance ($\bar{X}_{(in, fu)} > 24.1$). Although the levels of non-reactivity to inner experience increased slightly across the phases, these changes were not clinically significant. Thus, there was neither a basic effect nor a delayed effect observed.

**Cohort 1.** During baseline, Cohort 1’s non-reactivity levels had a mean of 14.1 (range: 7.0 – 25.0; SD: 6.4). In intervention, Cohort 1’s non-reactivity levels increased slightly to a mean of 15.8 (range: 7.0 – 28.0; SD: 6.2). Although follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s non-reactivity levels further increased albeit slight again to a mean of 17.2 (range: 7.0 – 25.0; SD: 6.2). The change in Cohort 1’s non-reactivity levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in)} > 26.9$). Although Cohort 1’s non-reactivity levels slightly increased across the phases, the changes were not clinically significant. Thus, there was neither a basic effect nor a delayed effect was observed.
**Participant 1.** Across baseline, Participant 1’s non-reactivity level showed a mean of 19.0 (range: 15 – 25; SD: 4.3), with an ascending trend. Across intervention, Participant 1’s non-reactivity level increased to a mean of 25.5 (range: 23 - 28; SD: 3.5). There were 50% non-overlapping between baseline and intervention phases. The change in Participant 1’s non-reactivity level at intervention did not meet clinical significance ($\bar{X}_{(in)} > 27.6$). There were no follow-up data. Although Participant 1’s non-reactivity to inner experience increased in intervention, this change began during the baseline phase. Thus, no basic effect was observed.

**Participant 2.** Across baseline, Participant 2’s non-reactivity level showed a mean of 8.4 (range: 7 – 15; SD: 3.0). In intervention, Participant 2’s non-reactivity level increased to a mean of 11.8 (range: 7 – 16; SD: 3.7), with an ascending trend. There were 40% non-overlapping data between baseline and intervention phases. The change in Participant 2’s non-reactivity level at the intervention did not meet clinical significance ($\bar{X}_{(in)} > 14.4$). There were no follow-up data. Participant 2’s non-reactivity to inner experience levels remained relatively consistent and low over the study. Thus, no basic effect was evidenced.

**Participant 3.** Across baseline, Participant 3’s non-reactivity level showed a mean 22.5 (range: 22 – 23; SD: 0.6). In intervention, Participant 3’s non-reactivity level remained relatively unchanged, with a mean of 21.7 (range: 19 – 24; SD: 2.5). During follow-up, Participant 3’s non-reactivity level maintained with a mean of 22.2 (range: 20-25; SD: 1.9). There were 33% non-overlapping data both between baseline and intervention and between baseline and follow-up phases. A clinical significance analysis was not completed due to baseline levels being higher than the other two phase-levels.
Participant 3’s non-reactivity to inner experience remained relatively constant across the phases. Thus, neither a basic effect nor delayed effect was shown.

**Participant 4.** Across baseline, Participant 4’s non-reactivity level showed a mean of 8.7 (range: 7 – 10; SD: 1.5). In intervention, Participant 4’s non-reactivity level remained consistent, with a mean of 9.3 (range: 7 – 11; SD: 2.1). During follow-up, Participant 4’s non-reactivity level decreased slightly to a mean of 8 (range: 7 – 10; SD: 1.7). There were 33% non-overlapping data both between baseline and intervention, and no non-overlapping data between baseline and follow-up phases. Participant 4’s non-reactivity to inner experience remained relatively constant and low across the study. Thus, neither a basic effect nor delayed effect was shown.

**Participant 5.** Across baseline, Participant 5’s non-reactivity level showed a mean of 14.7 (range: 14 – 16; SD: 1.2), with a descending trend. In intervention, Participant 5’s non-reactivity level increased slightly to a mean of 16.3 (range: 14 – 19; SD: 2.6), with an ascending trend. Across follow-up, Participant 5’s non-reactivity further increased slightly to a mean of 17.8 (range: 15 – 20; SD: 2.2). There were 50% non-overlapping data between baseline and intervention, and 75% non-overlapping data between baseline and follow-up phases. Change in Participant 5’s non-reactivity levels at follow-up met clinical significance ($\bar{X}_{(in, fu)} > 17.1$). Although there were 25% overlapping data, Participant 15’s trend in non-reactivity to inner experience ascended at intervention, and the level at follow-up increased to meet clinical significance. Thus, a weaker delayed effect was evidenced.

**Cohort 2.** During baseline, Cohort 2’s non-reactivity to inner experience levels had a mean of 12.8 (range: 7.0 – 18.0; SD: 3.5). In intervention, Cohort 2’s non-
reactivity levels increased in the desired direction to a mean of 15.7 (range: 7.0 – 24.0; SD: 5.3). Although the follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, Cohort 2’s non-reactivity further increased to a mean of 18.5 (range: 11.0 – 23.0; SD: 4.7). Neither the change in Cohort 2’s non-reactivity levels at intervention nor follow-up met clinical significance ($\bar{X}_{(in;fu)} > 19.8$). Although Cohort 2’s non-reactivity increased, it did not meet clinical significant levels. Therefore, neither a basic effect, nor a delayed effect was observed.

Participant 6. Across baseline, Participant 6’s non-reactivity to inner experience level showed a mean of 14.9 (range: 14 – 17; SD: 1.0). In intervention, Participant 6’s non-reactivity level increased to a mean of 19.7 (range: 15 – 24; SD: 3.5), and showed an increasing trend. During follow-up probes, Participant 6’s non-reactivity decreased slightly to a mean of 18.5 (range: 11 – 23; SD: 4.7), with a slightly descending trend. There were 71% non-overlapping data between baseline and intervention, and 50% non-overlapping data between baseline and follow-up phases. Change in Participant 6’s non-reactivity at intervention and follow-up met clinical significance ($\bar{X}_{(in;fu)} > 16.9$).

Although there were overlapping data, Participant 6’s non-reactivity into inner experiences increased to clinically significant levels at both intervention and follow-up phases, with an ascending trend at intervention. Thus, a weaker basic effect was observed.

Participant 7. Across baseline, Participant 7’s non-reactivity to inner experience level showed a mean of 10.4 (range: 7 – 18; SD: 4.0) with a descending trend. Across intervention, Participant 7’s non-reactivity level increased slightly to a mean of 11.7 (range: 7 – 15; SD: 3.4), with an ascending trend. Participant 7 had no follow-up data.
There were no non-overlapping data between baseline and intervention phases. Changes in Participant 7’s non-reactivity at intervention did not meet clinical significance ($\bar{X}_{(in)} > 18.4$). Overall, Participant 7’s non-reactivity to inner experiences remained consistent over the study. Thus, no basic effect was evidenced.

**Cohort 3.** During baseline, Cohort 3’s non-reactivity levels had a mean of 14.7 (range: 7.0 – 23.0; SD: 3.6). In intervention, Cohort 3’s non-reactivity levels increased in the desired direction to a mean of 18.5 (range: 9.0 – 29.0; SD: 5.1). Although the follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 3’s non-reactivity levels further increased to a mean of 22.8 (range: 19.0 – 27.0; SD: 2.9). Change in Cohort 3’s non-reactivity levels at follow met clinical significance ($\bar{X}_{(in)} > 21.9$). Although Cohort 3’s non-reactivity levels increased to clinical significance in follow-up, this level can not be compared to baseline because of the different number of participants. Thus, neither a basic effect nor delayed effect was shown.

**Participant 8.** Across baseline, Participant 8’s non-reactivity level had a mean of 11.0 (range: 7 – 12; SD: 1.8). In intervention, Participant 8’s non-reactivity level increased slightly to a mean of 12.8 (range: 9 – 20; SD: 5.0). Participant 8 had no follow-up data. There were 25% non-overlapping between baseline and intervention. Change in Participant 8’s non-reactivity at intervention did not meet clinical significance ($\bar{X}_{(in)} > 14.6$). Participant 8’s non-reactivity to inner experiences remained relatively consistent across the study. Thus, no basic effect was evidenced.

**Participant 9.** Across baseline, Participant 9’s non-reactivity level had a mean of 14.7 (range: 13 – 17; SD: 1.5). In intervention, Participant 9’s non-reactivity level
increased to a mean of 18.2 (range: 13 – 21; SD: 3.3), with an ascending trend. Participant 9 had no follow-up data. There were 60% non-overlapping between baseline and intervention phases. Change in Participant 9’s non-reactivity at intervention met clinical significance ($\bar{X}_{(in)} > 17.7$). For Participant 9, non-reactivity to inner experiences increased to significant levels in intervention, with some overlap with the baseline level. Thus, a weaker basic effect was shown.

**Participant 10.** Across baseline, Participant 10’s non-reactivity level showed a mean of 15.9 (range: 10 – 21; SD: 4.2), with a descending trend. In intervention, Participant 10’s non-reactivity levels increased to a mean of 19.8 (range: 15 - 28; SD: 6.1), with an ascending trend. During follow-up, Participant 10’s non-reactivity level further increased to a mean of 26 (range: 25 - 27; SD: 1.4). There were 33% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. The change in Participant 10’s non-reactivity at follow-up met clinical significance ($\bar{X}_{(in;fu)} > 24.3$). Participant 10’s non-reactivity to inner experiences increased to significant levels at follow-up. Thus, there were both a weaker basic effect due to the change in trend and a non-significant change in level during intervention, and a delayed effect at follow-up.

**Participant 11.** Across baseline, Participant 11’s non-reactivity level had a mean of 14.9 (range: 10 – 19; SD: 3.0), with a slightly ascending trend. In intervention, Participant 11’s non-reactivity level increased to a mean of 19.5 (range: 18 – 22; SD: 1.9). During follow-up, Participant 11’s non-reactivity level increased further to a mean of 22.5 (range: 22 – 23; SD: 0.7). There were 50% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up.
up phases. Changes in Participant 11’s non-reactivity at follow-up met clinical significance ($\bar{X}_{(in;fu)}>20.9$). Although Participant 11’s non-reactivity to inner experiences increased to significant levels in follow-up, this change began in baseline. Thus, neither a basic effect nor a delayed effect was shown.

Participant 12. Across baseline, Participant 12’s non-reactivity level showed a mean of 20.7 (range: 17 – 23; SD: 2.3), with an ascending trend. In intervention, Participant 12’s non-reactivity level increased slightly with a mean of 22 (range: 21 – 25; SD: 1.7). In follow-up with one measurement, Participant 12’s non-reactivity level remained consistent at 21. There were 20% non-overlapping data between baseline and intervention, and no non-overlapping data between baseline and follow-up phases. Changes in Participant 12’s non-reactivity levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)}>25.3$). No changes in Participant 12’s non-reactivity to inner experiences were evidenced across the study. Thus, neither a basic effect nor a delayed effect was shown.

Participant 13. Across baseline, Participant 13’s non-reactivity level showed a mean of 14.3 (range: 11 – 16; SD: 1.8). In intervention, Participant 13’s non-reactivity level increased to a mean of 18.2 (range: 11 – 29; SD: 7.3). In follow-up with one measurement, Participant 13’s non-reactivity level remained relatively consistent with a score of 19. There were 60% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up phases. Changes in Participant 13’s non-reactivity at intervention and follow-up met clinical significance ($\bar{X}_{(in;fu)}>17.9$). Participant 13’s non-reactivity to inner experiences increased to
significant levels across the phases. Therefore, both a weaker basic effect and a delayed effect were shown.

**Cohort 4.** During baseline, Cohort 4’s non-reactivity levels had a mean of 17.9 (range: 14.0 – 25.0; SD: 3.7). In intervention, Cohort 4’s non-reactivity levels increased to a mean of 19.7 (range: 14.0 – 26.0; SD: 4.3). In follow-up, Cohort 4’s non-reactivity levels further increased to a mean of 24.6 (range: 16.0 – 30.0; SD: 4.4). Change in Cohort 4’s non-reactivity levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 25.3$). Cohort 4’s non-reactivity increased over the phases, but did not reach clinically significant levels. Therefore, a weaker delayed effect was observed.

**Participant 14.** Across baseline, Participant 14’s non-reactivity level showed a mean of 14.7 (range: 14 – 16; SD: 1.0). In intervention, Participant 14’s non-reactivity level remained consistent, with a mean of 14.7 (range: 14 – 16; SD: 1.2). During follow-up, Participant 14’s non-reactivity levels increased to a mean of 18.8 (range: 16 – 20; SD: 1.9), with a slightly decreasing trend. There were no non-overlapping data between baseline and intervention, and 75% non-overlapping data between baseline and follow-up phases. Changes in Participant 14’s non-reactivity level at follow-up met clinical significance ($\bar{X}_{(in;fu)} > 16.7$). Although there were overlapping data, Participant 14’s non-reactivity to inner experiences increased to a significant level in follow-up. Thus, there was a weaker delayed effect observed.

**Participant 15.** Across baseline, Participant 15’s non-reactivity level had a mean of 21 (range: 18 – 25; SD: 2.4), with an ascending trend. In intervention, Participant 15’s non-reactivity level remained relatively constant, with a mean of 22.0 (range: 21 – 24; SD: 1.7), a slightly decreasing trend. During follow-up, Participant 15’s non-reactivity
increased to a mean of 27.8 (range: 25 – 30; SD: 2.2). There were no non-overlapping data between baseline and intervention, and 75% non-overlapping data between baseline and follow-up phases. The change in Participant 15’s non-reactivity level at follow-up met clinical significance (\( \bar{X}_{(in;fu)} > 25.8 \)). Although Participant 15’s non-reactivity to inner experiences increased to significant levels over the phases, this change began in baseline and there was considerable overlap in intervention. Thus, neither a basic effect nor a delayed effect was shown.

**Participant 16.** Across baseline, Participant 16’s non-reactivity levels had a mean of 14.7 (range: 14 – 15; SD: 0.6). In intervention, Participant 16’s non-reactivity levels increased to a mean of 21.4 (range: 16 – 26; SD: 4.1). During follow-up, Participant 16’s non-reactivity levels further increased to a mean of 27.0 (range: 25 – 28; SD: 1.2). There were 100% non-overlapping data both between baseline and intervention, and between baseline and follow-up. Changes in Participant 16’s non-reactivity to inner experience at both intervention and follow-up phases met clinical significance (\( \bar{X}_{(in;fu)} > 15.9 \)). Participant 16’s non-reactivity to inner experiences significantly increased across the phases. Thus, both a basic effect and a delayed effect were observed.

**FF-NR summary.** The Five Facet Mindfulness Questionnaire- Non-reactivity to Inner Experience is a measure of the mindfulness quality of non-reactivity. When reviewing increases in non-reactivity across baseline and intervention phases, only Participant 16 evidenced a basic effect. Participants 6, 9, 10, and 13 evidenced weaker basic effects. When reviewing increases in non-reactivity across baseline and follow-up phases, Participants 10, 13 and 16 evidenced delayed effects. Participant 5 and 14 showed weaker delayed effects. Cohort 4 evidenced a weaker delayed effect. Thus, there
were some increases in non-reactivity to inner experiences for some of the participants across the phases.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).

At the level of the Cohort, there were no functional relationships evidenced. At the individual participant level, there were two weaker functional relationships. First, there was a weaker functional relationship established by Participant 16’s basic effect and Participants 6 and 10’s weaker basic effects. Second, there was a weaker functional relationship established by Participants 10’s and 16’s basic effects, and Participant 5’s weaker basic effect. Thus, two functional relationships were established between the IMAG and an increased in non-reactivity to inner experience.

**Five Facet Mindfulness Questionnaire- Observing (FF-O: Baer et al., 2006).**

The FF-O is one of the five sub-scales comprising the Five Facet Mindfulness Questionnaire. FF-O measures mindful observing, or intentional noticing and awareness of one’s internal or external environments. This mindfulness scale has a range of 32, with a minimum score of 8 and a maximum score of 40. As the sum scores get larger, mindful observing increases. Thus, the optimal trend is an ascending trend, which would indicate a progressive increase over time. Figure 5.13 shows the multiple baseline design graph for the sum scores of the 16 participants.
Figure 5.13. Five Facet Mindfulness Questionnaire: Observing (FF-O)

Figure 5.13. Multiple baselines across cohorts and phases for the Five Facet Mindfulness Questionnaire: Observing’s sum scores for the 16 participants. The Five Facet Mindfulness Questionnaire: Observing measures the mindful quality of intentional noticing and awareness of one’s internal or external environment. Higher scores represent higher amounts of this mindful quality.
**Total group.** During baseline, the 16 participants’ mindful observing levels had a mean of 23.7 (range: 8 – 37.7; SD: 8.1). In intervention, the participants’ mindful observing levels increased to a mean of 26.9 (range: 9.3 – 40; SD: 8.1). Only 11 of 16 participants completed scales in the follow-up phase. In this phase, these participants’ mindful observing levels further increased to a group-mean of 29.6 (range: 9 – 40; SD: 7.9). The change in the participants’ mindful observing at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 39.9$). The participants’ mindful observing slightly increased, but did not meet clinical significance. Thus, neither a basic effect nor a delay effect was evidenced.

**Cohort 1.** During baseline, the levels of Cohort 1’s mindful observing had a mean of 19.7 (range: 7.0 – 36.0; SD: 10.8). In intervention, Cohort 1’s mindful observing levels remained consistent, with a mean of 20.8 (range: 8.0 – 35.0; SD: 11.0). Although the follow-up did not have the full complement of participants, with only 3 of 5 participants completing scales in this phase, Cohort 1’s mindful observing increased to a mean of 26.4 (range: 8.0 – 36.0; SD: 10.7). The change in Cohort 1’s mindful observing levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} >40$). Cohort 1’s mindful observing increased in follow-up, but not to clinically significant levels. Thus, neither a basic effect, nor a delayed effect was observed.

**Participant 1.** Across baseline, Participant 1’s mindful observing level had a mean of 22.8 (range: 20 – 27; SD: 3.1), with an ascending trend. In intervention, Participant 1’s mindful observing level increased slightly to a mean of 25.0 (range: 24 – 26; SD: 1.4). There were no follow-up data. There were no non-overlapping data
between baseline and intervention phases. The minimal change in Participant 1’s mindful observing at intervention was not clinical significance ($\bar{X}_{(in)} > 29$). These data suggest that Participant 1 did not change in the area of mindful observing. Thus, no basic effect was shown.

**Participant 2.** Across baseline, Participant 2’s mindful observing level had a mean of 10.4 (range: 7 – 15; SD: 3.5), with a descending trend. In intervention, Participant 2’s mindful observing remained constant, with a mean of 10.4 (range: 8 – 15; SD: 3.4). There were no non-overlapping data between baseline and intervention phases. There were no follow-up data. Clinical significance was not calculated because there was no change in level. Participant 2’s scores across the study did not reflect a change in mindful observing. Thus, no basic effect was documented.

**Participant 3.** Across baseline, Participant 3’s mindful observing level had a mean of 29.8 (range: 29 – 32; SD: 1.5). In intervention, Participant 3’s level of mindful observing remained consistent, with a mean of 30.0 (range: 27 – 32; SD: 2.6). During follow-up, Participant 3’s mindful observing level again remained consistent, with a mean of 30.4 (range: 28 - 32; SD: 1.5). There were no non-overlapping both between baseline and intervention, and between baseline and follow-up phases. The changes in Participant 3’s mindful observing levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 32.8$). Participant 3’s mindful observing remained consistent across the phases. Thus, neither a basic effect, nor a delayed effect was evidenced.

**Participant 4.** Across baseline, Participant 4’s mindful observing level had a mean of 8.0 (range: 8 – 8; SD: 0.0). Across intervention, Participant 4’s mindful
observing level increased slightly, to a mean of 9.3 (range: 9 – 10; SD: 0.6). During follow-up, Participant 4’s mindful observing level maintained at a mean of 9 (range: 8 – 10; SD: 1.0). There were 100% non-overlapping data between baseline and intervention, and 67% between baseline and follow-up phases. The changes in Participant 4’s mindful observing levels at intervention or follow-up did not meet clinical significance ($\bar{X}_{(in, fu)} > 8$). Participant 4’s mindful observing remained consistent across the phases. Thus, neither a basic effect nor a delayed effect was evidenced.

*Participant 5.* Across baseline, Participant 5’s mindful observing level showed a mean of 35.7 (range: 35 – 36; SD: 0.6). In intervention, Participant 5’s mindful observing level decreased slightly to a mean of 33.3 (range: 30 – 35; SD: 2.2). During follow-up, Participant 5’s mindful observing level remained consistent, with a mean of 34.5 (range: 33 – 36; SD: 1.3). There were no non-overlapping data both between baseline and intervention, and between baseline and follow-up phases. Clinical significance was not completed due to a decrease in mindful observing levels across the phases. Thus, neither a basic effect nor a delayed effect was evidenced.

*Cohort 2.* During baseline, Cohort 2’s mindful observing levels had a mean of 27.7 (range: 22.0 – 34.0; SD: 4.0). In intervention, Cohort 2’s mindful observing levels increased in the desired direction to a mean of 32.4 (range: 25.0 – 40.0; SD: 4.7). Although the follow-up did not have the full complement of participants, with only 1 of 2 participants completing scales in this phase, Cohort 2’s mindful observing levels decreased to a mean of 30.8 (range: 27.0 – 34.0; SD: 2.7). The changes in Cohort 2’s mindful observing levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in, fu)} > 35.7$). Thus, neither a basic effect nor a delayed effect was evidenced.
Participant 6. Across baseline, Participant 6’s mindful observing level had a mean of 25.3 (range: 22 – 29; SD: 2.8), with an ascending trend. In intervention, Participant 6’s mindful observing level increased to a mean of 29.1 (range: 25 – 34; SD: 3.6), with an ascending trend. During follow-up, Participant 6’s mindful observing level slightly increased to a mean of 30.8 (range: 27 – 34; SD: 2.7). There were 42.9% non-overlapping data between baseline and intervention, and 66.7% non-overlapping data between baseline and follow-up phases. The changes in Participant 6’s mindful observing levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 30.9$). Although Participant 6’s mindful observing levels increased in both intervention and follow-up phases, this increase began in the baseline phase and there were overlapping data with baseline. Thus, neither a basic effect nor a delayed effect was evidenced.

