Creativity and Mental Well-Being in Older Australians: A Mixed-Method Study

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Submitted in fulfilment of the requirements of the degree of Doctor of Philosophy

April 2016

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Authorship and Access

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person or material that to a substantial extent has been accepted for the award of any other degree or diploma at Charles Sturt University or any other educational institution, except where due acknowledgement is made in the thesis. Any contribution made to the research by colleagues with whom I have worked at Charles Sturt University or elsewhere during my candidature is fully acknowledged.

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__________________________________________

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Acknowledgements

I am grateful for the assistance of many people who helped me to carry out the research and to write this thesis. I want to thank two academics who have been particularly helpful over the years, Emeritus Professor A. J. Cropley and Dr Robert Trevethan. They have both enabled me to understand scholarly rigour.

Professor Cropley was a steadfast adjunct supervisor from the beginning, and I thank him for generously sharing his knowledge about creativity, quantitative and qualitative methods, and writing skills, and for the at-times fiery feedback and humour that helped me keep focussed on the overall picture. His seminal paper on creativity and mental health in everyday life was a catalyst for my decision to commence the research presented in this thesis, and it has been an honour to have been supervised by him.

I am deeply indebted to Dr Trevethan for his generous efforts in providing tuition and statistical assistance with the quantitative data, his excellent capacity for detail, his playful humour, and his undying patience when it seemed all too much.

I am grateful to Associate Professor Rod Pope, who was my principal supervisor for six and a half years, and more recently Dr Anna Moran, for their support especially when their career circumstances were changing.

I am grateful to the study participants, to the staff and members of Age Concern Albury Wodonga Inc., staff at the Albury-Wodonga Volunteer Resource Bureau, and numerous volunteer members of community organisations who expressed interest in and support for the research and helped with recruiting participants. I want to thank Celia Bevan who was president of Age Concern Albury Wodonga Inc. which provided, without charge, a venue for interviewing and carrying out the 12 week creativity enhancement intervention program. Also I want to thank Celia and John Saw for their advice in accessing participants.

Also I would like to thank the staff at Charles Sturt University School of Community Health, Associate Professor Paul Tinley, the staff of the CSU Allied Health Clinic who provided rooms for interviewing participants, Dr. Gayle Smythe for finalising the administration of the thesis, Dr. Ross Richards for approving the funding to carry out some dual scoring of the creativity instrument forms, Wes Ward from CSU
Marketing for assistance with media, Associate Professor Michael Curtin for his considerations regarding my workload, and my occupational therapy colleagues.

Finally, I want to thank my husband, Barry Pitman for his unwavering interest and his perceptive understanding of the topic and methods. He made helpful suggestions, worked as an unpaid assistant in helping me with the practical tasks in setting up the creativity enhancement program, read and edited my early drafts, and gave me the space and support to achieve my ambition. I am grateful for the thoughtful support from members of both of our families, and other people who have been particularly supportive including Karen Murphy, Dr Sally Denshire, Dr Wendy Holmes, Dr Marian May, Paule Gauquié, Alison Copley, Dr Marie Sheahan, and Robin Harvey.
Paid Editorial Assistance

Paid editorial assistance was obtained from Dr Robert Trevethan under the approval of Megan Smith, Head of the School of Community Health and my supervisors.

Neither the editor’s current nor former area of academic specialisation is similar to that of mine. Editing of the thesis was limited to formatting, grammar, and style and did not alter or improve the substantive content or conceptual organisation of the thesis. Where advice was provided on matters of structure, exemplars only were given. All final decisions regarding format, grammar and style and any inaccuracies in this thesis are mine alone and are not attributable to the copy editor.
Ethics Approval

Permission to conduct this research was sought from, and granted by, Charles Sturt University’s Human Research Ethics Committee, approval number 2010/132. See Chapter 3.
Publication

Abstract

Past research has demonstrated the mental health benefits of creativity in general terms, but little of the research has been quantitative. Furthermore, there is scant research about whether creativity has beneficial effects on healthy ageing. Relevant findings might suggest ways of promoting mental well-being for older people and of caring for older adults more effectively. In light of this, the aim of this research was to investigate the effects of a creativity enhancement program on creativity and mental well-being of active older adults. A mixed-method approach was used, comprising a quantitative and a qualitative study.