Participant 7. Across baseline, Participant 7’s mindful observing level had a mean of 30.4 (range: 26 – 34; SD: 3.5), with an ascending trend. In intervention, Participant 7’s mindful observing level increased to a mean of 35.7 (range: 31 – 40; SD: 2.9). Participant 7 had no follow-up data. There were 71.4% non-overlapping data between baseline and intervention phases. The change in Participant 7’s mindful observing level at intervention did not meet clinical significance ($\bar{X}_{(in)} > 37.4$). Although there was an increase in Participant 7’s mindful observing, these changes did not meet clinical significance, and they began in baseline. Thus, there was no basic effect.

Cohort 3. During baseline, Cohort 3’s mindful observing levels had a mean of 24.7 (range: 14.0 – 40.0; SD: 7.0). In intervention, Cohort 3’s mindful observing levels increased in the desired direction to a mean of 28.9 (range: 16.0 – 40.0; SD: 7.0).
Although the follow-up did not have the full complement of participants, with only 4 of 6 participants completing scales in this phase, Cohort 3’s mindful observing levels increased to a mean of 32.7 (range: 28.0 – 40.0; SD: 4.3). The change in Cohort 3’s mindful observing levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in)}=40$). Cohort 3’s increases in mindful observing did not meet clinical significance. Thus, neither a basic effect nor a delayed effect was evidenced.

Participant 8. Across baseline, Participant 8’s mindful observing level had a mean of 18.4 (range: 14 – 27; SD: 4.4), with a descending trend. In intervention, Participant 8’s mindful observing increase to a mean of 22 (range: 16 – 26; SD: 4.5), with an ascending trend. Participant 8 had no follow-up data. There were no non-overlapping data between baseline and intervention phases. The change in Participant 8’s mindful observing at intervention did not meet clinical significance ($\bar{X}_{(in)}>27.2$). Although Participant 8’s data did not meet clinical significance, there was an increase in mindful observing in intervention, and a shift to an ascending trend in intervention. Thus, a weaker basic effect was evidenced.

Participant 9. Across baseline, Participant 9’s mindful observing level had a mean of 24.7 (range: 22 – 26; SD: 1.6). During intervention, Participant 9’s mindful observing level increased to a mean of 28.8 (range: 24 – 33; SD: 3.4), with an ascending trend. There were 80% non-overlapping data between baseline and intervention phases. The changes in Participant 9’s mindful observing at intervention met clinical significance ($\bar{X}_{(in)}>27.9$). Participant 9 had no follow-up data. Participant 9’s mindful observing levels increased to clinical significance, and evidenced an ascending trend in intervention. Thus, a basic effect was evidenced.
**Participant 10.** Across baseline, Participant 10’s mindful observing level had a mean of 17.3 (range: 16 – 19; SD: 1.5). In intervention, Participant 10’s mindful observing level increased to a mean of 25 (range: 19 – 31; SD: 6.4), with an ascending trend. During follow-up probes, Participant 10’s mindful observing level further increased to a mean of 33.5 (range: 33–34; SD: 0.7). There was 75% non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up phases. The changes in Participant 10’s mindful observing at intervention and follow-up met clinical significance ($\bar{X}_{(in;fu)} > 20.3$). Although there were overlapping data, Participant 10’s mindful observing levels increased during the phases. Thus, a weaker basic effect and a delayed effect were shown.

**Participant 11.** Across baseline, Participant 11’s mindful observing level had a mean of 23.6 (range: 18 – 29; SD: 4.3), with an ascending trend. In intervention, Participant 11’s mindful observing level increased to a mean of 29.3 (range: 26 – 33; SD: 3.0), with a slightly descending trend. During follow-up, Participant 11’s mindful observing level further increased, albeit slightly to a mean of 30.5 (range: 29 – 32; SD: 2.1). There was 50% non-overlapping data between baseline and intervention, and 50% non-overlapping data between baseline and follow-up. The changes in Participant 11’s mindful observing at baseline or follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 32.2$). Although Participant 11’s mindful observing increased over the study, this increase began in baseline. Thus, neither a basic effect nor a delayed effect was evidenced.

**Participant 12.** Across baseline, Participant 12’s mindful observing level had a mean of 37.7 (range: 34 – 40; SD: 2.6), with an ascending trend. In intervention,
Participant 12’s mindful observing level increased to the maximum level, with a mean of 40 (range: 40 – 40; SD: 0.0). In follow-up with the one measurement, Participant 12’s mindful observing level maintained, with a score of 40. There were no non-overlapping data between baseline and intervention, and between baseline and follow-up phases. The changes in Participant 11’s mindful observing at baseline or follow-up did not meet clinical significance ($\bar{X}_{(in;fu)}=40.0$). Participant 12’s mindful observing level increased during baseline and maintained the maximum score in both intervention and follow-up phases. Thus, neither a basic effect nor a delayed effect was evidenced.

**Participant 13.** Across baseline, Participant 13’s mindful observing level had a mean of 24.3 (range: 22 – 27; 1.8). In intervention, Participant 13’s mindful observing level increased to a mean of 26.2 (range: 25 – 27; 1.1). In follow-up with one measurement, Participant 13’s mindful observing increased to a score of 28. There were no non-overlapping data between baseline and intervention, and 100% non-overlapping data between baseline and follow-up data. The change in Participant 13’s mindful observing level at follow-up met clinical significance ($\bar{X}_{(in;fu)} > 27.9$). Participant 13’s mindful observing levels gradually increased over the study, and reached clinical significance in follow-up. Thus, a delayed effect was evidenced.

**Cohort 4.** During baseline, Cohort 4’s mindful observing levels had a mean of 25.6 (range: 16.0 – 34.0; SD: 4.6). In intervention, Cohort 4’s mindful observing levels increased in the desired direction to a mean of 28.5 (range: 23.0 – 36.0; SD: 4.4). During follow-up, Cohort 4’s mindful observing levels further increased, albeit slightly to a mean of 29.3 (range: 24.0 – 36.0; SD: 4.5). The change in Cohort 4’s mindful observing levels at intervention and follow-up did not meet clinical significance ($\bar{X}_{(in;fu)} > 34.8$). Cohort
4’s mindful observing levels increased over the phases, but did not reach clinical significance. Thus, neither a basic effect, nor a delayed effect was evidenced.

**Participant 14.** Across baseline, Participant 14’s mindful observing level had a mean of 23.1 (range: 21 – 26; SD: 1.7). In intervention, Participant 14’s mindful observing level increased slightly to a mean of 25 (range: 24 – 26; SD: 1.0). During follow-up, Participant 14’s mindful observing level remained consistent, with a mean of 24.5 (range: 24 – 25; SD: 0.6). There were no non-overlapping data between baseline and intervention, and between baseline and follow-up phases. The changes in Participant 14’s mindful observing at intervention and follow-up were not clinically significant ($\bar{X}_{(in;fu)}>26.5$). Participant 14’s mindful observing level remained consistent across the study. Thus, neither a basic effect nor a delayed effect was evidenced.

**Participant 15.** Across baseline, Participant 15’s mindful observing level had a mean of 29.2 (range: 26 – 34; SD: 2.5), with a slightly decreasing trend. In intervention, Participant 15’s mindful observing level increased to a mean of 34.7 (range: 33 – 36; SD: 1.5). During follow-up, Participant 15’s mindful observing level decreased slightly to a mean of 33.7 (range: 32 – 35; SD: 1.5). There was 67% non-overlapping data between baseline and intervention, and 67% between baseline and follow-up phases. The changes in Participant 15’s mindful observing at intervention met clinical significance ($\bar{X}_{(in;fu)}>34.2$). Although there was some overlap with baseline, Participant 15’s mindful observing levels increased across the study. Thus, both a weaker basic effect and a weaker delayed effect were evidenced.

**Participant 16.** Across baseline, Participant 16’s mindful observing level had a mean of 18.3 (range: 16 – 20; SD: 2.1). In intervention, Participant 16’s mindful
observing level increased to a mean of 26.8 (range: 23 – 29; SD: 2.4), with an ascending trend. During follow-up, Participant 16’s mindful observing level further increased a mean of 30.4 (range: 25 – 36; SD: 3.9). There were 100% non-overlapping data both between baseline and intervention, and 100% non-overlapping data between baseline and follow-up. The change in Participant 16’s mindful observing at both intervention and follow-up met clinical significance ($X_{(in, fu)} > 22.5$). Participant 16’s mindful observing significantly increased over intervention phase, and stabilized in follow-up. Thus, both a basic effect and a delayed effect were shown.

**FF-O summary.** The Five Facet Mindfulness Questionnaire: Observing measures the mindful quality of observing one’s self and context. When reviewing increases in mindful observing across baseline and intervention phases, Participants 9 and 16 evidenced basic effects. Participants 8 and 10 showed weaker basic effects. When reviewing increases in mindful observing across baseline and follow-up phases, Participants 10, 13, and 16 evidenced delayed effects. Participant 15 showed a weaker delayed effect. None of the Cohorts evidenced basic or delayed effects. Thus, there were some increases in mindful observing for some of the participants.

To assess for functional relationships, there needs to be either three basic effects (i.e., basic or weaker) or three delayed effects (i.e., delayed or weaker) at three different time periods, or in three different cohorts. For the present data, there was a possibility of seven functional relationships that could have been shown: four functional relationships from the potential basic effects (i.e., basic or weaker), and three functional relationships from the potential delayed effects (i.e., delayed or weaker).
At the level of the Cohort, there were no delayed effects evidenced, therefore no functional relationships could be assessed. At the individual participant level, there were neither basic effects nor delayed effects evidenced at three points of time, or changes in three separate cohorts. Out of a possible seven functional relationships, there were none established. Thus, no functional relationships were established between the IMAG and an increased in mindful observing.

**Summary of mindfulness measures.** The following reviews the basic and delayed effects, and the corresponding functional relationships for cohorts and individual participants.

At the cohort level, there were no basic effects. At the individual participant level, there were total of six basic effects in the mindfulness measures. Participant 16 had five basic effects. Participants 9 had one basic effect. There were a total of 15 weaker basic effects. In terms of these weaker basic effects, Participant 10 showed four effects; Participant 9 and 13 each showed three effects; Participants 6 showed two effects; Participants 4, 8, and 16 each showed one effect.

Again, at the individual participant level, there were a total of 20 delayed effects in the mindfulness measures. Participant 16 demonstrated seven delayed effects. Participant 10 showed six delayed effects. Participant 13 had four delayed effects. Participants 11, 12, and 15 each had one delayed effect. There were a total of 7 weaker delayed effects. In terms of these weaker delayed effects, Participant 15 had two; Participants 5 and 14 each had one. Cohort 4 has three weaker delayed effects.

There were four weaker functional relationships demonstrated between an increase in mindfulness and IMAG. There were three weaker functional relationship
established by basic and weaker basic effects in the following measures: Composite Mindfulness Score, Five Facet Mindfulness Questionnaire- Acting with Awareness, and Five Facet Mindfulness Questionnaire- Nonreactivity to Inner Experience. There was one weaker functional in Five Facet Mindfulness Questionnaire- Nonreactivity to Inner Experience.

There also was an unexpected finding worthy of note. In the intervention phase, the majority of participants (i.e., 62.5%) had a mindfulness level that was lower than baseline. For many these participants, this phenomenon occurred in 17.9% of the intervention measurements of the mindfulness dependent variable (i.e., 20 measurements of a possible 112 measurements), and often occurred more than once for a participant. These lower levels were also present in the follow-up, but with a lower frequency (i.e., 7.7% of the measurements) and with fewer participants (i.e., 36.3%). Thus, as participants trained in mindfulness through the IMAG, the scores on acquired mindfulness or their mindfulness levels could decrease.

**Summary of Visual Analyses**

The research questions guiding these analyses each inquired if there was a functional relationship between the IMAG and one of the three variables in the study: General Clinical Outcome, Anxiety, and Mindfulness. The above analyses showed that there was only one functional relationship demonstrated in the follow-up phase for one of the anxiety measures (i.e., CAS). There were however nine weaker functional relationships shown. Six of these weaker functional relationships were shown in the intervention phase with one general outcome measure (i.e., OQ 45.2), two anxiety measures (i.e., CAS and BAI), and three mindfulness measures (i.e., CMS, FF-AA, and
The final three weaker functional relationships were evidenced in the follow-up phase, one in each of the variables (i.e., OQ-45.2, CMS, and FF-NR).

In terms of understanding individual changes across the phases, there were a total of 12 basic effects across baseline and intervention phases. One of these was at the cohort level, and 11 of these basic effects were at the individual participant level. There were 29 weaker basic effects, with one at the cohort level and 28 at the individual participant level.

In terms of change across the baseline and follow-up phases, there were a total of 38 delayed effects, and 15 weaker delayed effects. One of the delayed effects was evidenced by Cohort 4, with the remaining 37 delayed effects resulting from changes at the individual participant level. Cohort 4 evidenced eight of the weaker delayed effects, with the remaining seven occurring at the individual participant level.

The following answers the three research questions that guided this analyses. Out of seven possible functional relationships, there were two weaker functional relationships evidenced between the IMAG and the general outcome measure. Out of 35 possible functional relationships, there was one functional relationship and three weaker functional relationships between the IMAG and the reduction of anxiety. Finally, out of a possible 49 functional relationships, there were four weaker functional relationships between the IMAG and an increase in mindfulness characteristics. Thus, there were very few functional relationships evidenced, with the majority of these functional relationships being weaker in nature, with only one functional relationship using the strict criteria of change.
The next chapter expanded the assessment of change by investigating the same data used in this chapter, but instead used group-based analyses of the three dependent variables. The group-based analyses outlined in the next chapter is a common method for investigating change in a clinical outcome study (e.g., pre- and post-measure testing). The within-subject analysis presented next assessed if changes across the phases are evidenced at the group level.
CHAPTER SIX: GROUP-BASED ANALYSES RESULTS

This is the third of the four result chapters. This chapter reviewed results of the within-subject Analyses of Variance of the three dependent variables: general outcome, anxiety, and mindfulness. The chapter begins with outlining the data and criteria used in the analyses. Next, both descriptive and inferential statistics with effect size and post-hoc analysis (if applicable) are presented. Finally, a summary of these results are provided.

**Research Question**

The research question guiding these within-subject analyses is: did the IMAG create statistically significant ($\alpha = 0.05$) differences between scores on the dependent-variable measurements at Pre-group, Mid-group, End-group, and Post-group measurements? Effect sizes ($\eta^2$) for the various tests performed are reported. If the IMAG did create statistically significant differences between the various phases of the intervention, post-hoc tests were used to determine at which phases did the differences occur.

**Review of the Data and Procedures of the Within-Subject Analyses**

To answer this question, both descriptive and inferential statistics are displayed for each of the measurement scales and composite scores, which are grouped according to the study’s three dependent variables: general clinical outcome, anxiety, and mindfulness. The descriptive statistics reported the means, standard deviations, and sample sizes for each of the phases and each scale of measurement. Additionally, the descriptive statistics used in

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6. Note that the statistical significance is not corrected for multiple dependent variables.
each of the separate analyses are reported.

The inferential statistics were two sets of within-subject Analysis of Variance (ANOVA) performed between the phases of the IMAG (i.e., the intervention): (a) the first ANOVA was based on Pre-group to End-group measurements (i.e., differences between three phases), and (b) the second ANOVA was based on Pre-group to Post-group measurements (i.e., differences between four phases). Two separate sets of ANOVAs were chosen because not all participants completed questionnaires in the Post-group phase, thus the sample sizes are different. For those ANOVAs that were significant (i.e., $\alpha < 0.05$), post-hoc analyses of pairwise comparisons with Bonferroni probability corrections were completed and reported. Finally, the criteria outlined by Cohen (2003) were used to determine the magnitude of the effect sizes: $\eta^2 = 0.02 < 0.14$ was a small effect, $\eta^2 = 0.15 < 0.34$ was a medium effect, and $\eta^2 = 0.35 < 0.99$ was a large effect.

To review the phase measurements, the baseline or Pre-group was represented by an average of the three measurements closest to the start of the intervention; this mean was used because it provided a better estimate of a pre-group level. The intervention phase was represented by two measurements at different times. The first was Mid-group, which was a measurement taken between the third and the seventh week of the intervention phase. An individual’s Mid-group score was taken from the mid-point in this individual’s scores in the intervention phase; it was the mid-point of the participant’s process in the intervention phase. The End-group was the last measurement score in the
intervention phase. *Post-group* was the last measurement submitted in the follow-up phase. As stated above, not all participants completed data in the follow-up phase.

Prior to analysis, OQ-45.2, STAI, PSWQ-PW, BAI, MAAS, and FF were examined through various SPSS (17.0) programs for accuracy of data entry, and missing values. Additionally, two research assistants manually checked the data for transcription or entry errors. Raw data was reversed scored (if necessary), summed, and the sum scores for the participants were entered into separate data files for each of the scales and composite scores to be used in the ANOVA calculations. Missing data were assigned a -99. These ANOVA data files were checked for transcription or entry errors. Analyses were performed using SPSS (17.0) Descriptive Statistics, and SPSS (17.0) General Linear Model, Repeated Measures.

From the six measurement instruments mentioned above, there were 13 dependent variables (DV)s, necessitating separate univariate ANOVAs. However, it should be acknowledged that there is some debate in the methodology literature about whether each Type I error should be adjusted using a Bonferroni correction (see Huberty & Morris, 1989). In what follows, the DVs were treated as functionally separate, thus these analyses do not correct for Type I error. Furthermore, adjusting for Type I error using a Bonferroni correction with this data would drastically reduce the statistical power, therefore inducing Type II errors.

To address the ANOVA assumption of Sphericity or the equality of variances of differences between measurements, Mauchly’s Test of Sphericity was observed and found not significant for any of the ANOVAs displayed below. Additionally, the most conservative estimate or the Lower Bound epsilon (ε) was used. This estimate was
chosen because of possible inflations of Type I error due to the unequal time periods between the levels of the independent variable (i.e., phases of the study). Using the Shapiro-Wilks criteria to test normality, all but five of the distributions were non-significant. The BAI 3-phase mid-group distribution, OQ-45.2 3-phase mid-group distribution, FF Observe 3-phase end-group distribution, and FF Observe 4-phase end-group and post-group distributions were all significant therefore not normally distributed.

Following are the results of the two sets of ANOVAs on each of the 13 dependent variables.

**General Clinical Outcome Measure**

There was one measurement scale used in the dependent variable of General Outcome: Outcome Questionnaire-45.2.

**Outcome Questionnaire-45.2 (OQ-45.2)**

The Outcome Questionnaire-45.2 (OQ-45.2: Lambert et al., 1996) assesses general distress and clinical symptoms. Table 6.1 displays the means, standard deviations, and sample sizes of each of the four phases of the study. It should be noted that the End-group and the Post-group means met the criteria for the non-clinical range ($\bar{X}$<64).
Table 6.1

*OQ-45.2 Means, with Standard Deviation (SD) and Sample Size (N)*

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>74.86</td>
<td>18.94</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>16</td>
<td>70.75</td>
<td>16.84</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>59.38*</td>
<td>21.51</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>56.91*</td>
<td>24.48</td>
</tr>
</tbody>
</table>

*Note.* Non-clinical range (X< 65) for the OQ-45.2 is denoted by *.

Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

**OQ-45.2: Three-phase ANOVA.** Sixteen participants were used in this analysis. The three sets of OQ-45.2 means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 73.48 (SD=18.66), 70.75 (SD=16.85), and 59.38 (SD=21.51), respectively. The one-way ANOVA $F (1, 15) = 9.05, p = 0.009, \eta^2 = 0.376$ demonstrated a statistically significant difference between at least one of the sets of phase means. Thus, one may interpret this large effect size ($\eta^2$) as 37.6% of the variance

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7. The reader should be reminded that the degrees of freedom for the omnibus $F$-test were reduced because of the lower bound correction for potential problems due to unequal time periods between measurements.
across time found in the OQ-45.2 can be ostensibly accounted for by the intervention creating change. A Bonferroni corrected pairwise comparison for the OQ-45.2 score showed two significant mean differences for the OQ-45.2: Pre-group and End-group ($p < 0.011$), and Mid-group and End-group ($p < 0.004$). Thus, the End-Group measurements were significantly lower than both the Pre-group and the Mid-group measurements.

**OQ-45.2: Four-phase ANOVA.** Eleven participants were used in this analysis. The four sets of OQ-45.2 means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 72.39 (SD=14.95), 70.27 (SD=11.00), 58.18 (SD=16.18), and 56.91 (SD=24.48), respectively. The one-way ANOVA $F(1, 10) = 5.14, p=0.047, \eta^2 = 0.340$ demonstrated a statistically significant difference between one of the sets of means. A Bonferroni corrected pairwise comparison for the OQ-45.2 score showed one significant mean difference for the OQ-45.2: Pre-group and Post-group ($p < 0.038$). Thus, the Post-Group measurements were significantly lower than the Pre-group measurements.

**Anxiety Measures**

Four measurement scales compose the dependent variable of anxiety: State-Trait Anxiety Inventory- State & Trait, Burns Anxiety Inventory, and Penn State Worry Scale-Past Week. Additionally, the Anxiety Composite score compiles these four scales into a single score. Thus, there were a total of five anxiety scales analyzed.
Burns Anxiety Inventory (BAI)

The Burns Anxiety Inventory (BAI: Burns & Eidelson, 1998) measures three types of anxiety symptoms: emotional, physiological, and cognitive. Table 6.2 displays the means, standard deviations, and sample sizes for each of the four phases of the study.

Table 6.2

_BAI Means, with Standard Deviation (SD) and Sample Size (N)_

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>32.29</td>
<td>14.29</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>16</td>
<td>28.69</td>
<td>12.27</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>24.59</td>
<td>14.57</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>19.33</td>
<td>15.30</td>
</tr>
</tbody>
</table>

Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

**BAI: Three-phase ANOVA.** Sixteen participants were used in this analysis. The three sets of BAI means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 30.88 (SD=13.46), 28.69 (SD=12.27), and 23.38 (SD=14.13), respectively. The one-way ANOVA \( F(1, 15) = 3.536, p = 0.080, \eta^2 = 0.191 \) demonstrated no statistically significant difference between the sets of means.

**BAI: Four-phase ANOVA.** Eleven participants were used in this analysis. The four sets of BAI means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 30.00 (SD=14.71), 26.64 (SD=10.16), 22.27 (SD=13.61), and 15.36 (SD=7.03), respectively. The one-way ANOVA \( F(1, 10) = 6.85, \)
$p=0.026$, $\eta^2 = 0.407$ demonstrated a statistically significant difference between at least one of the sets of means. A Bonferroni corrected pairwise comparison for the BAI score showed two significant mean differences for the BAI: Pre-group and Post-group ($p<0.014$), and Mid-group and Post-group ($p < 0.011$). Thus, the Post-Group measurements were significantly lower than both the Pre-group and the Mid-group measurements.

**Penn State Worry Questionnaire- Past Week (PSWQ-PW)**

The Penn State Worry Questionnaire- Past Week (PSWQ-PW: Stöber & Bittencourt, 1998) assesses worry, as it is experienced over the past week. Table 6.3 displays the means, standard deviations, and sample sizes of each of the four phases.

**Table 6.3**

*PSWQ-PW Means, with Standard Deviation (SD) and Sample Size (N)*

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>59.12</td>
<td>15.80</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>16</td>
<td>53.31</td>
<td>17.48</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>45.35</td>
<td>18.56</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>43.67</td>
<td>16.84</td>
</tr>
</tbody>
</table>

Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

**PSWQ-PW: Three-phase ANOVA.** Sixteen participants were used in this analysis. The three sets of PSWS-PW means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 58.75 (SD=16.25),
53.31 (SD=17.48), and 44.00 (SD=18.29), respectively. The one-way ANOVA $F(1, 15) = 8.031, p = 0.013, \eta^2=0.349$ demonstrated statistically significant difference between at least one of the sets of phase means. A Bonferroni corrected pairwise comparison for the PSWQ-PW score showed one significant mean difference: Pre-group and End-group ($p < 0.002$). Thus, the End-group measurements were significantly lower than the Pre-group measurements.

**PSWQ-PW: Four-phase ANOVA.** Eleven participants were used in this analysis. The four sets of PSWS-PW means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 56.30 (SD=14.86), 53.45 (SD=17.83), 40.55 (SD=16.69), and 42.27 (SD=16.92), respectively. The one-way ANOVA $F(1, 10) = 6.05, p = 0.034, \eta^2 = 0.377$ demonstrated a statistically significant difference between at least one of the sets of means. A Bonferroni corrected pairwise comparison for the PSWQ-PW score showed one significant mean difference: Pre-group and End-group ($p < 0.017$). Thus, the End-group measurements were significantly lower than the Pre-group measurements.

**State-Trait Anxiety Inventory- State Anxiety (STAI-S)**

The State-Trait Anxiety Inventory- State Anxiety (STAI-S: Spielberger, 1983) assesses anxiety, as it is experienced as a state or as a current response. Table 6.4 displays the means, standard deviations, and sample sizes of each of the four phases.
**Table 6.4**

*STAI-S Means, with Standard Deviation (SD) and Sample Size (N)*

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>51.82</td>
<td>11.81</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>15</td>
<td>48.53</td>
<td>6.59</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>42.23</td>
<td>12.43</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>43.08</td>
<td>13.64</td>
</tr>
</tbody>
</table>

Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

**STAI-S: Three-phase ANOVA.** Fifteen participants were used in this analysis. The three sets of STAI-S means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 49.64 (SD=10.24), 48.53 (SD=6.59), and 40.33 (SD=8.80), respectively. The one-way ANOVA $F(1, 14) = 6.58, p = 0.022, \eta^2 = 0.320$ demonstrated a statistically significant difference between at least one of the sets of means. A Bonferroni corrected pairwise comparison for the STAI-S score showed two significant mean differences: Pre-group and End-group ($p < 0.009$), and Mid-group and End-group ($p < 0.012$). Thus, the End-group measurements were significantly lower than both the Pre-group and Mid-group measurements.

**STAI-S: Four-phase ANOVA.** Eleven participants were used in this analysis. The three sets of STAI-S means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 49.00 (SD=8.31), 50.45
(SD=6.20), 40.82 (SD=9.95), and 40.82 (SD=11.70), respectively. The one-way
ANOVA $F(1, 10) = 5.81, p=0.037, \eta^2 = 0.368$ demonstrated a statistically significant
difference between at least one of the sets of means. Thus, 36.8% of the variance found
in the STAI-S can be ostensibly accounted for by the intervention creating change across
the study. A Bonferroni corrected pairwise comparison for the STAI-S score showed one
significant mean difference for the STAI-S: Mid-group and End-group ($p<0.032$). Thus,
only the End-group measurement was significantly lower than the Mid-group
measurement.

**State-Trait Anxiety Inventory-Trait (STAI-T)**

The State-Trait Anxiety Inventory-Trait (STAI-T: Spielberger, 1983) assesses
anxiety, as it is experienced as a trait or as a personality characteristic. Table 6.5 displays
the means, standard deviations, and sample sizes of each of the four phases.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>56.82</td>
<td>12.17</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>15</td>
<td>54.73</td>
<td>9.42</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>50.00</td>
<td>13.78</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>47.50</td>
<td>15.48</td>
</tr>
</tbody>
</table>

Due to the varying sample sizes, the means used in the inferential statistics are
reported in each of the sections of the respective ANOVA analyses.
**STAI-T: Three-phase ANOVA.** Fifteen participants were used in this analysis. The three sets of STAI-T means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 55.40 (SD=11.48), 54.73 (SD=9.42), and 49.07 (SD=13.46), respectively. The one-way ANOVA $F(1, 14) = 6.73, p = 0.021, \eta^2 = 0.324$ demonstrated a statistically significant difference between at least one of the sets of means. A Bonferroni corrected pairwise comparison for the STAI-T scores showed two significant mean differences for the STAI-T: Pre-group and End-group ($p<0.030$) and Mid-group and End-group ($p < 0.045$). Thus, the End-Group measurements were significantly lower than both the Pre-group and Mid-group measurements.

**STAI-T: Four-phase ANOVA.** Eleven participants were used in this analysis. The four sets of STAI-T means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 53.64 (SD=11.28), 54.55 (SD=9.98), 48.09 (SD=11.79), and 45.82 (SD=15.04), respectively. The one-way ANOVA $F(1, 10) = 5.49, p=0.041, \eta^2 = 0.355$. Although there is a significant finding for the omnibus $F$-test, there are no pairwise comparisons that were indicated as significant.

**Composite Anxiety Score (CAS)**

This composite score compiled the four aforementioned anxiety scores into a single Composite Anxiety score (CAS). Table 6.6 displays the means, standard deviations, and sample sizes of each of the four phases of the study.
Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

**CAS: Three-phase ANOVA.** Fifteen participants were used in this analysis. The three sets of CAS means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 194.51 (SD=42.43), 189.00 (SD=35.84), and 160.13 (SD=49.90), respectively. The one-way ANOVA $F (1, 14) = 8.89$, $p = 0.010$, $\eta^2 = 0.388$ demonstrated a statistically significant difference between at least one of the sets of means. A Bonferroni corrected pairwise comparison for the CAS scores showed two significant mean differences for the CAS: Pre-group and End-group ($p < 0.005$), and Mid-group and End-group ($p < 0.011$). Thus, the End-Group measurement was significantly lower than both the Pre-group and Mid-group measurement.

**CAS: Four-phase ANOVA.** Eleven participants were used in this analysis. The four sets of ACS means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 188.94 (SD=37.90), 185.27 (SD=37.55), 155.55 (SD=45.99), and 144.27 (SD=46.11), respectively. The one-way ANOVA $F (1,$
10) = 8.17, \( p = 0.017, \eta^2 = 0.450 \) demonstrated a statistically significant difference between at least one of the sets of means. A Bonferroni corrected pairwise comparison for the CAS scores showed two significant mean differences for the CAS: Pre-group and Post-group \( (p<0.027) \) and Mid-group and Post-group \( (p < 0.046) \). Thus, the Post-Group measurements were significantly lower than both the Pre-group measurements and Mid-group measurements.

**Mindfulness Measures**

Six measurement scales compose the dependent variable of mindfulness: Mindful Attentional Awareness Scale, and Five-Facet Questionnaire, which has five separate scales. Additionally, the Mindfulness Composite score compiled these six scales into a single score. Thus, there were a total of seven mindfulness scales analyzed.

**Mindful Attentional Awareness Scale (MAAS)**

The Mindful Attentional Awareness Scale (MAAS: Brown & Ryan, 2003) measures attention and mindful awareness. Table 6.7 displays the means, standard deviations, and sample sizes for each of the four phases.

Table 6.7

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>48.71</td>
<td>16.25</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>16</td>
<td>50.38</td>
<td>14.66</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>57.29</td>
<td>17.28</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>57.75</td>
<td>18.28</td>
</tr>
</tbody>
</table>
Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

**MAAS: Three-phase ANOVA.** Sixteen participants were used in this analysis. The three sets of MAAS means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 50.06 (SD=15.75), 50.38 (SD=14.66), and 59.69 (SD=14.65), respectively. The one-way ANOVA $F(1, 15) = 5.81, p = 0.029, \eta^2 = 0.279$ demonstrated a statistically significant difference between at least one of the sets of means. A Bonferroni corrected pairwise comparison for the MAAS score showed one significant mean difference for the MAAS: Mid-group and End-group ($p<0.023$). Thus, the End-group measurements were significantly higher than the Mid-group measurements.

**MAAS: Four-phase ANOVA.** Eleven participants were used in this analysis. The four sets of MAAS means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) were 51.55 (SD=14.86), 51.00 (SD=12.75), 63.09 (SD=11.32), and 59.72 (SD=17.77), respectively. The one-way ANOVA $F(1, 10) = 3.67, p = 0.085, \eta^2 = 0.268$ did not demonstrate a statistically significant difference between at least one of the sets of means.

**Five Facet Mindfulness Questionnaire- Describe (FF-D)**

The Five Facet Mindfulness Questionnaire- Describe (FF-D: Baer et al., 2006) is one of the five scales from the Five Facet Mindfulness Questionnaire. This particular scale measures the mindful skill of describing. Table 6.8 displays the means, standard deviations, and sample sizes for each of the four phases.
Table 6.8

*FF-D Means, with Standard Deviation (SD) and Sample Size (N)*

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>26.63</td>
<td>7.70</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>15</td>
<td>28.20</td>
<td>9.68</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>28.47</td>
<td>8.14</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>28.25</td>
<td>5.96</td>
</tr>
</tbody>
</table>

Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

**FF-D: Three-phase ANOVA.** Fifteen participants were used in this analysis. The three sets of FF-D means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 27.51 (SD=7.70), 28.20 (SD=9.68), and 29.67 (SD=7.39), respectively. The one-way ANOVA $F(1, 14) = 1.90$, $p = 0.19$, $\eta^2 = 0.119$ did not demonstrate a statistically significant difference between at least one of the sets of means.

**FF-D: Four-phase ANOVA.** Eleven participants were used in this analysis. The four sets of FF-D means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 28.45 (SD=6.96), 29.73 (SD=7.94), 29.55 (SD=7.51), and 29.00 (SD=5.62), respectively. The one-way ANOVA $F(1, 10) = 0.303$, $p = 0.594$, $\eta^2 = 0.029$ did not demonstrate a statistically significant difference between one of the sets of means.
Five Facet Mindfulness Questionnaire- Observe (FF-O)

The Five Facet Mindfulness Questionnaire- Observe (FF-O: Baer et al., 2006) is one of the five measures from the Five Facet Mindfulness Questionnaire. This particular scale measures the mindful skill of observing and naming. Table 6.9 displays the means, standard deviations, and sample sizes for each of the four phases.

Table 6.9

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>23.67</td>
<td>8.72</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>15</td>
<td>28.00</td>
<td>8.35</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>27.41</td>
<td>8.46</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>29.42</td>
<td>7.67</td>
</tr>
</tbody>
</table>

Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

**FF-O: Three-phase ANOVA.** Fifteen participants were used in this analysis.

The three sets of FF-O means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 23.87 (SD=9.29), 28.00 (SD=8.36), and 28.00 (SD=8.86), respectively. The one-way ANOVA $F(1, 14) = 11.33, p = 0.005, \eta^2 = 0.447$ demonstrated a statistically significant difference between at least one of the sets of means. A Bonferroni corrected pairwise comparison for the FF-O score showed two significant mean differences for the FF-O: Pre-group and Mid-group ($p<0.007$), and Pre-
group and End-group \( (p < 0.010) \). Thus, the Mid-group and End-group measurements were significantly higher than the Pre-group measurement.

**FF-O: Four-phase ANOVA.** Eleven participants were used in this analysis. The four sets of FF-O means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 25.33 (SD=8.69), 29.00 (SD=7.80), 29.00 (SD=7.77), and 29.91 (SD=7.84), respectively. The one-way ANOVA \( F (1, 10) = 6.69, p = 0.027, \eta^2=0.401 \). Although the above omnibus \( F \)-test was significant at 0.05, there were no reported significant differences between the means.

**Five Facet Mindfulness Questionnaire- Nonreactivity to Inner Experience (FF-NR)**

The Five Facet Mindfulness Questionnaire- Nonreactivity to Inner Experience (FF-NR: Baer et al., 2006) is one of the five measures from the Five Facet Mindfulness Questionnaire. This particular scale measures the mindful skill of not being reactive. Table 6.10 displays the means, standard deviations, and sample sizes for each of the four phases.

Table 6.10

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>15.06</td>
<td>4.82</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>15</td>
<td>17.27</td>
<td>5.20</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>20.18</td>
<td>5.28</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>20.75</td>
<td>6.14</td>
</tr>
</tbody>
</table>
Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

**FF-NR: Three-phase ANOVA.** Fifteen participants were used in this analysis. The three sets of FF-NR means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 14.64 (SD=4.93), 17.27 (SD=5.20), and 20.20 (SD=5.53), respectively. The one-way ANOVA $F(1, 14) = 8.32, p = 0.012, \eta^2 = 0.373$ demonstrated a statistically significant difference between at least one of the sets of means. A Bonferroni corrected pairwise comparison for the FF-NR score showed one significant mean difference for the FF-NR: Pre-group and End-group ($p < 0.005$). Thus, the End-group measurements were significantly higher than the Pre-group measurements.

**FF-NR: Four-phase ANOVA.** Eleven participants were used in this analysis. The four sets of FF-NR means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 16.18 (SD=4.61), 18.09 (SD=5.38), 21.55 (SD=5.26), and 20.73 (SD=6.44), respectively. The one-way ANOVA $F(1, 10) = 4.61, p=0.057, \eta^2 = 0.315$ did not demonstrate a statistically significant difference between one of the sets of means.

**Five Facet Mindfulness Questionnaire- Non-judgment (FF-NJ)**

The Five Facet Mindfulness Questionnaire- Non-judgment (FF-NJ: Baer et al., 2006) is one of the five measures from the Five Facet Mindfulness Questionnaire. This particular scale measures the mindful skill of not being judgmental. Table 6.11 displays the means, standard deviations, and sample sizes for each of the four phases.
Table 6.11

*FF-NJ Means, with Standard Deviation (SD) and Sample Size (N)*

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>23.23</td>
<td>7.54</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>15</td>
<td>23.80</td>
<td>7.43</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>25.53</td>
<td>7.69</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>28.17</td>
<td>9.04</td>
</tr>
</tbody>
</table>

Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

**FF-NJ: Three-phase ANOVA.** Fifteen participants were used in this analysis. The three sets of FF-NJ means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 22.96 (SD=8.02), 23.80 (SD=7.43), and 25.27 (SD=7.53), respectively. The one-way ANOVA $F(1, 14) = 1.34, p = 0.267, \eta^2 = 0.087$ did not demonstrate a statistically significant difference between any of the sets of means.

**FF-NJ: Four-phase ANOVA.** Eleven participants were used in this analysis. The four sets of FF-NJ means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 24.64 (SD=5.76), 25.00 (SD=5.90), 27.36 (SD=5.35), and 28.36 (SD=9.46), respectively. The one-way ANOVA $F(1, 10) = 1.18, p=0.303, \eta^2 = 0.105$ did not demonstrate a statistically significant difference between any of the sets of means.
Five Facet Mindfulness Questionnaire- Acting with Awareness (FF-AA)

The Five Facet Mindfulness Questionnaire- Acting with Awareness (FF-AA: Baer et al., 2006) is one of the five measures from the Five Facet Mindfulness Questionnaire. This particular scale measures the mindful skill of acting with awareness. Table 6.12 displays the means, standard deviations, and sample sizes for each of the four phases.

Table 6.12

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>21.04</td>
<td>6.29</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>15</td>
<td>22.13</td>
<td>5.72</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>24.18</td>
<td>8.52</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>24.92</td>
<td>8.02</td>
</tr>
</tbody>
</table>

Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

**FF-AA: Three-phase ANOVA.** Fifteen participants were used in this analysis. The three sets of FF-AA means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 21.69 (SD=6.24), 22.13 (SD=5.72), and 25.27 (SD=8.07), respectively. The one-way ANOVA $F(1, 14) = 5.66, p = 0.032, \eta^2 = 0.288$ demonstrated a statistically significant difference between at least one of the sets of means. A Bonferroni corrected pairwise comparison for the FF-AA score showed one significant mean difference for the FF-AA: Pre-group and End-group ($p < 0.043$). Thus, the End-group measurements were significantly higher than the Pre-group measurements.
FF-AA: Four-phase ANOVA. Eleven participants were used in this analysis. The four sets of FF-NJ means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 22.72 (SD=5.85), 22.18 (SD=6.24), 26.64 (SD=7.54), and 26.00 (SD=7.43), respectively. The one-way ANOVA $F(1, 10) = 3.64, p=0.086, \eta^2 = 0.267$ did not demonstrate a statistically significant difference between any of the sets of means.

Composite Mindfulness Score (CMS)

This composite score compiled the six aforementioned mindfulness scores into a single Mindfulness Composite score (CMS). Table 6.13 displays the means, standard deviations, and sample sizes of each of the four phases of the study.

Table 6.13

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sample Size</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Group</td>
<td>17</td>
<td>158.33</td>
<td>41.98</td>
</tr>
<tr>
<td>Mid-Group</td>
<td>15</td>
<td>167.73</td>
<td>39.87</td>
</tr>
<tr>
<td>End-Group</td>
<td>17</td>
<td>181.65</td>
<td>44.92</td>
</tr>
<tr>
<td>Post-Group</td>
<td>12</td>
<td>189.17</td>
<td>47.89</td>
</tr>
</tbody>
</table>

Due to the varying sample sizes, the means used in the inferential statistics are reported in each of the sections of the respective ANOVA analyses.

CMS: Three-phase ANOVA. Fifteen participants were used in this analysis. The three sets of CMS means and standard deviations (i.e., Pre-group, Mid-group, and End-group) used in this analysis were 160.73 (SD=43.48), 167.73 (SD=39.87), and
187.00 (SD=42.13), respectively. The one-way ANOVA $F(1, 14) = 10.48, p = 0.006,$ $\eta^2 = 0.428$ demonstrated a statistically significant difference between at least one of the sets of means. A Bonferroni corrected pairwise comparison for the CMS scores showed two significant mean differences for the MCS: Pre-group and End-group ($p < 0.006$), and Mid-group and End-group ($p < 0.009$). Thus, the End-group measurement was significantly higher than both the Pre-group and Mid-group measurements.

**CMS: Four-phase ANOVA.** Eleven participants were used in this analysis. The four sets of CMS means and standard deviations (i.e., Pre-group, Mid-group, End-group, and Post-group) used in this analysis were 168.97 (SD=39.28), 176.45 (SD=35.43), 197.00 (SD=32.60), and 193.64 (SD=47.53), respectively. The one-way ANOVA $F(1, 10) = 4.68, p = 0.056, \eta^2 = 0.319$ did not demonstrate a statistically significant difference between any of the sets of means.

**Summary**

**ANOVA Significance Results**

This summary addresses the first research question. Of the total 26 ANOVAs completed, 17 ANOVAs were significant at $p < 0.05$, or 69.23% of the ANOVAs were significant. Ten of the 13 three-phase ANOVAs, or 76.92% of these results, were significant. Seven of the 13 four-phase ANOVAs, or 53.85% of these results, were significant.