Eighty-five people aged 65 years and over were allocated to either a creativity intervention group \( n = 41 \) or a control group \( n = 44 \). The intervention group took part in 12 weekly sessions involving creative problem solving and cognitive and expressive creative arts activities. Both groups completed the Test for Creative Thinking – Drawing Production (TCT-DP) and The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) prior to the intervention, immediately after it, and 5 months after that. Reliability-corrected ANCOVAs were used to determine whether changes in creativity and mental well-being scores had occurred as a result of the intervention.

The quantitative study showed that the participants in the intervention group obtained significantly higher creativity scores than did the control group immediately after completing the program \( p = .036 \), but not 5 months later. There was no statistically significant difference in mental well-being scores immediately after completing the program or 5 months subsequently. The results revealed that the creativity enhancement intervention had only a short-lived effect on participants’ creativity and no measurable effect on mental well-being. It seems that participants may have required a longer intervention to develop more enduring creative habits capable of being detected by quantitative methods and that booster/maintenance intervention sessions might have been of benefit. The WEMWBS may not be appropriate for measuring mental well-being change in older adults. Further research in this area may need to include the design of a battery of mental health and well-being instruments appropriate for this group.
In the qualitative study, interviews were conducted with 24 participants from the intervention. The interviews were semi-structured on the basis of an a priori framework and their contents were analysed using a grounded theory approach. Five themes identified in the interview data revealed a broad range of behavioural changes indicative of increased creativity and mental well-being, thus showing that the creativity intervention had in fact been effective, especially the creative problem-solving aspects. It was a catalyst for self-fulfilment/development, which is known to be related to mental well-being. Thus, the mixed-method approach revealed the complexity involved in studying the links between creativity and mental well-being and the difficulty of attempting to measure creativity and mental well-being via quantitative means alone. The mixed-method approach allowed subtle information to emerge and indicated the need to develop ways of studying the phenomenological and contextual circumstances of participants.
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INTRODUCTION

1.1 Creativity and mental health

Creativity has a long association with mental health through its apparent connection to the psychopathology of people diagnosed with a mental illness. The therapeutic use of creative activities in mental health care settings arose from that connection, and patients in mental asylums have been sampled by psychiatrists and clinical psychologists to study any effects of the creative arts in achieving behavioural change. The therapeutic use of creative activities within mental health settings continues to the present day. Furthermore, there are numerous creative arts therapists (art, drama, music, and dance and movement therapists) and health professionals (occupational therapists, psychologists, social workers, and nurses) who use the creative arts as a therapeutic treatment method. In Australia, the UK, Canada, America, and Europe during the last 20 years, the nature, location, and models of mental health care have shifted from hospital to community-based settings. Along with this shift, the therapeutic use of creativity in mental health practice has been extended. Creativity is beginning to be promoted as beneficial for health and well-being, and this is evident within a range of healthcare settings from general hospitals to community health and arts-based community settings, and reaches out to population groups that are vulnerable and most at risk emotionally and mentally.

The target group for this present investigation is older adults. Mortality rates are decreasing across the globe, resulting in higher life expectancies and an ageing population (Begg et al., 2007; World Health Organization, 2015). The population of older Australians is growing in absolute terms and as a proportion of the total population. Between June 2002 and June 2012, the number of people aged 65 and over increased by 29% (about 727,000 people), and from 12.6% to 14.2% of the total population (Australian Institute of Health and Welfare, 2013). Just as the population of
Australia is ageing, so it is in the United Kingdom, America, Canada, and many other countries.

The Australian government has funded and implemented many policies and strategies to address the urgent need to support this ageing population (Almeida et al., 2006; Australian Attorney General, 2007; Australian Government Department of Health and Ageing, 2012; Australian Institute of Health and Welfare, 2007, 2013; Begg et al., 2007; Lee et al., 2005). These initiatives are mostly underpinned by provision of adequate medical care. There have been many studies of the circumstances of people 65 years and over where there is a risk of illness or of becoming a burden to healthcare accommodation (Age Concern, 2007, 2008; Australian Institute of Health and Welfare, 2013; Keyes, 2004). Although older adults experience good health, there are alarming statistics concerning the mental health of older adults (World Health Organization, 2013). For example, over 20% of adults world-wide aged 60 years and over suffer from a mental or neurological disorder. The most common disorders are dementia and depression. Many older adults are at risk of developing mental health disorders because the prevalence of depression increases with age. Moreover, mental health problems are under-identified by healthcare professionals and older adults themselves (Age Concern, 2008; World Health Organization, 2013).