When reviewing anxiety scales of measurement, nine of ten ANOVAs, or 90% of these results, were significant. Four of five three-phase anxiety scales ANOVAs, or 80% of these results, were significant. All five four-phase anxiety measure ANOVAs, or 100% of these results, were significant.
When reviewing mindfulness scales of measurement, six of fourteen ANOVAs, or 42.86% of these results, were significant. Five of seven three-phase mindfulness measures ANOVAs, or 71.43% of these results, were significant. One of seven four-phase mindfulness measures ANOVAs, or 14.29% of these results, were significant.

When reviewing a general clinical outcome measure, both ANOVAs, 100% of these results, were significant. Thus, both three-phase and four-phase ANOVAs were significant.

In conclusion, the majority of the ANOVAs were significant. All but one of the ANOVAs for the anxiety scales were significant. The general clinical outcome measure had significant results. The results for the mindfulness scales however were modest. The majority of the three-phase mindfulness ANOVAs were significant. This however drops substantially in the four-phase mindfulness ANOVAs, with only one significant finding.

**Effect Statistics Summary**

This summary addressed the magnitude of effect sizes. When reviewing the effect statistics or the variance created by the intervention, the effect sizes across the three phases of Pre-group, Mid-group, and End-group had a range of 8.7% to 44.7%, with a mean effect-size average of 30.53% (SD: 11.19). There were six large effects, six medium effects, and one small effect, with the mean of all three phases being of medium effect. The effect sizes across the four phases of Pre-group, Mid-group, End-group, and Post-group had a range of 2.9% to 45.0%, with an effect-size average of 30.78% (SD: 12.00). With this set of ANOVAs, there were six large effects, five medium effects, and two small effects, with the mean of all four phases also being of medium effect. Thus, there was an average of approximately 30% of the variance across the study.
When reviewing the effect sizes in the anxiety measures, the range was 19.1% to 45.0%, with an effect-size average of 35.29% (SD: 6.88). The range of the effect sizes in the anxiety measures across the three phases of Pre-group, Mid-group, and End-group was 19.1% to 38.8%, with an effect-size average of 31.44% (SD: 7.41). There was one large effect and three medium effects, with the mean of all three phases being of medium effect. The range of the variance in the anxiety measures across the four phases of Pre-group, Mid-group, End-group, and Post-group was 35.5% to 45.0%, with a mean average of 39.14% (SD: 3.79). There were four large effects, resulting in the mean of all four phases being a large effect.

When reviewing the variance in the mindfulness measures, the range was 2.9% to 44.7%, with a mean average of 26.61% (SD: 13.31). The range of the mindfulness scales’ variance across the three phases was 8.7% to 44.7%, with a mean average of 28.87% (SD: 14.21). There were two large effects, three medium effects, and one small effect, with the mean of all three phases being of medium effect. The range of the mindfulness measures’ variance across the four phases was 2.9% to 40.10%, with a mean average of 24.34% (SD: 13.04). There was one large effect, three medium effects, and two small effects, with the mean of all four phases being of medium effect.

When reviewing the variance in the general clinical outcome measure, the variance for the three-phase ANOVAs was 37.6% or a large effect, and for the four-phase ANOVAs was 34% or a medium effect. The average mean variance for this scale was 35.8% (SD: 2.55); this is a large effect.

Thus, the effect sizes for the mindfulness measures had greater range and lower magnitude, than the effect sizes for either anxiety or general outcome measures. Or,
stated differently, there was less variance created in the mindfulness variable than there were for either the general clinical outcome or anxiety variables. There also was greater variability for the mindfulness effect size, than for either the anxiety or general clinical outcome effect sizes. Thus, there was more potent change in anxiety and general clinical outcome, than for mindfulness.

**Post-hoc Pairwise Comparisons**

This final summary addressed in which phase the significant change occurred. Reviewing the significant mean differences identified by the various sets of ANOVAs and as specified by post-hoc comparison, there were a total of 23 significant mean pairwise differences. Three of the significant mean comparisons were in the general clinical outcome measure. Thirteen of the significant mean comparisons were in the anxiety measures. Seven of the significant mean comparisons were in the mindfulness measures.

Sixteen of the pairwise comparisons found in the three-phase ANOVAs were significant; for this set of ANOVAs, nine of the 16 significant mean comparisons existed between the Pre-group measurements and the End-group measurements; six had significant mean differences between Mid-group and End-group; and, only one had a significant mean difference between Pre-group and Mid-group. Thus, when considering the three-phase comparisons, the End-group measurements consistently evidenced the significant change.

Seven of the pairwise comparisons found in the four-phase ANOVAs were significant; for this set of ANOVAs, three of these mean comparisons existed between the Pre-group measurements and the Post-group measurements; two mean comparisons
had significant differences between Mid-group and Post-group. There was only one significant difference between Mid-group and End-group, and only one significant difference between Mid-group and Post-group. Thus, when considering the four-phase comparison, the majority of change was shown to be at the End-group or Post-group measurements.

Thus, there was significant change created across the phases, and the majority of this change was evidenced in the later portion of the study, which was at the end of the intervention phase or in the follow-up phase.

**Conclusions**

These analyses displayed evidence of significant change that occurred across the study. Anxiety and general clinical outcome seemed to be more responsive to change, than the mindfulness variable. Almost all significant results occurred at the end of the intervention phase or the follow-up phase.

The next and final results chapter departs from the research questions and analyses regarding if the IMAG was able to change, to exploring how the participants’ experienced or did not experience change in the intervention. This next analysis was the only qualitative method included in this mixed-method design study.
CHAPTER SEVEN: THEMATIC ANALYSIS RESULTS

This is the fourth and final results chapter. This chapter reviews the thematic analysis of the one-hour post-group interviews undertaken with eleven of the participants. First, the chapter presents the research question guiding the analysis, and reviews the text-based data used in the analysis. Both of the credibility checks used in this analysis are presented. Next, the results of this analysis are organized into three thematic categories: change, challenge, and mindfulness. Finally, a summary of the themes and the presentation of mirrored themes are presented.

Research Question

A thematic analysis using the text-based data was used to address the following research question: What themes occurred in the post-group interviews regarding the participant’s successes and struggles with anxiety, mindfulness, and the group?

Review of the Interview Data and Procedures of the Thematic Analysis

This analysis was based on Skype-telephone interviews completed with the individual participants between 3-6 months after the intervention was completed. Eleven of the seventeen participants were contacted and agreed to be interviewed. The reasons for the six participants not being interviewed were: they could not be reached, did not have the time, or decided against the interview for personal reasons. These one-hour interviews were conducted by the project’s research assistant, who was trained how to administer an interview and how to probe for clarifying information. The interview followed an interview protocol, which was divided into four general areas. First, the
anxiety or activation component was comprised of questions regarding their current activation, changes in activation, and what supports and hinders coping with activation.

Second, the mindfulness component was comprised of questions regarding the participant’s understanding of mindfulness, and their practice in both meditation and mindfulness skills. Third, the group component was comprised of questions regarding what aspects of group helped and hindered. The final component, group goals, was comprised of questions regarding their degree of goal completion, and what helped and hindered in their goal-achievement tasks. After the participant was interviewed, they were thanked for their time. The interview was audio-recorded, and the dialogue was verbatim transcribed. The files were converted to text files, and loaded into Atlas-Ti (Buhr, 1995).

There were two credibility checks used in this analysis: an extraction check and a sorting check. The extraction check showed a range of 98.16%-100% agreement between the first and second coders on the interview lines of the coding units (i.e., a match of interview lines chosen). The agreement on the general content of the coding units was also checked; there was a range of 94.74%-100% agreement between the two coders. The minimal disagreement for the extraction check was resolved through collaboration. This extraction check met the criteria set by the study.

8. The word activation was often used in the intervention as interchangeable with anxiety.
The second credibility check, the sorting check, showed a range of 87.10% - 87.74% agreement when the second coder sorted 25% of randomly chosen excerpts into their established themes. The sorting check met the criteria set by the study. The discrepancies for the Challenge themes were due to a lack of background information for the misplaced excerpts, and the discrepancies for the Change themes were due to subtle content overlap of specific themes. These minimal disagreements were resolved through collaboration.

Themes

The themes are presented below in three broad categories: change, challenge, and mindfulness definition. Each category has a table displaying the theme titles, frequency of inclusion, and percentage of inclusion. Following the table, each theme shows the theme title, the theme’s definition, and its criteria for inclusion and exclusion, if applicable. For the themes with higher inclusion rates, exemplars or excerpts from the participant’s interviews are presented.

Change Themes

The 11 themes in the Change category are related to participant change, factors that lead to change, or factors that are the evidence of change. Change is used broadly to mean differences experienced by the participant, or the experiences mentioned by the participant that seemed to reflect progress towards a desired state. These themes were built from material across the various interview sections. The response from the question pertaining to the mindfulness definition however was not included this analysis, as it has its own category.
Table 7.1

*Change Themes*

<table>
<thead>
<tr>
<th>Theme Name</th>
<th>Frequency of Inclusion</th>
<th>Percentage of Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group format and group material</td>
<td>11/11</td>
<td>100%</td>
</tr>
<tr>
<td>Openness and awareness</td>
<td>10/11</td>
<td>90.9%</td>
</tr>
<tr>
<td>New approaches to anxiety and goals</td>
<td>9/11</td>
<td>81.8%</td>
</tr>
<tr>
<td>Motivation and making time/effort</td>
<td>9/11</td>
<td>81.8%</td>
</tr>
<tr>
<td>Physical relaxation</td>
<td>8/11</td>
<td>72.7%</td>
</tr>
<tr>
<td>New experiences of anxiety</td>
<td>8/11</td>
<td>72.7%</td>
</tr>
<tr>
<td>Enjoyment, comfort and success</td>
<td>8/11</td>
<td>72.7%</td>
</tr>
<tr>
<td>Understanding the mind and anxiety</td>
<td>7/11</td>
<td>63.6%</td>
</tr>
<tr>
<td>Improved social and performance ability</td>
<td>6/11</td>
<td>54.5%</td>
</tr>
<tr>
<td>Empathy and emotions</td>
<td>6/11</td>
<td>54.5%</td>
</tr>
<tr>
<td>Group members as agents of change</td>
<td>6/11</td>
<td>54.5%</td>
</tr>
</tbody>
</table>

**Group format and group material.** This theme regarded the group process, the group’s tasks, and the group format, all of which promoted accountability, support, and follow-through. Also included were: check-ins, regularity of time and structure, leader support, leader knowledge, and the various learning materials (e.g., hand-outs, questionnaires, and audio CDs). Also, participants mentioned that group gave a
designated time and greater focus to learning. Excluded were: the support provided by other group members.

- “The group was pretty good because it gave kind of a structure. … You were there so you had to do it. There was a certain time, and everybody else was doing it so you were kind of forced to do it” (Participant 3).

- “Umm, I thought it was all helpful. Umm, Asa, she'd take a good example from our life and apply it, like she'd break it down for us, I guess. That was helpful. … Yeah, what we were dealing with and she, she would show us how it relates to mindfulness” (Participant 6).

- “… I probably use the mindfulness skills more when I was in the group, because, we were going over them every week. So, we were constantly reviewing them, so it helped me keep them in mind, and use them throughout the week” (Participant 10).

**Openness and awareness.** This theme has to do with being open and aware. Participants reported having greater openness and awareness with both internal (e.g., self, body, feelings) and external (e.g., environmental, situational) contexts and content. Included were: stepping-back, monitoring, observing, and deciding how to respond based on greater awareness or openness. There also was an acknowledgement of the here-and-now or the present moment supporting action or decision-making. The elements of being less judgmental of or more open to thought, circumstance, and total self; or being open and accepting the situation *as it is* were also included. Excluded were: awareness of thoughts when the content of thought is the main focus.
• “Yup, just accept it, and move forward and do what you need to do to get beyond here, (and) stop pretending that this isn’t the situation because you know better” (Participant 8).

• “(U)hm, I would say mostly for me it is just trying to focus and stay in the moment. And this is something that Asa really focused on was just being really present in the moment, and focusing on what is going on in the here and now and not worry about what is going to happen 5 minutes from now or 10 minutes from now or 2 days from now. So I find that helps to just sort of ground myself” (Participant 14).

• “I think more than anything. What I used more than anything is my mindfulness. Thinking things through a little bit more. … It is not like I am fighting the way things are, but I am actually more aware of them. … I am aware that the racing thoughts could start, but I don’t follow them anymore” (Participant 16).

• “I am always trying to be aware. … (J)ust, if I am walking from a class to another class, and I am walking across the courtyard of the school, I slow down, and I am not in a full rush panic. I take my time. I look up, look up when I am walking and I watch the birds” (Participant 16).

New approaches to anxiety and goals. This theme involved taking a new approach or strategy to deal with anxiety, or accomplish goals. It describes how the participant was doing to deal with anxiety or goal achievement. Included were: specific statements of how one is dealing with or approaching anxiety or goals, or the steps of change or the skills used. There might be an orchestrated approach, with particular steps, a routine, or several techniques (e.g., cognitive, emotional, or behavioural); or, taking
smaller steps, making goals concrete and realistic, or knowing how to prevent or shut-down the anxiety/activation process. Excluded were: understanding thoughts as the only technique mentioned; physically relaxed or using breathing as the only technique mentioned; and motivation without the details of what is done or what steps are taken.

- “OK, I feel it is very relaxing, I feel like it focuses it, or it focuses me quite a bit. Just sitting and clearing my mind and focusing on my breath, and be aware of the thoughts in my head. And after I am done, I feel quite a bit more focused, and more relaxed overall” (Participant 10).

- “But in actual moments of activation, I’d say the best thing for, I think she called them the ‘what and the how’ skills. Just sort of asking myself why I’m feeling (this way). For example, frustrated or anxious or worried and what I can do about it to turn the situation around? Basically, because, I mean, if I look at the anxiety more objectively, if I tried dealing with the emotion, I’d just get swept up in it, so. I feel that she taught us a way to trying to just step back out and see what’s objectively going on. … For example, I have a habit of buying into the judgment, that I can’t focus on what I’m trying to do, then it will seem pretty much automatic that I actually can’t focus because I start thinking about the, about the worries (more) than thinking about what I’m trying to actually work on so. And once, I realized that it’s just a judgment, it’s just a habit or something like that, it’s a lot easier to cope with” (Participant 13).

- “(W)hen I do notice (the anxiety), I am able to, I literally stop. I will stop what I am doing, and I will start thinking, what is going on. And then I will sort of, take
my deep breaths, and I will start to be more mindful of what is going on around me. And then, I will deal with things” (Participant 16).

**Motivation and making time/effort.** This theme generally describes something that is done to deal with the anxiety, or that there is motivation to do something, but there is little to no detail about what is done. Included are: having the motivation to enter the group; doing or making the time for the practices; applying the lessons, the tools, or the skills (without detail); working the practices or goals into one’s schedule; and, putting effort into the tasks. Also, included is working the tasks or lessons into life more generally. This theme has more general statements of application or using the skills or techniques. Excluded are: approaches to anxiety with the detail or steps mentioned.

- “Well, I've stopped in umm, like November, and I was just feeling really crappy so I started it up again. And like, I didn't stop completely but I didn't do it as often. And then, I just, I know, I felt like I needed (to do the practices)” (Participant 6).
- “So, I'd say they went from goals, to being more things that I try to achieve during the day, which is the same as goals. I look less at them as, or I look more at them as daily activities, instead of this is something I have to do. Rather, this is something that I try to include in my daily life” (Participant 10).
- “When I was in the group, I was learning. I think, now, I am just getting better at (mindfulness). … As long as, I am always, I can’t, I just have to practice all of the time. Even little bits of it, I have to practice it” (Participant 16).

**Physical relaxation.** This theme discussed experiencing less physical tension and restlessness. Included were: doing breath or meditation work, which created calm and
physical shifts; feeling physically and/or emotionally more normal, balanced, relaxed, or
slowed down. Because of the mind/body connection, there was crossover with the theme
of Understanding and Using the Mind with Greater Ease; although these themes are
presented separately, they seemed highly related.

- “Taking deep breaths forces me to slow down” (Participant 9).
- “Umm, generally I would try to practice it when I’m able to do it in the day for
  between 20 and 30 minutes. And umm, yeah, for me, just being able to be
  somewhere relatively quiet, and I focus mainly on my breath and try to, just,
  umm, I find that sometimes I notice my thoughts really slow down and calm down
  and I kind of feel almost like, sort of like a tangible shift in the way that I, yeah,
  the way that I feel, I guess. Both mentally and physically and feeling quite an
  intense kind of, umm, I guess what I would describe as meditative state”
  (Participant 11).
- “It is helpful because it helps you focus on your breathing and it is calming your
  nerves and calming yourself down. So it is good once you can set aside the time”
  (Participant 12).

**New experiences of anxiety.** This theme pertains to general changes or
experiences with anxiety. Included are: experiencing a general decrease in anxiety;
experiencing a shift in both feelings (e.g., less afraid, less helpless, and less worried), and
the intensity of feelings (e.g., less intense, less severe and less overwhelmed).
Participants also might assess levels of anxiety as normal or functional. They also
discussed taking longer time to activate, taking less time to de-activate, or dealing with
anxiety or activation more effectively (without stating how).
• “So my body still activates really easily. The same things that used to activate me still activate me, and the, so I guess also (to) the same degree almost in a sense. Even though, at last, I don’t really… activate as much. But the difference is that I’m able to de-activate more quickly. … More easily, yeah” (Participant 4).

• “When I came into it, I was crying a lot, I was not sleeping well, and I knew that I needed to do something. And, what I have gotten out of this is that, not so much that I don’t do it anymore, but the more that I have learned how to deal with it, before it gets that bad again” (Participant 8).

• “I feel now all that the anxiety that does pop up every once and a while is completely rational, as compared to before. It seemed to be sometimes I would just get anxious and it felt like it was coming out of nowhere. Like just thinking about things would make me anxious. So that is quite an improvement” (Participant 10).

• “I think the most immediate difference is just that I’m, I’m not activated as much, and when I am, I’m able to use them to deal with it reasonably quickly” (Participant 13).

**Enjoyment, comfort and success.** This theme has to do with motivation created by the enjoyment, comfort, and success of using the techniques. Included were: comfort and ease with using and applying the techniques; enjoying how the techniques feel during or after use; or, success with the techniques and knowing that the technique works. Excluded were: general motivation to use the techniques without statement of the three above criteria; and, statements of social or performance success.
“Like how well the techniques worked, the more that I found that I was using them and they were helping me, the more that I wanted to use them. The more that I was ‘hey that worked, hey that is awesome, better keep doing it’ ” (Participant 8).

“I would say it was a fairly good experience. It was very hard at first. It was something I had never done before, and it took quite a lot of energy, to do it. At first, it felt as though I was not really achieving anything, but then after practicing it for a while it got quite a bit easier. And, I was able to not just practice, but I was able to use in other situations, so I could apply it in other areas of my life, instead of just in the group” (Participant 10).

“The skills, I’d say what supported me was my success at using them really. I found that I would get the result that I want, but I’d feel that, I’d just feel a lot better. I’d feel more focused and a lot happier in general than I used to, so. … I’d say this success is what really encouraged me to use those … and the meditation itself” (Participant 13).

**Understanding the mind and anxiety.** This theme has to do with the thinking or cognitive process. It also deals with greater understandings and realizations about anxiety or self. Included were: greater understandings about self, mind, and anxiety; better able to focus and manage the mind and thoughts; and better able to focus and attend. Also, greater objectivity and different perspectives of the situation or thoughts are available. The mind and thoughts are slower and quieter. Excluded were: openness and awareness to thought where the openness or awareness is emphasized.
• “And I use it in different situations. And, I feel like I have a different perspective on how my thoughts kind of, and how I handle my mind and how I think. I've certainly become much more self-reflective, so instead of just thinking, I feel that I think more about what I am thinking now” (Participant 10).

• “Umm I feel like I definitely have better understanding of the, the issues around sort of anxiety and activation, that kind of thing and I have better understanding of how it happens, how it works, and how to deal with it, and umm, sort of manage it in my life for sure” (Participant 11).

• “Before, I’d just get real frustrated probably cause I don’t really know, you know, I didn’t really know, sort of, why I was feeling the way I was. I mean I didn’t know what was going on. So now that I understand it a lot better I find it makes me feel a lot less helpless” (Participant 13).

• “You start to think things through a little more. We talked about that. You extend the reaction time a little more” (Participant 16).

**Improved social and performance ability.** This theme involves greater comfort and accomplishment in social or performance situations. This might include feeling more comfort with authority figures, friends, strangers, and in work or school contexts. One is able to function more effectively or with greater ease in social or performance environments. Excluded were: social support provided from individuals outside of the group.

• “Umm, when I'm like in front of people or, umm. Yeah, like I was a cashier in the summer and I really, umm, I guess I just get anxious and worried and scared when I was at the till, and umm, it's, it's not so bad anymore. … Mmm, well, in
school I, so far, had to give a couple of presentations and those have gotten okay. Like I know I wouldn't have been able to do them last year, probably started crying in the middle of it … Mmm, well, yeah. Like, from before it's super scary, and now, (it is) not as much” (Participant 6).

• “The school is pretty big. Like, that I even gave a presentation or that I gave a report, (and) I didn't worry. I had to have my paper proofread by my professor, and I've never done that before, because I'll be thinking ‘oh, it's a stupid paper' and ‘she's gonna criticize it’. And, I was fine with that. Like, I've never been okay with having someone look at my work” (Participant 6).

• “Well I think, before, I was very hesitant about volunteering in class, or participating in the discussion, and asking questions in class. And now, it is not a problem. It is like if I have a question, I ask, and I feel free to participate in discussions if I want to. I don't have that anxiety or that nervous feeling that was really present before I started the group” (Participant 10).

**Empathy and emotions.** This theme pertains to having greater compassion and empathy for the self and one’s own feelings. Included were: having greater happiness and confidence; being less judgmental of the self; having greater kindness towards the self; feeling greater acceptance for the self; and having fewer expectations of the self. This theme largely pertains to the self and one’s positive emotional world. Excluded are: emotional statements about a reduction of anxiety, and enjoyment of the techniques or skills.

• “One of my goals was to be more self-accepting. … I realized that I should be doing, or feeling more important. Like, kind of just, kind of take your goals are
linked (to not being so anxious). You know, like it kind of made me realize that I’m really in a sorry state. Like, wow, I’m really mean, right? Yeah, I’m so mean to myself. It just kind of helped me realize why is that, consciously” (Participant 4).

- “A chance for me to continue to just come to accept myself more and just innerly enjoy life and (not) judge myself. That is something that’s useful, at the beginning. It’s sort of a life-long path so to speak” (Participant 13).

- “Recognizing when I need to be empathetic to myself, and empathetic to my situation, and not be so harsh and judgmental about myself” (Participant 14).

- “There is more confidence. I feel more confident” (Participant 16).

**Group members.** This theme involved group membership, and the opportunities to learn from others, as well as teach and support others. Included were: members not feeling alone, and having the anxiety experiences and distress normalized. Excluded are: non-group supportive individuals.

- “The helpful thing about the group was actually getting to meet other people who are anxious, and realizing you are not alone. That other people go through it too. … (W)hen you realize that other people are also going through the same thing it kind of takes away that part of the stress” (Participant 4).

- “What I found helpful was that there are other people out there that have similar feelings and situations to myself, and that I am not alone and crazy in this world. And hearing what they had been through, comparing that to myself, and all just, kind of, learning from each other. Other people have other techniques that work
and might be helpful for myself as well. … And learning from what they have experienced, and applying it to what I have been through” (Participant 12).

Challenge Themes

The 11 themes in this Challenge category are related to challenge, factors that lead to challenge, or the evidence resulting from challenge. This category reflected how the participant encountered and understood difficulties in their practice and their dealing with anxiety, and the factors that lead to these difficulties. These themes were built from material across the various interview sections. The response from the question pertaining to the mindfulness definition however was not included this analysis, as it has its own category.
Table 7.2

*Challenge Themes*

<table>
<thead>
<tr>
<th>Theme Name</th>
<th>Frequency</th>
<th>Percentage of Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of motivation: low enjoyment or low success</td>
<td>10/11</td>
<td>90.9%</td>
</tr>
<tr>
<td>Lack of motivation: low priority or low desire</td>
<td>9/11</td>
<td>81.8%</td>
</tr>
<tr>
<td>Needing support: help with integration or application</td>
<td>9/11</td>
<td>81.8%</td>
</tr>
<tr>
<td>Rejecting the present moment</td>
<td>7/11</td>
<td>63.6%</td>
</tr>
<tr>
<td>Difficulty relaxing</td>
<td>6/11</td>
<td>54.5%</td>
</tr>
<tr>
<td>Difficulty with time or schedule</td>
<td>6/11</td>
<td>54.5%</td>
</tr>
<tr>
<td>Needing support: extra time</td>
<td>6/11</td>
<td>54.5%</td>
</tr>
<tr>
<td>Difficulty with group: group format</td>
<td>5/11</td>
<td>45.4%</td>
</tr>
<tr>
<td>Other disorders</td>
<td>3/11</td>
<td>27.2%</td>
</tr>
<tr>
<td>Difficulty with group: group members</td>
<td>3/11</td>
<td>27.2%</td>
</tr>
<tr>
<td>Difficulty meeting goals</td>
<td>3/11</td>
<td>27.2%</td>
</tr>
</tbody>
</table>

*Lack of motivation: low enjoyment or low success.* This theme is about a lack of motivation caused by one’s experiences with the practices or techniques. Included were: low enjoyment of the techniques; low success with the techniques; finding the process of practice too intense or unpleasant; not enjoying how one feels while doing the practices; not liking the stillness of the practices; or, finding the experience boring. Also, one could experience unintended responses from the practices (e.g., falling asleep or
fatigue). It is important to note that a participant might enjoy practicing one particular
technique, while not liking another. Excluded are: a lack of motivation because of issues
related to the person.

- “The formal meditation, I had to push myself, 'cause it's hard. No, it's just so hard
if you are tired. When your mind just drifts off and then it's hard to bring back”
(Participant 6).

- “I mean, honestly from the time I left the group, I didn’t feel like I really
benefitted. And not like really from it. I mean I get more information, but not
necessarily, it wasn’t like a huge change” (Participant 9).

- “The bells was always difficult because I would always end-up falling asleep. …
Uhm, she had bells ringing in intervals. Ok. Like, there would be total silence
and then she would have bells ringing at 5, 10, 15 minute intervals but with that
one I would always fall asleep” (Participant 12).

**Lack of motivation: low priority or desire.** This theme pertains to a lack of
personal motivation, discipline, or desire to practice or practice alone. Low personal
motivation or low priority was reported to negatively impact regular practice or success
with the techniques or goals. The participant might appreciate the practices, but is not
motivated to do them. Included were: not practicing on own; not having the energy or
self-accountability required for continual and intentional practice; and not remembering
the skills or goals. The participants could have low motivation for one skill or technique,
but not another. Excluded were: a lack of motivation because of issues related to the
techniques.

- “(W)hat’s hindering me? (W)ell, I guess commitment, I guess” (Participant 3).
• "It's always just not putting it as a high enough priority. Like, not putting my well-being on a high enough priority. I still feel like, I still feel guilty when it comes to like, being like... I feel guilty and selfish when it comes to like "I'm doing this for me". Like, you know, kind of like being productive. I (still) feel like I always have to be productive, so yeah. ... I just have a lot of (trouble) putting time and effort into it. ... You don't really see any immediate results so it's really hard to like sit down and actually do them. I just have a lot of trouble putting my goals as a high priority" (Participant 4).

• “It is exhausting having a panic attack and being anxious all of the time. But it is also exhausting thinking about being anxious. The processes and the lessons that Asa tried to teach as far as recognizing and putting that pause in the moment, and trying to stay grounded. It is an exhausting process, and I know that it is something that I continually need to work with, in order for it to become more like second nature as opposed to having to think through it. It is just right now when I had done the (group), I was tired and spent. I just wanted to pretend that I didn’t have anxiety for a while and not do anything with it” (Participant 14).

**Needing more support.** This theme represents the need for more support in integrating, applying, or learning the skills and techniques. Included were: the skills and techniques being presented too quickly; too many skills and techniques presented; or needing more support in applying and practicing the skills in real life contexts. Also, some members spoke of the results of this lack of support: not being versed in the skills; not making connections between skills and application; and struggling with use and
application. Excluded are: wanting more 1-1 time with the leader; and needing more time with the techniques.

• “And outside, yeah, I guess it's not very easy to find, like, when to use them? … Mmm, well like I've said before, it's not always easy to know what to use” (Participant 6).
• “(I)t is more that, when I was learning them, I was learning them, and I was not making the connection” (Participant 8).
• “I know that we have so many skills that we talked about in the group and I think a lot of them, I just can't even incorporate it into my way of thinking and if I were trying to name them all, I wouldn't be able to” (Participant 11).
• “(U)hm, like I said, the biggest thing for me was the lack of practical application of the skills that we learned” (Participant 14).

Rejecting the present moment. This theme was about rejecting or turning away from the present moment. Included were: avoidance, anticipation, or expectation; and, a lack of openness or awareness of the present moment. The elements of being judgmental of or less open to thought and circumstance, or being closed to and not accepting the situation as it is were also included.

• “I think one of the most re-occurring themes for us, was that I anticipate. When I know that a stressful situation is coming up, I anticipate how someone is going to react to it, or how intense the situation is going to be. … (S)o my anticipation of the situation, it always made it a 1000x more stressful” (Participant 8).
• “Actually everything that is happening is kind of baby steps, (and) I am the kind of person that wants everything instantly” (Participant 12).
• “(B)ut I still do sometimes avoid situations that would get me activated so. The avoidance is something I’m trying to kick” (Participant 13).

**Difficulty relaxing.** This theme is about having difficulty relaxing physically or mentally. Included are: being overwhelmed; not being able to relax, calm down, or unwind. Additionally, difficulty releasing or managing energy (i.e., physical or mental), or the presence of excess energy was included.

• “Sometimes it can be difficult. It is hard to sit still, internally” (Participant 3).
• “Umm, not being able to get away I guess. Like not being able to stop the situation (and) having to stay in it. Yeah. Like, like take a break sometimes. Sometimes I just can’t take a break. I’m in the situation and I can’t just stop and go take some deep breaths. I have to see it through” (Participant 9).

**Difficulty with time or schedule.** This theme had to do with not having enough personal time and having a difficult schedule. Included were: not having enough time, or having difficult and full schedules prohibiting the necessary time and attention to the practices. Also, not working the practice or goals into a realistic schedule was mentioned as challenging.

• “… I practiced with a little bit less frequently now, than when I was in the group. Just due to scheduling mostly. I find I’m just more busy this term …” (Participant 10).
• “I was just setting the time aside to do the stretching and meditation, that has been the challenge. … (J)ust the time management issue. Not seeming to have enough time for, the things that are higher priority get in the way, I guess. Like job hunting, work, school, everything” (Participant 12).
Needing support: extra time. This theme represents the idea that participants needed more time in the intervention. Included were: wanting longer sessions, more frequent sessions, or more follow-up sessions. Excluded were: needing leader and group support in integrating or applying the techniques and skills.

- “(M)aybe have more, longer times maybe, longer sessions, or meet more often. … (M)eet more often, meet more frequently. … (M)aybe, it was once a week, wasn’t it? Yes twice a week, maybe that would be better, because you get more into the groove” (Participant 3).

- “I might make it more often during the week. Like two sessions during the week, instead of one. Because, it would just give, offer more time to get those methods or the practice in that environment. I think that would be a lot more beneficial” (Participant 10).

- “Hmm, I think the only thing that might be useful is to spread it out over a couple more sessions, just because some of the amount of time to discuss and digest some of the skills was a little, a little umm, too packed. … Well, I'm thinking maybe up to like another 4 sessions, but shorter sessions. Possibly like almost maybe an hour (or) less” (Participant 11).

Difficulty with group format. This theme involved the actual group itself or the process of group therapy. Included were: type of the group material, the group format, how the group was structured, or the group process. Also, included were the explicit desire for more individualized or 1-1 time with leader, and the anxiety and stress created by the group format itself. Excluded were: specific members; the needs of the members (e.g., needing more support with the application and integration of skills in member’s life,
or needing more time in the group); missing the group influencing motivation and accountability.

- “And I also felt kinda annoyed sometimes by the exercises, like the one where we had to chew the raisin. I just like, I found that extremely annoying. To sit there and chew a raisin … Chew a raisin and then talk about how it felt. And I would just get really frustrated because I just felt like my time was being wasted” (Participant 9).

- “That you were, or I was, at least, activated by the group. I was activated by going to group. And, you worried about the worrying. That was probably the hardest part in the beginning, the first couple of weeks was getting over that activation of going to group. … But, then as you are taught different methods and the meditation, (and) it fully went away and by the end. It felt like it was a very safe environment. But, it definitely inhibited me in the beginning” (Participant 10).

**Other disorders.** This theme pertains to other disorders, with which the participants dealt. These other disorders were present with the anxiety, and created extra demands and challenges. The disorders were mental (e.g., depression) and/or physical (e.g., illness, changing health condition), and would have required specific help and support.

**Difficulty with group members.** This theme regarded challenges created by the group members. Included were: members who seemed to be unequally invested in the function and tasks of group; a mismatch of the particular members to the group;
particular members being seen as not taking the group seriously or not attending regularly. Excluded were: difficulties created by group format.

**Difficulty meeting goals.** This theme was about the difficulty with goals and goal-attainment. Included were: a lack of goal specificity; a lack of goal concreteness; or a lack of goal applicability. Also included was a difficulty in measuring goal success. Additionally, approaching goals in a vague, broad, or non-specific way leads to difficulty.

**Mindfulness Definition Themes**

This category of themes pertains specifically to the participant’s stated definition of mindfulness. Although there are three themes, it should be noted that all of the themes related to awareness: general awareness, awareness of the present moment, and awareness of the self. For many of the awareness themes, elements of non-judgment were also present. Following are themes and the participant’s excerpts.

**Table 7.3**

*Mindfulness Definition Themes*

<table>
<thead>
<tr>
<th>Theme Name</th>
<th>Frequency</th>
<th>Percentage of Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being aware</td>
<td>7/11</td>
<td>63.6%</td>
</tr>
<tr>
<td>Awareness of the self or understanding of the self</td>
<td>5/11</td>
<td>45.4%</td>
</tr>
<tr>
<td>Awareness of the present moment or the here and now</td>
<td>5/11</td>
<td>45.4%</td>
</tr>
</tbody>
</table>

**Being aware.** This theme is about general awareness. Included were also awareness of one’s internal and external context. Participants also discussed this general awareness as being without judgment. Excluded were: awareness of only the self, or awareness of the present moment.
• “Being aware of yourself and your surroundings” (Participant 8).

• “Mindfulness in general... for me it's about umm, an awareness of my own mental and emotional, sort of spiritual state at any given time in relation to whatever it is that I'm doing” (Participant 11).

• “My situation, my feelings, my thoughts, other people around me, and even with nature. I mean I am looking out my window right now, and I am looking at the leaves and such. I mean just everything. And being aware, and mindful of where I am in that. Uhm, yah. … Knowing what I know, when I get into the panicky feeling or situation, and your mind goes and starts running away and start thinking, ‘oh people must be thinking this’ or ‘people must be doing that’, and I go through, ‘this is going to happen’. And being aware, or the mindfulness helps me, or reminds me, like what do I know for a fact, and what do I know with my own imagination. That is mindfulness” (Participant 16).

  **Awareness of the self.** This theme is about understanding or an awareness of the self. The self could be discussed as the total self, or the thoughts and feelings. Some participants discussed non-judgment of self and its components. Excluded were: awareness of self with mention of surroundings, or broader perspectives of awareness.

  • “Yah, so understanding who you are, and paying attention to how I act. And, paying attention to how I react. And, figuring out what is important to me, and make decisions based on that” (Participant 8).

  • “I think mindfulness is being aware of one's own thoughts and feelings, so and, just monitoring, and not feeling that they're good or bad, you're just aware of them” (Participant 10).
• “And being mindful of how I am feeling in the situation and being empathetic to how I feel as opposed to being judgmental of myself. … And also not being judgmental of anything that I am feeling” (Participant 14).

**Awareness of the present moment.** This theme is about awareness of the present moment or of the here-and-now. Accepting the present moment exactly as it is. Some participants discussed non-judgment of the here-and-now. Excluded were: awareness of the self or general awareness.

• “I guess like, accepting things how they are, and not really pushing anything away …” (Participant 6).

• “Being present in the moment and paying attention and letting things flow” (Participant 9).

• “Ok. Again. Like I mentioned before, just being present in the moment. … Because I was being mindful of really being present and staying in the moment focusing on the surroundings that I am in, and trying to recognize that the situation that I am in is not an actual threat” (Participant 14).

**Summary**

This summary is presented in three sections. Each section summarizes and organizes the themes in a manner that supports an understanding of the strengths and challenges of the IMAG from the perspective of the participant. The first section reviews the Change and Challenge categories, and groups the themes found within these categories. The second section reviews themes with mirrored content, or similar thematic content presented in both the Change and Challenge categories. The third section
summarizes the mindfulness themes. Each of these sections summarizes the themes in a manner that can help guide and strengthen the IMAG.

**Change and challenge groupings.** The eleven participants who were interviewed had a variety of experiences in the areas of changes and challenges. Both of these categories were foci throughout the interviews. In order to help summarize, the themes within a category were grouped. The Change category produced two main groups of themes: (1) types of change, and (2) the criteria and contexts that lead to change. The Challenge category had three main groups of themes: (1) challenges related to the practices, (2) challenges related to the group, and (3) challenges related to the context of the participant. Following is a brief review of these thematic groups.

**Two groups of change themes.** These two groups allow a window into the participant’s experience of change and what supported change. First, the types of change experienced by these 11 participants were in six areas: in the participant’s own openness and awareness, in physical relaxation, in understanding their own minds differently, in improved social and performance areas, and in how they viewed themselves and their willingness to be less judgmental and more compassionate with themselves. Additionally, these participants discussed differences in their experience of anxiety; for some there was a lessening of anxiety, but for many, they learned to prevent, cope, manage, and work with their anxious experience rather than admonish themselves for having the experience. Thus, this group supports the understanding of what changed for these 11 participants.

Second, the contexts and criteria that supported change were found in six areas: the intervention and being a part of this intervention, personal motivation, enjoying the
practices and techniques, finding that the practices and techniques worked, sharing experiences with others, and having social support. This group underscores the aspects of the intervention that facilitated or supported change for these participants. In order to strengthen the IMAG, the features of these two groups, the Types of Change and the Contexts and Criteria of Change, have to be sustained and promoted.

**Three groups of challenge themes.** The challenge category had three main groups of themes: challenges related to the practices, challenges related to the group, and challenges related to the context of the person. The first group contained the challenges related to the practices; these were difficulty with motivation, difficulty with staying present, and difficulty with relaxing. The second group contained the challenges related to the group; these were needing more support from the group or more time in the group, experiencing difficulties with the group format or with the group members, and having difficulties with achieving goals because of the nature of the goals set. The third group pertained to challenges of the context of the participant; these were other health disorders with which the participant had to deal, and not having the time or a flexible schedule into which the practice and techniques could fit. In order to strengthen the IMAG, the features of these three groups would need to be assessed, supported, changed, or corrected.

These five thematic groups help orient the respective themes in a manner that supports an analysis of the IMAG from the perspective of the participants. The groups of change suggest what should be maintained and strengthened, and the groups of challenge show areas that need further attention and possible calibration.
**Mirrored themes.** This section of the summary deals with change and challenge themes that have similar content. Understanding these mirrored themes can be important for strengthening and improving the intervention because increasing the content on one side, decreases content on the other. Stated differently, increasing a change theme would automatically decrease a challenge theme. There were five areas of shared or mirrored content: (1) the group or group format (i.e., Group and Group Format--Difficulties with Group), (2) openness to the present moment (i.e., Openness and Awareness--Rejection of the Present Moment), (3) participant motivation (i.e., Motivation and Making Time--Lack of Motivation), (4) relaxation (i.e., Physical Relaxation--Difficulty Relaxing), and (5) enjoyment and success within the intervention (i.e., Enjoyment, Comfort, and Success--Low Enjoyment and Low Success). Improving or increasing the content in each of these five areas not only enhances the possibility for change but also decreases a challenge that might be encountered.

**Mindfulness.** The final category, the Mindfulness Definition, shows that these 11 participants understood mindfulness as awareness. This awareness seemed to have three facets: general awareness, awareness of the self, and awareness of the present moment. Along with awareness, the participants discussed elements of non-judgment in the awareness. Given that mindfulness is the core therapeutic change-mechanism of the IMAG, this definition and the participant’s understanding of this critical concept is important for correcting or fortifying this intervention in the future.
Conclusions

This chapter presented the thematic analysis of the one-hour post-group interviews for 11 of the participants. This analysis produced three main categories of themes: change, challenge, and mindfulness. The two main theme categories, change and challenge, were further clustered into thematic groups. The change category produced two groups, and the challenge category produced three groups. Additionally, there were five mirrored themes identified; these mirrored themes share content across the change and challenge categories. The discrete themes, thematic groups, the mirrored themes, and the mindfulness definitions presented the interview material in a manner that was instructive to improving and strengthening the IMAG. The discussion and application of these themes and the above three sections to the strengthening of the IMAG is in the next chapter.
CHAPTER EIGHT: DISCUSSION

This chapter discusses the results within the context of the goal of the study: to evaluate the effectiveness of an integrated mindfulness-based group therapy for university students who self-reported problematic anxiety. The first two analyses, the Small-N Visual Analyses and the Group-Based Within-Subject Analyses, both addressed the issue of the IMAG’s effectiveness. The second two analyses, Participant and Group Practice Analyses and Thematic Analysis, both reviewed different aspects of the participant’s involvement with the IMAG; these second two analyses integrated the participant’s behaviours and perspectives in a broader evaluation of effectiveness. Combined, the four analyses not only answer the question of effectiveness but also guide the IMAG towards improvement. Following is a discussion of each of the four analyses, and a synthesis to understand the effectiveness of the IMAG. Discussions of novel contributions, challenges and limitations, and the future directions are offered. And, finally concluding statements summarizing the current study are presented.

Therapeutic Effectiveness

The two primary analyses that addressed the intervention’s effectiveness gave two somewhat differing perspectives. The overall findings from the Small-N Visual Analyses do not support the assertion that the IMAG was effective at creating the desired changes set out by this research. Stating the contrary, the results of the Within-Subject Analyses suggested that there were significant, substantial, and consistent changes in the dependent variables across the study. The following discussion attempts to understand, explain, and possibly reconcile these two conflicting results.
Small-N Design, Visual Analyses

The following discusses the specific questions posed for the Visual Analyses. The first question was: Is there a functional relationship between the IMAG and an increase in mindfulness, as seen by qualities of consciousness, awareness, attention, non-reactivity, and non-judgment among university or college students who self-report anxiety? Out of a total 49 functional relationships possible, there were three weaker functional relationships documented at intervention, and one weaker functional relationship at follow-up. Thus, there was some change documented, but this change did not meet the strict standards set by the study. Additionally, this change was only documented for some of the participants. Thus, although weaker functional relationships were documented, they were infrequent. An overall statement about a functional relationship between the IMAG and an increase in mindfulness cannot be made.

This finding is somewhat unexpected given that 2500 years of Buddhist history has shown that formal meditation techniques increase the quality mindfulness in the practitioner (Gunaratana, 2002; Hahn, 1976; Walsh, 1988). Additionally, Baer and her colleagues (2006) showed significant positive correlations between meditative practice and scores on the Kentucky Inventory of Mindfulness Skills (Baer, Smith, & Allen, 2004), which is the predecessor to the Five Facet Mindfulness Questionnaire (Baer et al., 2006) used in the current study. Thus, it can be concluded that either some aspect of the IMAG interfered with or failed to support an increase of mindfulness in many of the participants, or there was an overall failure to capture the changes that were present.
The second question of this analysis was: Is there a functional relationship between the IMAG and a decrease in the symptoms generally associated with anxiety (e.g., worry, physical, cognitive, and affective symptoms) among university or college students who self-report anxiety? Out of a total 35 functional relationships possible, there was one functional relationship documented in the follow-up phase. Additionally, there were two weaker functional relationships documented at intervention, and one weaker functional relationship at follow-up. Thus, there was some change documented, but this change seldom met the strict standards set by the study. Additionally, this change was only documented for some of the participants. Thus, although a few functional relationships were documented, they were infrequent. An overall statement about a functional relationship between the IMAG and a decrease in anxiety cannot be made.

Again, this finding was somewhat surprising. The mindfulness-based techniques found in the Mindfulness-Based Stress Reduction program (MBSR: Kabat-Zinn, 1990) were present in the IMAG, although modified by shortening the sitting times and eliminating the full day of practice; the initial MBSR showed effectiveness with a reduction of anxiety symptoms at the end of the program, at 3-months (Kabat-Zinn et al., 1992), and at 3-years (Miller, Fletcher, & Kabat-Zinn, 1995). Additionally, Grossman, Neimann, Schmidt, & Walach (2004) concluded from their meta-analysis of MBSR that this program might be helpful with a broad range of clinical and non-clinical challenges. Therefore, as with the mindfulness variable, one could conclude that either the IMAG’s content or processes interfered with the successes shown by other mindfulness-based interventions, or there was a failure to capture the changes that were present.
The final research question was: Is there a functional relationship between the IMAG and increased well being as measured by therapy outcome in university or college students who self-report anxiety? Out of a total seven functional relationships possible, there were two weaker functional relationships documented, one at intervention and one at follow-up. Thus, there was some change documented, but this change did not meet the strict standards set by the study. Additionally, this change was only documented for some of the participants. Thus, although weaker functional relationships were documented, they were infrequent. Again, this is somewhat surprising given MBSR’s success with a broad range of clinical difficulties (Grossman et al., 2004; Hofmann, Sawyer, Witt, & Oh, 2010). An overall statement about a functional relationship between the IMAG and an increase in therapy outcome cannot be made.

Thus, the overall finding was that the IMAG is not effective at making the desired changes in the three dependent variables. The overall lack of effectiveness found in the current study might allude to the critique of MBSR’s effectiveness posited by Toneatto and Nguyen (2007); however, it must be noted that the current study, due to the changes in the therapy protocol, was not an MBSR effectiveness study.

**Discussion.** In discussion of these three somewhat negative results, several explanatory possibilities present themselves. The first possibility is the IMAG and the manner in which it delivered its program failed to make the definitive changes. Although the initial intervention (e.g., Mindfulness-based Stress Reduction) is arguably able to make desired changes in anxiety, taking the core components from this established and empirically supported treatment, and re-constituting them into the IMAG may have had a detrimental impact on effectiveness. Using part of an initial intervention (e.g., DBT’s
Mindfulness skills) and how this selectiveness would impact the outcome in the treatment of anxiety was a question posed by Gratz, Tull, and Wagner (2005). There also may have been difficulty with how these components (e.g., mindfulness meditational practices or mindfulness skills) were presented, processed, and integrated by the participants. Toneatto and Nyugen (2007) also discussed the difficulty of comparing the effectiveness of modified programs. Thus, if one intends to pull core and potent therapeutic components out of established interventions, then great care and attention must be paid to the therapeutic milieu in which the components are placed. Successful and effective therapy programs might be larger than the sum of their parts.

The second possibility is that the lack of effectiveness findings is a manifestation of a research method that is highly conservative, although the inclusion of weaker effects was an attempt to address this possible limitation. By using many indicators and strict criteria, the avoidance of Type I errors might have lead to the commission of Type II errors. However, the conservativeness shown in this current effectiveness study was required due to the complex nature of the population being investigated, the intensity and demands of the IMAG, and the consequences of the outcome. The importance of therapists and clinicians using empirically-supported or scientifically investigated treatments is well documented in the literature (Chambless, 1999; Hunsley, Dobson, Johnston, & Mikail, 1999). Given this was an effectiveness study, it was preferred that the error, if one was made, was on the side of caution. Thus, although there were functional relationships documented, this evidence was not sufficient to make overall statements about the presence of functional relationships between the IMAG and the three dependent variables.
**Alternative evidence of change.** Although this design is highly conservative and refuted statements of overall effectiveness, it did show that certain participants were successful in evidencing change over the study. Some participants displayed evidence of stronger change (i.e., Participants 16, 10, 13, 11, 5, and 3); these individuals were the stronger performers in the intervention. Other participants showed evidence of weaker change (i.e., Participants 9, 6, 15, 14, and 8). Interestingly, the stronger effects were primarily shown in the follow-up phase (e.g., 38 of 50 effects were delayed). Yet, the weaker effects were primarily present in the intervention phase (e.g., 29 of 44 weaker effects were basic). This supports the assertion that the intervention phase is a training phase, and the follow-up phase evidences the cumulative effect of this training. This might have consequences for the type of student-client that would find mindfulness training useful (e.g., a student-client not needing immediate therapeutic change). Thus, although it is conservative in its overall endorsement of effectiveness, the visual analysis at the individual level allowed a window into a particular participant’s success, and into the intervention itself. Given the newness of the IMAG, perspectives into the individual participant’s performance and into the intervention are invaluable to better understanding the IMAG for the purposes of improving this therapy program.

**Unexpected finding.** An interesting observation about mindfulness and mindfulness acquisition was made. For some participants, the measurements of mindfulness had lower levels in intervention than baseline phases. Nine of the participants showed 30 instances of decreased mindfulness levels (i.e., 20 decreases were in intervention and 10 were in follow-up). For these particular participants, this is somewhat troubling as it means that mindfulness decreased. However, this might not be
the case. First, the reported decrease in the levels of mindfulness qualities during training may be the function of an acquisition of or increase in mindfulness. Stated differently, through the acquisition of mindfulness, one becomes aware of their lack of awareness, their lack of describing, or their lack of non-judging; therefore the measurement of the levels of these qualities may decrease because of an increase in or sensitivity to awareness or mindfulness. Thus, the more one gains the skill of mindfulness, the more aware one is of their lack of awareness. This highlights mindfulness’s meta-cognitive characteristics. Kabat-Zinn (1990) outlined that the processes involved in mindfulness may be difficult to directly measure because they operate largely in the unconscious; they are processes of the mind rather than its content. This harkens to Zvolensky, Feldner, Leen-Feldner, and Yartz’s (2005) and Block-Lerner, Salters-Pedneault, Tull, Orsillo, and Roemer (2005) call to improve assessment tools that measure mindfulness.

Second, the quality of awareness may actually transform through mindfulness training. Therefore, the construct of awareness being measured in baseline might be qualitatively different than the construct being measured in intervention and follow-up. One starts with a notion of awareness from within the Western paradigm, and ends up with a notion of awareness from within the Eastern paradigm. The two above points about mindfulness measurement (i.e., mindfulness as a meta-cognitive process and a possible qualitative shift in awareness from baseline to intervention) create questions in the area of measurement after mindfulness training. This then somewhat challenges the results of a lack of increase in the mindfulness variable across this current study.

**Conclusions.** There was one functional relationship and seven weaker functional relationships established between the IMAG and the three variables used in the study
(i.e., an increase in mindfulness, decreased in anxiety, and a decrease in clinical symptoms). Given that there were 91 possible functional relationships, the findings of only eight being evidenced were rather meager evidence of change given the potential consequences to students and counselling centres of assigning an outcome of effectiveness to the IMAG. Thus, it is concluded that the intervention failed to bring about the desired changes.

**Group-based, Within-Subject Analyses**

This set of analyses portrays a very different perspective than the one outlined above. A group-based analysis or within-subject analysis is a more often cited approach to understanding effectiveness or verifying change in a therapeutic intervention (i.e., pre- and post-intervention testing). The research question for this analysis was: Did the IMAG create statistically significant ($\alpha = 0.05$) differences between scores on the dependent-variable measurements at Pre-group, Mid-group, End-group, and Post-group measurements? Effect sizes ($\eta^2$) for the various tests performed were reported. If the IMAG did create statistically significant differences between the various phases of the intervention, post-hoc tests are used to determine in which phases did the differences occur. Thus, Group-based Within-subject Analysis was a secondary method used to support a possible claim of effectiveness for the IMAG.

When reviewing the overall findings of the within-subject analyses, one finds that the majority of the ANOVAs (69.2%) were significant. When reviewing the dependent variables, the two variables regarding a reduction of symptoms showed strong results. It can be seen that 90% of the ANOVAs for the anxiety measures were significant. In terms of the general clinical outcome, it was found that 100% of the ANOVAs were significant. The
prior research on mindfulness-based therapies supports symptom-reduction claims (e.g.,
Goldin, Ramel, & Gross, 2009; Kabat-Zinn, et al., 1992; Miller, Fletcher, & Kabat-Zinn,
1995; Roemer & Orsillo, 2005; Tacón, McComb, Caldera, & Randolph, 2003). Therefore,
in the domain of symptom decreases, there were significant reductions of both anxiety
symptoms and general symptoms across the current study.

When reviewing the dependent variable of mindfulness, the results were more
modest. This variable involves an increase or acquisition of mindfulness skills or a
mindful way of being. It was shown that only 42.9% of the ANOVAs for the
mindfulness measures were significant. Thus, it was more difficult to create change in
mindfulness increase or acquisition. Given the strong findings above in anxiety and
general clinical outcome, and the modest findings for mindfulness increases, an
interesting question about what the actual change mechanisms are in mindfulness-based
interventions. Several authors query what the actual change mechanisms are in
mindfulness-based programs (Carmody, Baer, Lykins, & Olendzki, 2009; Zvolensky et
al., 2005)

When reviewing the effect sizes for the various ANOVAs, it is shown that the
majority of the effect sizes were of medium or large magnitude. The average effect size
for the study was 30.0% or a medium effect. The effect sizes evidenced in this study are
similar to the effect sizes observed in other mindfulness-based studies (Carmody & Baer,
2009; Grossman, et al., 2004; Hofmann, et al., 2010). When considering the variance
created over the intervention, the mindfulness variable seemed to be less responsive in
terms of showing change, than the anxiety and general outcome variables. Stated
differently, there was greater magnitude of change in anxiety and general clinical
outcome, than there was for mindfulness. Finally, when reviewing the change that occurred in the intervention, the post-hoc tests showed that almost all of the change occurred at the end of the intervention phase, or in the follow-up phase. This is similar to Singh, Wahler, Adkins, and Myers (2003) findings that the intervention phase was a training phase for the mindfulness treatment, thus the expected changes in targeted problematic behaviours were consistently found at the end of the intervention phase and in the follow-up phase; this echoes the results of the Small-N analyses.

Conclusions. To answer the research question for this analysis, there were significant differences or significant change found across the study for all three variables. The most potent change was found in the anxiety and general clinical outcome variables. For all three dependent variables, the change was found at the end of the intervention or in the follow-up phase. Thus, the intervention phase seems to behave like a training phase; participants learned the various skills and techniques in intervention, and then applied them to their anxiety and in their lives more generally at the end of intervention and in follow-up. The main limitation presented by these analyses is that it cannot be confirmed that the IMAG created the said-changes; the particular design of this study precluded the within-subject analyses from supporting or confirming an effectiveness claim about the IMAG.

Summary

Although there were four discrete research questions outlined above, the simple question of “was the IMAG effective at producing the desired changes” was the basis of them all. The answer to this question would have to be: no, it was not effective. Stated differently, IMAG was not able to make the desired changes in the participants’ anxiety
reduction, in clinical symptoms’ reduction, and in increases in mindfulness. This conclusion is drawn primarily from the findings of the Small-N design because this method has experimental control established through multiple baseline measures and three changes over three points of time (i.e., the functional relationship); the ANOVAs did not have experimental control therefore statements about the cause of change cannot be made. This conclusion however is not the end of this story.

The combined discussion of the conservative nature of Small-N’s Visual Analyses, the change shown by individual participants (i.e., the various effects evidenced across phases), and the significant and substantial changes found in the Group-based Within-Subjects Analyses provides hope and impetus for the next section, which is the examination of the final two analyses. This next section discusses how to possibly improve and strengthen the IMAG.

Improvement and Strengthening of the IMAG

The main research questions have been addressed with the general answer that change created by the IMAG was not evidenced in desired or predicted ways. Thus, the next steps for this discussion was to understand how to improve and strengthen the IMAG. The remaining two analyses were explored in this capacity.

Participant and Group Practice Analyses

This section inquired about the participant’s practice of skills and techniques taught in the intervention. The research questions in this section were: What types of stress and anxiety events confronted the participant’s on a weekly basis? How often and for how long did the participant’s practice the skills and techniques taught in the intervention? Which skills and techniques were practiced? From the prior sections, it
can be seen that there is doubt as to whether the IMAG can create the desired changes, namely increasing mindfulness and decreasing clinical and anxiety symptoms. Thus, the discussion of this analysis focuses on understanding how the practices as taught by the IMAG might have faltered in accomplishing the desired changes. It also provides insight on how the IMAG could be improved.

The overall challenge for discussing the Participant and Group Practice Analyses is that the intervention did not work. As stated above, this is an odd finding given that these practices in other established interventions do create desired changes in anxiety-suffering populations. The IMAG’s ability to teach and encourage these practices in the participant’s lives might be at fault. Thus, the IMAG might be stumbling in teaching the core content, or in successfully utilizing the various processes present.

In the area of content, the Participant and Group Practice Analyses shows the participants learned a large number of skills and techniques in the intervention, and yet carried over to follow-up a more discrete choice of skills and techniques in their repertoire. When reviewing the list of the highest-ranked techniques used, the formal meditation techniques were consistently at the top of the list, with the mindfulness skills primarily in the bottom half of the list. Therefore, a point of attention might be equal emphasis and practice being placed on the acquisition and application of the mindfulness skills, as well as the maintenance of formal mindfulness techniques. New skills were introduced weekly, yet the techniques were repeatedly practiced each week. DBT mindfulness skills acquisition is a rigorous and involved process (Linehan, 1993a). Thus, greater group discussion, practice, and emphasis might need to be placed on this aspect of the intervention in order to possibly reap the benefits found in these mindfulness skills.
This might require extending the number of sessions in the IMAG. This potential increase would bring the IMAG into alignment with the number of sessions in van Ingen and Novicki’s (2009) and Roemer and Orsillo’s (2005) respective studies.

In the area of process, the analysis of the duration of practice elucidates an interesting discovery. Overall, the patterns of practice frequency (i.e., number of days of practice) and practice duration (i.e., number of minutes of practice) produced quite idiosyncratic findings across the participants. The overall sitting duration observed in this study was shorter than Carmody and Baer (2008)’s observation of formal practice in a MBSR group (i.e., average of between 31-35 minutes per day, with a range of 6 minutes to over 45 minutes per day). However, four of the six successful participants (i.e., Participants 16, 10, 11, and 5) showed the highest duration of minutes in a practice day in follow-up (i.e., averages of 25 minutes or more). This is closer to the MBSR practice times noted above in Carmody and Baer’s study. This high duration of practice minutes aligns with Kabat-Zinn and Santorelli’s (2005) sentiments *that if you sit for long enough something is bound to happen*. Both the Mindfulness-based Stress Reduction (Kabat-Zinn, 1990), and the Mindfulness-based Cognitive Therapy (Segal, Williams, & Teasdale, 2002) both have 45 minutes as the target length for formal practices. The longer duration of one’s practice or stillness, the more one learns to stay present, and the more opportunity for exposure to and practice with staying with unpleasant or distressing internal states. Thus, in the formal practice, promoting a longer sitting duration, perhaps up to 45 minutes may be useful. However, the impact of the duration of the sitting time is a contentious issue in the literature. Like this current study, Speca and his colleagues (2000) stated that increased sitting times produced stronger outcome results, whereas
Astin (1997) and Vettese and colleagues (2009) posited that there was no correlation between sitting times and symptom change. Regardless, as Roemer, Salters-Pedeault, and Orsillo (2006) suggest, understanding optimal mindfulness practice times and types would be very useful. This current study concurs with this suggestion.

Thus, from the two points above, where the IMAG might have faltered becomes clearer. Not only did this intervention appropriate mindfulness techniques and skills from established interventions, but it also adapted these components to meet the specific needs of this new intervention (i.e., staying within a 2-hour, 10 session limit) and its population (i.e., reducing the practice load in a busy student schedule). In the history of the creation of the MBCT, Segal, Williams, and Teasdale (2002) tell the story of teaching mindfulness without much success. These authors recounted adapting MBSR to meet the needs of the MBCT, but not paying attention to the program of teaching or training; MBSR was a full program of training mindfulness. Thus, MBCT did not gain its effectiveness until care and attention was paid to both the content and the processes of teaching mindfulness. Although the IMAG had both good reason and intention, the adaptations from the original MBSR/MBCT practices and the DBT mindfulness skills might have disrupted the effectiveness of these core components.

**Conclusions.** The Participant and Group Practice Analyses offered two points to better understand the IMAG and its improvement: (1) better presentation, emphasis, and practice with the mindfulness skills component as these were not as clearly established in the participant’s repertoire; and, (2) promoting a longer sitting practice as this might support training and sustaining relaxation, openness, non-judgment, and exposure to challenging mental and physical experiences. These two changes will bring both the
mindfulness-based techniques and skills into better alignment with their original interventions.

**Thematic Analysis**

In terms of understanding and correcting the above challenges with the IMAG, the analysis of the eleven post-group interviews was most important. It presents the participant’s perspectives, which were crucial because these individuals were the experts in terms of what worked or didn’t work. The research question guiding this analysis was: What themes occurred in the post-group interviews regarding the participant’s successes and struggles with anxiety, mindfulness, and the group? The open-coding strategy used with the interviews produced themes in three broad categories: change themes, challenge themes, and mindfulness themes. The change themes and the challenge themes were further clustered into groups.

**Change themes.** In the change category, there were two groups of themes: (1) the types of change experienced by the participants, and (2) the contexts and criteria that seemed to support change. The change themes created by this study are similar to the *benefits of participating in the MBSR program* themes found in a qualitative outcome study for MBSR with nurses (Cohen-Katz et al., 2005b).

In the first group of change themes found in the interviews, the participants revealed the types of changes that were experienced during and after the intervention. More specifically, the participants mentioned change in their openness and awareness, in relaxation, in understanding their own minds, in social and performance areas, and in their willingness to be more compassionate with themselves. Although the intervention ostensibly did not work, the group of the types of change experienced by the participants...
gives hope and reason to continue working on and improving the IMAG. The second group of change themes was the contexts and criteria that seemed to support change. More specifically, these were the components of the intervention (e.g., group material, group structure and format), personal motivation, enjoying and having success with the practices, sharing the experience with like-others, and having social support. This second group was important as it underscored what fostered change from the perspective of the participants.

**Challenge themes.** The challenge category outlined the difficulties that the participants experienced in the intervention and the practices. There were three groups or areas of difficulties: Challenges related to the practices, to the group, and to the context of the participant. The challenges outlined here will be important to address in order to strengthen and correct the IMAG. The first group of challenge themes were related to the practices; these included difficulty with participant motivation, difficulty with staying present, and difficulty with relaxing. Each of these themes relate to overall findings of the study, with the participants not showing increases in mindfulness or decreases in general clinical or anxiety symptoms. The theme of struggling with motivation to implement or sustain the practices or homework is echoed in other mindfulness-based research as being a major difficulty with mindfulness interventions (Cohen-Katz et al., 2005b, Kabat-Zinn, 1990; Toneatto & Nguyen, 2007; Vettese et al., 2009). Being present and relaxed are the hallmarks of mindfulness, therefore having difficulties in these areas might shed light on the challenges with mindfulness acquisition or increases. Again, the challenges of staying present and restlessness were presented in Cohen-Katz and her colleagues’ (2005b) qualitative study of a MBSR group for nurses’ burnout.
The second group of challenge themes involved challenges with the group itself. For this area, the difficulties were largely about needing more support or time in the group in order to make the desired gains. The support and help received from the IMAG (e.g., guidance in application, opportunities to practice) was insufficient for some of the participants. Additionally, the literature on anxiety interventions shows that the length of treatment can range from 10 to 20 weeks (e.g., Roemer & Orsillo, 2005; van Ingen & Novicki, 2009); the IMAG was only 10-weeks in duration. Thus, re-designing the IMAG to have more supportive time dedicated to skill attainment and application might be important in increasing not only effectiveness, but also potentially increasing participant enjoyment and success.

Finally, the third group of challenge themes was difficulties with the context of the participants. Although a thorough pre-screening was undertaken, co-morbidity with secondary mental and physical health difficulties did create some challenges, and did require referral in some cases to outside and specialized treatment. The Mindfulness-based Stress Reduction program does present with exclusionary criteria in regards to depression (Meleo-Meyer & Blacker, 2010). Thus, screening for secondary challenges would be important for participant and intervention success.

**Mirrored themes.** Possibly the most potent material located in the participant’s interviews were the themes that shared both a helping and a hindering aspect. To work with or attend to mirrored themes not only increases change, but also decreases challenge. More specifically, the areas of mirrored content were the group and group format, openness and awareness to the present moment, participant motivation, relaxation, and enjoyment and success of the intervention. Bringing attention to these mirrored themes,
along with the remaining change and challenge themes uniquely allows the participants to give guidance to the IMAG and its improvements.

**Mindfulness themes.** The last set of themes was the participant’s responses to a mindfulness definition. All of the interviewed participants responded that mindfulness was awareness. This awareness could be further broken down into three areas: general awareness, awareness of the self, and awareness of the present moment. Also present were aspects of openness and non-judgment involved in this awareness. When one considers that the word anxiety means constriction and narrowness (Barlow, 1988) and the anxious experience involves tension, avoidance, and evaluation (Bourne, 2000), training and supporting the opposite processes of awareness, openness, and non-judgment seems advantageous.

**Conclusions.** These themes provide specific guidance in terms of potential areas of improvement and encouragement. As stated above, this analysis honours the participant’s expertise in what worked and didn’t work in the IMAG. This analysis extends beyond the questions pertaining to effectiveness to discuss the types of change present for the participants, and what these participants thought helped. Qualitative outcome studies, such as this current research, Mason and Hargreaves (2001) and Cohen-Katz and colleagues (2005b), provide important insight into the intervention and the experiences of the participants. It gives voice to the challenges encountered, or where the participants thought the intervention failed them. It was through these themes and the higher-order groupings (i.e., theme groupings and the mirrored themes) that guidance was provided in terms of what should remain, and what should be improved upon. A new
iteration of the IMAG should address the above in its attempts to meet effectiveness standards.

**Synthesis of the Four Analyses**

The four analyses utilized in this study each contribute a different yet important component regarding the effectiveness of the IMAG at making desired changes in the three dependent variables for university students who self-report anxiety. Although the assertion of clinical effectiveness of the IMAG cannot be made, there were significant and important changes documented (e.g., the majority of the ANOVAs, the stronger performers observed in the Small-N analyses, the few functional relationships evidenced, the numerous basic/weaker basic and delayed/weaker delayed effects documented, and the participant’s discussion of the specific types of changes that were experienced due to the intervention). This provided hope for enhancing and improving the IMAG.

The next iteration of the IMAG can improve upon several key areas of the intervention: (1) create better balance between teaching meditation practices and mindfulness skills; (2) increase the number of sessions; (3) increase the applicability and generalizability of the practices and skills taught; (4) increase the sitting times, and possibly include the full day of practice; (5) support and encourage adherence to practice, and a non-judgmental and open orientation.

This mixed method approach to understanding the effectiveness of the IMAG did much more than answer a yes or no question about effectiveness. It provided a general answer to the effectiveness question without losing the complexity of this answer; it was in this complexity that the hope for further improvements of the IMAG was found. Additionally, the mixed method allowed for a greater understanding of the process of this
particular intervention (e.g., intervention as a training phase with weaker change evidenced; needing greater time and support in the intervention phase). It also allowed the participants to be key informants on change and how to improve the intervention. This research approach provided the capacity to measure change, as well as have participants’ discuss the types of change experienced and the factors that facilitated this change. This is something that neither a quantitative nor a qualitative method could accomplish alone. Thus, both the researcher’s and the participant’s expertise was utilized towards the goal of improving the IMAG.

Unique Contributions

This current study contributes to four areas of literature: anxiety interventions in college or university populations, mindfulness interventions, therapy-outcome designs, and mindfulness measurement. The following discusses several novel contributions within these said categories.

Potential Anxiety Intervention for College or University Students

There are three contributions made by this research in this area. The first contribution was that this current study answered a call by the literature for evidence-supported anxiety interventions that can be delivered in university counselling centres for university and college students who deal with anxiety (Baez, 2005). The IMAG (formerly the CAG) was an intervention used with anxiety-suffering college students. This current research evaluated the effectiveness of this intervention. Although the IMAG failed to garner the necessary evidence for a statement of overall effectiveness, it showed the potential for calibration to improve, strengthen, or correct the factors leading to or inhibiting desired change. Thus, the IMAG, with the knowledge gained from this
current study, has the potential for its next iteration to evidence desired and predicted change, hence enabling an effectiveness claim. The contribution here was taking the first and necessary steps towards creating an evidence-supported integrated mindfulness-based anxiety group that could be used on a campus with university or college students who self-report anxiety.

The second contribution was that the literature on integrated mindfulness-based anxiety interventions suggest that future research apply these novel interventions to anxiety-suffers in specific contexts (e.g., inner city) (See Roemer, Salters-Pedneault, & Orsillo, 2006). This study did just this, as it applied an integrated mindfulness-based intervention on university campuses to university students who self-reported anxiety. This approach enhances external validity claims for potential and future effectiveness statements. The contribution here was evaluating the effectiveness of the IMAG in the context and the population with which it will be used.

The final contribution in this area was the type of student who might benefit from an integrative mindfulness-based intervention. Given the intense, high-stakes, and task-oriented context of the university campus, untreated anxiety can seriously harm a student’s goals. And, given that the intervention phase acted as a training phase, and did not generally evidence change until the end of the 10-week sessions, this might not be suitable for all anxiety-suffering students, particularly those with imminent deadlines or tasks. As Kabat-Zinn and Santorelli (2005) have stated, mindfulness is no panacea or cure all. For student-clients, mindfulness might be a longer-term strategy for dealing with anxiety, however they might need short-term skill-based strategies to support them in their immediate demands. Thus, although this study failed to evidence effectiveness,
the suggested change (e.g., Small-N design’s effects and the ANOVAs’ significant results) and where these changes occurred in the study (e.g., end of the intervention and in the follow-up phase) does arguably support a warning about the type of student-client who might benefit from mindfulness to deal with anxiety. The contribution here was becoming more precise about which student-clients might most benefit from longer-term mindfulness training, and which student-clients might need additional shorter-term coping skills to meet immediate academic demands.

**Mindfulness Interventions**

The second area of contributions is in mindfulness intervention, which has three unique contributions. First, given that the ANOVAs documented unequal change with less frequent and less potent change for the mindfulness variable when compared to the change in anxiety or general clinical symptom variables, this begs the question of what exactly might be creating these reductions. Several authors are making this same query (Roemer & Orsillo, 2005; Toneatto & Nguyen, 2007). Vettese and his colleagues (2007) also question the change mechanism when they failed to find a strong connection between mindfulness homework and clinical change; they concluded that there might be other factors contributing to change. This study provides evidence for the importance of the question of the change-mechanisms in mindfulness interventions, as this study suggests that there might be other change-mechanisms, besides mindfulness, mediating or moderating the reduction in symptoms. The contribution here was supporting the questioning of mindfulness as the only and main active change-mechanism in a mindfulness-based intervention.
Second, the IMAG incorporated core mindfulness components from other evidenced-supported therapy programs, and IMAG adapted these components to meet its own needs. In doing so, it may have critically hindered the successful processes and content of these core mindfulness components. Gratz and her colleagues (2005) inquired about this possibility. A successful empirically-supported therapy program might be larger than the sum of its parts. Great care, attention, and planning must be undertaken before selecting components from a successful program for use in a discrete clinical action plan or in the development of a new program. Thus, the IMAG needs to be carefully re-designed and regularly monitored in order to capture and ensure the full benefits of these core mindfulness components. The contribution here was a warning about selecting core components from evidenced-supported programs and transplanting them into a therapy practice or into a new program, and how this does not guarantee the initial effectiveness of the component in its original context. This narrow selecting of core components from popular and evidenced-supported therapy programs is a widely found practice in the clinical profession (DiGiorgio, 2009), and should be considered carefully.

Finally, mindfulness is meditation, not medication. And, it is not a panacea (Kabat-Zinn, 2003). Mindfulness formal techniques (e.g., meditation, yoga) or mindfulness skills (e.g., Radical Acceptance, Mindfulness skills) require effort and practice. Both the participants’ interviews and the cumulative change seen at the end of intervention and in follow-up support this assertion. Therefore, haphazardly suggesting mindfulness to clients as a clinical strategy is suspect; it takes particular effort and practice to develop. This speaks to the importance of leader training and experience with
mindfulness (Grepmair et al, 2007). Several authors re-iterate the importance of a therapist’s training and experience if using mindfulness clinically (Baer & Krietemeyer, 2006; Kabat-Zinn, 1990; Roemer, Salters-Pedault, & Orsillo, 2006; Segal, Teasdale, & Williams, 2002; Semple, Lee, & Miller, 2006; Walsh, 1988). The contribution here was emphasizing the practice and effort on the part of the client, which in turn supports the importance of the leader’s training and experience in using mindfulness interventions with clinical populations.

**Mixed-Method Therapy-Outcome Designs for Newer Interventions**

Although the benefits of the mixed-method therapy-outcome design are outlined above, the diversified clinical feedback in the form of a mixed-method research design provided a strong foundation to move forward and re-design the IMAG to maximize its clinical impact. It allowed both professional outcome standards (i.e., two quantitative research strategies) and participants’ perspectives (i.e., a qualitative research strategy) to evaluate and guide the IMAG into the next stages of its development. Cohen-Katz and her colleagues (2005a, 2005b) used a similar mixed-design approach to investigate the effectiveness and experiences of MBSR with nurses’ burnout. Thus, this current study as well as Cohen-Katz and her colleagues’ research studies show how mixed-method research designs are pragmatic and thorough approaches to therapy outcome research in the context of new interventions, which might benefit from multiple forms of feedback in order to maximize the understanding of both effectiveness and efficiency. The contribution here was a successful example of a new intervention utilizing a mixed-method research design to both evaluate effectiveness and guide intervention improvement and fortification.
Mindfulness Measurement

The final area of contribution is the measurement of mindfulness, which has two novel contributions. First, mindfulness scales often showed lower intervention levels when compared to baseline levels. This was troubling because the optimal trend is ascending, and the measurement suggests mindfulness decreased in the intervention. However, this might not be the case. Mindfulness training and practice increases awareness, therefore the lower scores might actually indicate higher mindfulness, as the participant is becoming more aware and more discriminating in regards to their own levels of awareness or mindfulness; they are becoming aware of or more sensitive to their lack of awareness, consequently mindfulness or awareness levels decrease. This represents a challenge to incremental validity. This measurement conundrum speaks to mindfulness’s meta-cognitive characteristics; mindfulness is the training of a mental process, which could lead to both greater awareness evidenced in the mental content, and greater awareness of the nature of the mental content. Thus, either lower mindfulness scores or higher mindfulness scores could mean higher levels of mindfulness. This is somewhat troubling for mindfulness measurement in mindfulness training contexts. The contribution here was outlining the potential challenge of measuring mindfulness acquisition due to its meta-cognitive characteristics.

The second contribution was also a conundrum, but of a cultural manner. Mindfulness was initially developed in an Eastern paradigm, and encouraged qualities of awareness specific to this cultural and paradigmatic context. Thus, when one trains in mindfulness through a program such as MBSR, MBCT, or DBT, one might be shifting awareness from a Western paradigm to an Eastern one. Therefore, the shift in
measurement might be a qualitative one, not a quantitative one. Measurement in research is predicated on quantitative shifts in a construct (i.e., decreases or increases in a particular construct). It cannot account for a qualitative shift in a construct. This again speaks to the importance of a mixed-method research design approach because a qualitative shift would need to be identified or verified by a qualitative method. The contribution here was outlining a potential challenge in pre and post measurements of mindfulness due to a possible qualitative shift after mindfulness training.

Challenges and Limitations

Several limitations and challenges presented themselves in this study. These have been divided into three categories: design limitations, measurement limitations, and intervention limitations.

Design limitations. This set of limitations pertains to the design of the study. First, the participants were all students, and they were participating in this study across different times of a semester. Academic semesters inherently have times that are more stressful or anxiety causing (i.e., mid-term and end-term). Although baseline and intervention phases are supposed to be equivalent in terms of academic pressure, stress, or anxiety, this would not be the case in an academic context. Thus, someone might start baseline at the beginning of the semester in a lower stress context, and enter the intervention phase at mid-term or in a higher stress context, while someone else might begin at mid-term, and then enter intervention at the end-term. An academic semester would create systematic variance, which could create a confound (i.e., a systematic error) for a lagged baseline conducted in the higher-educational context. Second, as mentioned above, the Small-N design is a conservative research approach, thus there is a potential
threat of Type II error. This potential challenge in the current study is emphasized by the substantial significant results of the Within-Subject Analyses. However, no conclusive statements can be made about effectiveness using the ANOVAs because there is no control group or TAU comparison. Thus, it is possible that the non-effectiveness result is an artefact of the method’s conservativeness and not the intervention’s failure. The third limitation is found in the types of effects or changes that were found by the study. Delayed effects were the most prominent type of change effect found in the study; however, some authors believe that delayed effects are inferior to basic effects when trying to establish functional relationships in that they “can compromise the internal validity of the design” (Kratochwill et al., 2010, p.18). For this study, the intervention phase has been observed to be a training phase, thus the predicted change would be expected afterwards or in the follow-up phase. Therefore, even if this study showed functional relationships with delayed effects, this form of evidence could be considered inferior, and challenges could be made against any effectiveness statements.

**Measurement challenges.** As stated above, the majority of the change was found either at the end of the intervention phase (i.e., Within-Subjects Analyses) or in the follow-up phase (i.e., Small-N Visual Analyses and the Within-Subject Analyses). Thus, the intervention phase performed like a training phase for the mindfulness techniques and skills. One could expect then that data from a training phase would overlap between the baseline and intervention phases, and that the effects in intervention would be more modest. This was shown in the current study, with weaker effects being evaluated more frequently in the intervention phase than in the follow-up phase, and the more conservative full effect being evidenced in the follow-up phase. However, the language
of a weaker effect may be misleading, particularly during a training phase. Therefore, the inclusion of two different criteria or standards for basic and delayed effects might have been useful, given the expected performance difference between the intervention and follow-up phases.

**Intervention limitations.** This set of limitations deals with the IMAG. First, Groups 1 & 2, and Groups 3 & 4 had a different agenda for session six of the IMAG. Groups 1 & 2 reviewed the prior material of session 5, and Groups 3 & 4 did a new exercise that fostered de-centering or de-identification. This change was undertaken as it was seen that changes were not being made in Groups 1 & 2, therefore there was an attempt to increase the therapeutic potency in the later groups. Second, the pre-group screen was a 2-hour face-to-face interview session, where rapport between the leader and participant was being established, and hope for the participant’s improvement was being instilled. Hope has been cited as a trans-theoretical or universal therapeutic change mechanism (Miller, Duncan, & Hubble, 1997). In a qualitative study, Mason and Hargreaves (2001) found that the MBCT participant’s pre-conceptions and expectations of therapy influenced their experience of the intervention. Thus, the baseline phase might have included this ubiquitous yet powerful change mechanism. Change for some participants might have started after this initial pre-group meeting in the baseline phase, and might have been sustained through completing the baseline questionnaires. Finally, there was a limitation in terms of the leader’s intentionality. From a broader perspective, this research was completed to fulfill the requirements of a doctoral degree. It could be said that there was goal-striving undergirding this intervention. Additionally, the participants all had the goals of lessening anxiety to enhance their academic or general
lives; they also were goal-focused. Goal-focused or striving are somewhat contrary to the precepts of mindfulness. Grepmair and his colleagues (2007) showed that a leader’s own mindfulness practice supported client outcome. Thus, there was an interesting misalignment between mindfulness and the goal-directiveness of both the leader and the participants. This might have made mindfulness acquisition and the attitudes of openness, non-judgment, patience, and not doing more challenging.

**Future Exploration and Research**

In terms of future exploration and research, the IMAG and other like interventions are well worth the time and effort in exploring their effectiveness. This was a first step in understanding if the IMAG could work with a university population, and how it could be improved. The following are some future research ideas generated from the findings of this study.

First, the most important research investigation that could come out of this current research study is exploring the effectiveness of an improved version of the IMAG. This improved IMAG could integrate the suggestions outlined above (e.g., more support, more time, greater attention to certain therapeutic components). The research investigating this new intervention could also evolve given the feedback above. Given that the intervention phase seems to be operating like a training session, the non-overlapping data analysis should be reserved to the end of intervention or follow-up phases, and completing the probes in follow-up should be encouraged so the necessary data is available in this critical phase. This would make this current research the first step in the direction of creating an effective integrated mindfulness-based group therapy for university-students who self-report problematic anxiety.
Second, given the results of the Within-Subjects Analyses and the conservativeness of the Small-N Visual Analyses, an alternative next step of research with the IMAG might be an experimental design, with a randomized control group or a TAU. This would eliminate questions about effectiveness, reduce potential bias due to change occurring in the follow-up phase, and reduce difficulties with continued measurement across an academic semester.

Third, an interesting area of investigation presented is the difficulties with the measurement of the mindfulness variable. Further exploration of the psychometric qualities of the meta-cognitive aspects of mindfulness would be useful in not only understanding mindfulness, but also in aiding its increase or acquisition in participants or clients. Thus, a mix-method design would be useful to understand what exactly is being measured in a mindfulness study, and how it changes or shifts both quantitatively and qualitatively. This type of design could monitor for qualitative shifts in the mindfulness construct over time. Additionally, a post-intervention to pre-intervention exploration might be useful. Stated differently, now that one has the knowledge of the mindfulness at the end of the study via training and experience, how do the participants reflect on mindfulness or awareness differently than at the beginning of the study? Given this current study encountered a context in which a decrease or increase in the measurements of mindfulness could indicate an increase or acquisition of this construct, this type of inquiry would be important to understand mindfulness better. This investigation would precede another crucial study to further understand mindfulness interventions: what are the various change-mechanisms creating change in a mindfulness-based intervention? It
is acknowledged that the measurement issue will need to be resolved prior to conceptualizing the role of mindfulness as a change-mechanism.

Fourth, another interesting finding was the participants with consistent and substantiated change were also the individuals who in follow-up practiced the formal techniques for longer sitting-periods. Kabat-Zinn (1990) and Segal, Teasdale and Williams (2002) both promote 45-minute practice sessions. However, actual practice times for participants vary (Carmody & Baer, 2009; Vettese et al., 2009). In order to explore this finding further, a mixed-method study with both a correlational component and an interview would be useful. The correlational component could tell if there was a relationship between duration of practice, and an increase in well-being or a decrease in anxiety or other symptoms. And, the interview could explore the experiential aspects of the varying duration of practice and how these differentially supported well-being tasks. If there was a difference in the correlation, then a researcher could continue to form different groups based on duration of practice, and assess if there are differences between the groups. This would support therapeutic mindfulness-based interventions, which use meditative practices as change or training techniques.

**Conclusions**

In the end, there was promise and direction for a new and improved version of the IMAG. Although this study showed that this current intervention was not effective, the several analyses utilized in the study have guided the various suggestions for improvements to the IMAG. These improvements are seen in the areas of techniques and practices, the group and group format, and encouraging and supporting participants. There also needs to be attention to aligning intentions of the mindfulness-based
intervention, with the conflicted striving and non-striving agendas of both the participants and the leader.

In addition to assessing and improving the IMAG as a therapeutic intervention, this research warns about the ramifications of extracting and adapting a technique or skill set from an original therapeutic program, and transplanting it into a new program, as it might have unintentional ramifications, which might negatively affect effectiveness. The therapist should pay attention to the requisites of the techniques and skills in their original context, and attempt to simulate these conditions in the new program, which is trying to meet the unique therapeutic needs of a population or clinical problem.

And finally, this research helped expand an understanding of mindfulness and mindfulness acquisition a little better. Mindfulness is a skill or a way of being that requires time, dedication, and particular attitudes to increase or acquire. It also has metacognitive characteristics, which are challenging to measure. Many therapeutic interventions are incorporating mindfulness into their programs to gain the advantages that historical-precedence and current research have established. Exploring the effectiveness of an integrated mindfulness-base group therapy for dedicated student-participants who struggle with anxiety has been a worthwhile endeavour. Further, advancing and improving the IMAG to a level of sustained effectiveness would not only support students but also the college counselling centres that are dedicated to helping them. Again, these are very worthwhile endeavours.
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APPENDIX A

Study Introduction Letter

January XX, 20XX

Dear Dr. XX

My name is Asa-Sophia Maglio, and I am a doctoral candidate in the Counselling Psychology Program at UBC. I am currently undertaking my dissertation research, which is titled “Effectiveness of an Integrated Mindfulness-Based Therapy for University Student Dealing with Anxiety”. My supervisor is Dr. William Borgen at UBC’s Counselling Psychology program.

I am exploring the effectiveness of a counselling group intervention, which focuses on anxiety. This counselling group has been offered at the University of XX Counseling Center for many years, and is this Center’s main intervention for anxiety. The specific forms of anxiety that were referred to this group: social, performance, panic, generalized, and test anxiety. I had the opportunity to run this counselling group 3 times during my pre-doctoral internship at the University of XX Counseling Center.

The purpose of this 10 two-hour weekly session group is to teach students who deal with anxiety various Mindfulness skills and practice, and emotional and cognitive skills. This group integrates Eastern and Western psychological interventions. This group approaches the treatment of anxiety from holistic perspective: physical (e.g., relaxation, breathing, meditation, body scanning), behavioural (e.g., skills teaching, practice, and application), emotional (e.g., acceptance skills, observing/naming, desensitization, non-reactiveness, present-moment awareness), and cognitive (e.g., observing/describing, non-judgment, effectiveness, “you are not your thoughts”, compassion for the self, value and goal clarification). It teaches mindfulness in many different ways, as it integrates 4 mindfulness-based programs: Mindfulness-Based Stress Reduction (Kabat-Zinn, 1990), Dialectic Behavioral Therapy (Linehan, 1993), Acceptance and Commitment Therapy for Anxiety Disorders (Eifert & Forsyth, 2005), and Mindfulness-Based Cognitive Therapy (Segal, Williams, & Teasdale, 2002).

For this counselling group, the participant would be required to attend 10 two-hour weekly sessions, complete skills practice as homework assignments throughout the week (up to 30 minutes per day 5 days a week), and complete weekly self-monitoring questionnaires (20 minutes per week). There are base line, intervention, and follow-up phases to this research. The total estimated time requirement for this intervention research is 55 hours over 6-9 months. There is no cost to you or the participant for this intervention or research. Also, you will be provided with a brief synopsis of the findings.

Inclusion criteria for this group would be: anxiety as a principle-presenting problem for the client, and being a full-time or part-time student able to access Counselling Center
services. The exclusionary criteria for this research are Obsessive-compulsive disorders, PTSD, and suicidal and homicidal ideation, and psychosis. There is a pre-group screening interview to identify the various forms of anxiety that may be present.

This group will be lead by Asa-Sophia Maglio. I have completed a Master of Art in Counselling Psychology, and have completed all of my clinical training for my doctoral degree. I am a Registered Clinical Counsellor. I have had training at the University of Massachusetts’ Center for Mindfulness for leading the Mindfulness-Based Stress Reduction Program. For the purposes of training, I have participated in mindfulness-interventions twice, and I have my own meditative practice. I also have taken Dialectic Behavioral Therapy training through Behavioural Corp. I have co-facilitated a undergraduate-level class on Meditation and Stress, and have given lectures and talks on meditation in Health Psychology and Sport Psychology. I frequently consult with the developer of this group Dr. XX, Ph.D., LCSW.

If you are interested in more information, please don’t hesitate to contact me at 604XX or XX.com

Thank-you for your time,

Asa-Sophia Maglio, M.A., RCC
APPENDIX B

Study Poster

Anxiety gets in your way?

Free group psychological treatment for anxiety available to university/college students

If you are over 18 years of age, and you are experiencing the following characteristics, please contact us:

- Ongoing fear and anxiety (e.g., feelings of panic, general anxiety, fear of social or performance situations, lots of worrying, poor concentration and attention, physical symptoms like racing heart, stomach upset, muscle tension)
- Recognize that this fear and anxiety is excessive or unreasonable
- This distress interferes with everyday activities
- Full-time or part-time University or College student

Treatment involves 10 two-hour weekly group sessions, skills to practice on your own, as well as assessment before, during, and three months after treatment. Treatment involves learning relaxation and meditation skills, and other distress management and coping techniques. The total time requirement would be about 55 hours over 4-6 months. (This includes pre-therapy, therapy group, and skills-practice time). Individuals with Obsessive-Compulsive or Post-Traumatic Stress disorders are excluded.

Please contact Asa-Sophia Maglio at 604-XX for more information

This study is being conducted by Asa-Sophia Maglio (doctoral candidate, co-investigator), under the supervision of Dr. William Borgen (faculty advisor), UBC Department of Educational and Counselling Psychology, and Special Education
APPENDIX C

Code: __________

Consent Form

Effectiveness of an integrated mindfulness group therapy intervention for anxiety in university or college students

Faculty Advisor: Dr. William Borgen, Professor, UBC Department of Educational and Counselling Psychology, and Special Education. Phone: 604-XX

Student-Investigator: Asa-Sophia Maglio, MA, RCC, doctor candidate, UBC Department of Educational and Counselling Psychology, and Special Education. Phone: 604-XX. Ms. Maglio is undertaking this study for her doctoral dissertation.

Purpose of the study: The purpose of this study is to investigate the effectiveness of a group psychological treatment for reducing the symptoms of anxiety in university or college students. You have been invited to participate because you are an university/college student who has identified yourself as dealing with anxiety. You also have identified anxiety as your primary psychological concern. All services rendered will be entirely free to participants.

Procedures: As a participant, you will be asked to do the following:

1) Attend an initial 2 hour in-person confidential pre-group screening and interview, complete questionnaires, and receive an overview of the study. The interview portion of this meeting will be audio-recorded.

2) Complete a series of pencil and paper questionnaires weekly during a self-monitoring period, which will last between 3-13 weeks, and once a month for 3 months after the group is completed. The questions ask about current anxiety level, anxiety-related symptoms, mindfulness levels, and target symptoms that you set. The questionnaires take approximately 20-30 minutes to complete and will be available for you to complete in your own home at your convenience.

3) You will be either randomly assigned to experimental or control group if your campus has two groups running. If your campus has only one group running, then you will be assigned to this group and your campus will be assigned to either the control or experimental group. Both groups begin with a 3-week baseline period, which comprised of completing questionnaires once a week for 3 weeks. After this baseline period, the experimental group will begin the intervention. The control group will stay in baseline for between 3-13 weeks after this group begins the intervention. Then, the control group will begin the intervention.

4) The therapy intervention consists of attend a 10-week group counselling treatment held once per week at your campus or at a nearby campus. Ms. Maglio will lead the counselling groups. At the beginning of each therapy group, there is a free write where you write for 5-10 minutes in a journal about whatever you chose. During the
sessions, we practice stretching, mindfulness meditation, breathing exercises, mindfulness skills, value exploration, and emotional regulation skills. There is a maximum of approximately 30-minutes of skills practice per day for about 5 days per week of the therapy group.

5) Each therapy session will be video recorded, and the files stored in locked cabinet. Video files are identified by session number, and will be only accessible by Dr. William Borgen, Asa-Sophia Maglio, and the research assistant. The video files will be used for supervision and research purposes; they will be viewed Dr. Borgen, Ms. Maglio, and the research assistant between sessions. The video files will not be released without your expressed written consent.

6) During the 10-week treatment, you will be asked to continue completing the self-monitoring questionnaires at home (as outlined in point #2), and once a month for approximately 3 months after the program has ended. The Research Assistant will manage the questionnaire, interview, and free write material (i.e., research material). This Research Assistant will remove your name from any research material and replace it with your research code.

During the 10-week therapy, the self-monitoring questionnaire material and free write material (identified only by your research code) will be available to Asa-Sophia Maglio for review between therapy sessions. If self- or other-harm, or any abuses (child, elder, disabled) is identified in any research material, Ms. Maglio and Dr. Borgen will access the participant’s name.

7) Participate in a 60-minute audio-recorded telephone interview three months after the treatment has been completed. The Research Assistant will conduct this interview. The pre and post interviews will not be reviewed until after the therapy sessions are completed.

8) If you decide to leave the therapy group prior to its completion, a brief (10-minute) telephone interview will be made to discuss reasons for leaving the group and how the group could be improved.

The total amount of time that will be required by you will be:
(i) Two interviews: pre-group is 2 hours and post-group is 1 hour
(ii) 20 minutes every week for between 4-6 months
(iii) 20 hours of anxiety treatment
(iv) 25 hours of skills practice over the 10 week treatment
The total time required will be approximately 55 hours, spread over 6-9 months

9) Optional follow-up sessions will be held approximately 6 to 12 weeks after the final group therapy session; these sessions will be optional for the study participants to attend. These follow-up sessions will review the skills and practices that were covered in the therapy group, and will support participants in using the skills on identified goals and in their general lives. The follow-up sessions will be approximately 4 hours in duration, and will be held at mutually convenient times for both the group participants and the group leader. These sessions will be audio-taped.

Possible Risks: You should check with your medical doctor a) if you have physical concerns regarding the gentle stretching component of the group and b) if you have a
blood pressure condition as systematic relaxation can affect blood pressure. Also, meditation can temporarily increase anxiety in some people. In this situation, you would be instructed to lessen the time spent in meditation, and focus on other practices that do not create difficulty for you (e.g., body scan, gentle stretching, mindful walking). There is weekly check in with the participants about their practices and any difficulty they may be experiencing.

Alternative Treatments: Alternative treatment options for anxiety can be located at Changeways program (604-822-XX), and a list of support group and treatment groups can be found at Anxiety Disorder Association for BC (604-681-XX).

Confidentiality: All identifiable information resulting from treatment and research will be kept confidential. There are three limits to confidentiality: a) if you represent a danger to yourself or others; b) if there is suspicion of child or elder abuse, or abuse of the disabled; c) if the therapist is required by the court to provide information (subpoena).

All research material will be identified only by research code number and kept in a locked filing cabinet in a locked office. Participants will not be identified by name in any reports of the completed study. In accordance with UBC recommendations, (i.e., audio files, video files, questionnaires, free write booklets, answers to interviews) will be kept for five years after the work is presented. After those five years, data will be destroyed (i.e., professionally shredded and/or erased). The raw data will not be used for other research projects your expressed written consent.

Contact: If you have any questions or desire further information with respect to this study, you may contact Asa-Sophia Maglio at 604-XX, or her faculty advisor Dr. William Borgen at 604-XX.

If you have any concerns about your treatment or rights as a research participant, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-XX.

Consent: I understand that my participations in this study is entirely voluntary and that I may refuse to participate or withdraw from the study at any time without jeopardy to my access to further services from UBC or my campus.

I have read this consent form. I have received a copy of this consent form for my own records. I consent to participate in this study.

Participant Signature

Date
APPENDIX D

Initial Brief Telephone Contact Script

Effectiveness of integrative mindfulness-based therapy for university students dealing with anxiety

Name of potential participant: ______________________________________________
Phone number: __________________________________________________________
Date: ___________________________________________________________________
Referral source: __________________________________________________________

Hello, may I talk to (potential participant) please?

(If not available, no message is left)

Hello, my name is Asa-Sophia Maglio, I am calling from Counselling Psychology Program at UBC. Is this a good time to talk to you?

You have left a message saying you are interested in finding out more about the research project that I am conducting about anxiety in university students. I am calling to give you a bit more information, so you can decide if you want to participate in this study. Our conversation should last between 5 and 15 minutes. Is this OK?

The purpose of the project is to look at the effectiveness of a group therapy for reducing the symptoms of anxiety in university or college students. Everyone in this group will deal with some form of anxiety, so everyone will share and understand an experience with anxiety. The forms of anxiety that we will be working with are panic, social anxiety, performance anxiety, and generalized anxiety. This group is focused on the treatment of anxiety, and not other psychological issues.

The group is a 2-hours a week for 10 weeks. This group is a combination of Eastern and Western psychology approaches to dealing with anxiety. The Eastern component is the integration of Mindfulness skills and meditation. Mindfulness simple means friendly, non-judging, present-moment awareness. This awareness can be of you, your thoughts and emotions, and/or of your life. Although Mindfulness comes from a Buddhist background, it has been used in a non-religious manner in medical and psychological settings for about 20 years. This group will involves gentle stretching, meditation, skills training, skills practice in-group and at-home, and check-in on practice. There is an at-home practice, which will be between 10-30 minutes at day for about 5 days a week for the duration of the group. There also is some self-monitoring, which will take about 20 minutes per week. There is a monthly follow-up for 3 months after the group ends, and a 60-minute interview appropriately 3 months after the group. Do you have any questions?
Can I ask you some brief questions? Please just answer yes or no:

1. Have you experienced the following symptoms in the last month?
   - Racing heart Y or N
   - Depersonalization Y or N
   - Shortness of breathe Y or N
   - Choking Y or N
   - Numbness Y or N
   - Tingling Y or N
   - Chest Pains Y or N
   - Dizziness Y or N
   - Chills Y or N
   - Sweating Y or N
   - Shaking/Trembling Y or N
   - Nausea Y or N
   - Fear of dying/feeling like going crazy Y or N
   - Muscle tension Y or N
   - Irritability Y or N
   - Restlessness or feeling keyed up/on edge Y or N
   - Easily fatigued Y or N
   - Difficulty concentrating Y or N
   - Sleep disturbance Y or N
   - Fear of social or performance situation Y or N
   - Fear of acting in a way that will be humiliating or embarrassing Y or N
   - Do you worry Y or N
   - Previous treatment for anxiety?

2. Have you been in therapy in the past? Y or N
3. Are you under the care of a therapist currently? Y or N
4. Are you a student with full or part-time status at your college or university?

If you are still interested, I would like to interview you about your experiences with anxiety. This interview will allow me to better understand your experiences with anxiety, and will allow me to understand if this group will be helpful for you. If this group will not be helpful, then I will give you some names and number of resources that may be helpful to you.

Let’s find a mutually convenience time and place to meet. This interview will take a maximum of 2 hours, and I can answer any questions that may arise for you. Do you have any questions?

Let’s set-up a time …

Email: ____________________________________________
APPENDIX E

List of Mental Health Referrals and Resources

- UBC Counselling Centre (for UBC Students)
  - 604-822-3811

- UBC Clinical Psychology Department Clinic
  - 604-822-3005

- British Columbia Psychological Association
  - 604-730-0522

- University of British Columbia Student Health Service
  - 604-822-7011

- Anxiety Disorders Associations for British Columbia
  - 604-681-3400

- Adler Counselling Clinic
  - 604-742-1818

- New Westminster Counselling Clinic
  - 604-525-6651
APPENDIX F

Name: _____________

Pre-Group Screen

1. Orient to the pre-group screen.
   - Ask if the participant has any questions that have arisen since our last conversation on the phone.
   - Inform them of the procedures of this interview
     - I will be asking about your experience with anxiety, some of the anxiety symptoms that you have experienced
     - I will be asking about your broader experience with therapy, and if there are other psychological difficulties that you may be dealing with
     - I will be asking about your goals for the group, and see if the group will fit your needs
     - I will be audio recording and writing your response down.
   - Explain the procedure to be followed if the participant does not meet the criteria of the research, or chooses not to participate. My copy of the consent form will have the reason for non-participation written on it, a date, and a statement that the list of referral and resources has been given to the participant. The consent form will be stapled to the pre-group screen and CD containing the audio-recording, and stored for 5 years. It will not be analysed for any reason, with the exception of the Limits to Confidentiality outlined in the consent form.
   - Read the consent form to the participant. Have them sign it.

2. Assessment
   - Description of symptoms of anxiety that they face. Elaborate on the symptoms indicated in the Initial Contact.
     - Racing heart Y or N
     - Depersonalization Y or N
     - Shortness of breathe Y or N
     - Choking Y or N
     - Numbness Y or N
     - Tingling Y or N
     - Chest Pains Y or N
     - Dizziness Y or N
     - Chills Y or N
     - Sweating Y or N
     - Shaking/Trembling Y or N
     - Nausea Y or N
     - Fear of dying/feeling like going crazy Y or N
     - Muscle tension Y or N
     - Irritability Y or N
- Restlessness or feeling keyed up/on edge Y or N
- Easily fatigued Y or N
- Difficulty concentrating Y or N
- Sleep disturbance Y or N
- Fear of social or performance situation Y or N
- Fear of acting in a way that will be humiliating or embarrassing Y or N
- Do you worry Y or N

- Panic attacks? Y or N
  - First panic attack
  - Most recent panic attack
  - Duration of attacks
  - What precipitates?

- Agoraphobia? Y or N
  - How long?
  - Where?

- Symptoms of anxiety and which of these are most salient for you from the brief telephone interview
  - Ask further questions about the experience with these symptoms

- Fear of social or performance situation Y or N
  - Specify
  - When did it begin
  - Has it limited your activities?
  - Any periods of remission?

- Fear of acting in a way that will be humiliating or embarrassing Y or N
  - When did it start?
  - Any periods of remission?
  - Run in the family?

- Do you worry Y or N
  - How often?
  - What kinds of worries?
  - What percentage of the time is spent worrying?

- Do you have obsessive thoughts and/or compulsive behaviours? Y or N
  - What kinds?
  - How often?
  - When did it start?

- Ask further questions from the Anxiety Disorder Interview Schedule (ADIS, Brown, Dinando, & Barlow, 2004)
  - Ask more specific questions about the type of anxiety that they seem to deal with

- Ask about depressive symptoms
  - Depressed mood Y or N
  - Anhedonia Y or N
  - Interests/Hobbies/sex Y or N
  - Irritability Y or N
  - Sleep Y or N
  - Weight Y or N
3. Previous treatment for anxiety?

4. Alcohol and Drugs
   - Caffeine use? Y or N
     - How often?
     - How much?
   - Alcohol use? Y or N
     - How often?
     - How much?
   - Drug use? Y or N
     - How often?
     - How much?

5. Current Medication

6. Diet and Exercise
   - Current exercise program? Y or N
     - Frequency?

7. Physical ability concerns Y or N
   - There is a stretching component of this program. If you have any concerns about your ability to participate in a gentle stretch routine, please check with your doctor.

8. Have you been in therapy in the past? Y or N
   - Past year? Y or N
   - What for?
   - Was it useful? Y or N
   - How was it useful?
   - Are you under the care of a therapist currently? Y or N
   - Have you experienced suicidal, homicidal, or psychotic thoughts in the past? Y or N
     - If yes to any of the above
       - Currently?
       - When?
       - Treatment?
9. What do you expect from this group?

A decision as to whether the prospective participant has met the group criteria will be made at this point.

- If the prospective participant has not met the group criteria, then I would explain how this group would not be helpful given his/her presenting difficulties, and review the List of Counselling Referral and Resources List.
- If the prospective participant has met the group criteria, then I would continue with the following questions.

9. What is your goal over the next 3 months?

10. What would you like to change over the next 3 months?
   - Pick out three behavioural indicators specific to this participant
   - What would you like to do more frequently or less frequently, feel less intensely or more intensely?
APPENDIX G

Post-Group Interview Questions

Activation Questions (15 minutes)

1. Please tell me about your experience with activation now. Can you give me an example?
2. How does activation impact your life? Describe an example of this impact.
3. When is activation most present for you? Describe an example. Has this changed since you have been in the group? Please explain.
4. When is activation least present (less likely to occur) for you? Describe an example. Has this changed since you have been in the group? Please explain.
5. What do you find has helped to cope with activation? Please explain. (NOTE: important to get a concrete example.)
6. What has hindered you in coping with activation? Please explain. (NOTE: important to get a concrete example.)
7. In your opinion, has your activation increased or decreased since being in the group. Can you give me an example?

Mindfulness Questions (15 minutes)

1. How are you understanding Mindfulness?
2. Describe your experience with Mindfulness meditation (e.g.: formal sitting meditation, body scan, mindful walking, mindful movement, loving kindness). Provide an example. What was it like to do these practices?
   a. Either during the time of the group OR after the group
   b. If they don’t talk about the formal sitting meditation, then ask specifically about their experience with this practice.
3. Describe your experience with mindfulness skills (e.g.: how-and-what skills, wise mind, radical acceptance, emotional regulation). How have you used them? Give an example.
   a. Either during the time of the group OR after the group
   b. When dealing with activation? Or other times?
4. What helped you, or supported your regular practice of Mindfulness? (Can you clarify what you mean?) Describe these examples. (CONCRETE EXAMPLES) *** NOTE: regular practice of mindfulness includes meditation & skills.
   a. If they don’t talk about the formal sitting meditation, then ask specifically about what helped with using this practice regularly. (Can you clarify what you mean?) Describe these examples. (CONCRETE EXAMPLES) ***
5. What has hindered your regular practice of Mindfulness? Describe these examples. (CONCRETE EXAMPLES, actual incidence?) *** NOTE: regular practice of mindfulness includes meditation & skills.
a. If they don’t talk about the formal sitting meditation, then ask specifically about what hindered with using this practice regularly. (Can you clarify what you mean?) Describe these examples. (CONCRETE EXAMPLES)

**Post-Group Activation Intervention Questions (15 minutes)**

1. What did you find helpful about the group? How was it helpful? How was it helpful with your activation?
2. What did you find not helpful about the group? How was it not helpful?
3. If you could change some aspect of the group, what would it be? And, why?
4. What changes have you experienced because of your participation in the group? (in their life?) (If they don’t talk about awareness as a change, then ASK: What awareness have you gained because of your participation in the group? How has this awareness impacted your anxiety? Increase/decrease)
5. Were there any changes that have occurred in your life at the time of the group that you haven’t told us about? And what were those changes?
6. What feedback would you give Asa to improve her instruction of the group?

**Goals in the Group (10 minutes)**

What was your experience of working towards your goals? (NOTE: duration of the group & after the group has ended)

1. How has the group help you reach these goals? (CONCRETE example)
2. What has hindered in reaching these goals? (CONCRETE examples)

** Is there anything we didn’t ask you but we should have asked you to help us understand your experience with activation, the group or mindfulness? **