In many countries, an emerging awareness and increasing emphasis on healthy/productive ageing and health promotion has grown alongside the realisation of the increasing cost burden to healthcare resources caused by an unprecedentedly large ageing population (Andrews, Clark, & Luszcz, 2002; Anstey et al., 2008; Australian Government Department of Health and Ageing, 2012; Center on Policy and Ageing, 2015; National Center for Chronic Disease Prevention & Health Promotion, 2011; Pizzi & Smith, 2010). Hence, research into the factors affecting healthy ageing is growing internationally as well as in Australia. In the last 20 years there has been a high level of experimental research evidence especially by American, Australian, and Canadian researchers, who have investigated the factors of successful ageing, and this has supported government health promotional initiatives. I am interested in extending the benefits of creativity into the general population—specifically to older active adults. Moreover, I am interested in investigating whether creativity is a beneficial factor in the
ageing process, and thus might perhaps be useful in preventing any risk to mental health.

Over recent years there have been some promising international endeavours to draw together the research fields of positive mental health, healthy ageing, and creativity. As yet, no Australian researchers using experimental study designs have sought evidence of links between creativity, mental well-being, and healthy ageing. Consequently, the following questions arise: Is mental well-being linked to creativity for healthy older adults? What research evidence exists that examines mental well-being as a factor for healthy ageing? What is the research evidence of any health and well-being benefits deriving from participating in creative activities, including, for example, social and physical health benefits? What are the range and type of creative activities and programs that have been used for older adults in promoting healthy ageing?

Researchers in education, psychology, and business and industry have provided longstanding empirical evidence of the effectiveness of creativity training programs aimed at fostering creative problem solving. In weighing up this substantial evidence the following questions arose: Does the evidence include any investigations into the effects of creative problem solving on health and well-being? Are there any studies where researchers have investigated the effects of creativity problem solving on samples of older adults?

On the other hand, although there is a wealth of anecdotal, descriptive, evaluative, and qualitative studies in which health researchers and practitioners have reported on the health and well-being benefits of a range of creative arts activities (e.g. art, painting, craft, music) there is little evidence that health researchers have investigated creative problem solving in relation to health and well-being. Subsequently, the following questions arose: Have health researchers investigated the effects of creative problem solving on health and well-being? Have health researchers investigated the effects of creative problem solving on healthy older adults?

The concept of mental well-being has its origins in psychiatric care. However, more recently there has been a push from practitioners and researchers to promote mental health and well-being with those people who are most at risk / vulnerable within the
general population. Mental well-being promotion is in an early phase of development, practice, and research. It is therefore important to know what instruments have been developed to measure creativity and mental well-being, what kinds of creativity and mental health interventions have been studied, and whether or not healthy older adults have been sampled in any research. These issues will be examined in Chapter 2.

1.2 Contribution

A number of mental health researchers, creativity researchers, and creative arts researchers have recommended that research should be interdisciplinary in order to enrich and provide holistic approaches to complex topics. Mental health researchers have recommended that researchers should examine the connections between mental well-being and a range of promotional interventions for the general population as well as for specific client populations (Huppert, 2007; Stewart-Brown & Janmohamed, 2008). Furthermore, Keyes (2007) and Keyes, Ryff, and Shmotkin (2002) have repeatedly argued that researchers must design effective interventions that enable healthy ageing and well-being. In addition, occupational therapy theorists, Pizzi and Smith (2010, p. 465) recommended that practitioners and researchers alike “be more creative and effective in developing programs to encourage successful aging”. Similarly, creativity researchers Mumford (2003) and Russ (2003) have called for new research directions that embrace interdisciplinary approaches. This present study was a response to such calls and was aimed at examining the issues just outlined. This response evolved from a longstanding personal interest in examining creativity, mental health, and well-being (see Schmid, 2005, 2012).

The outcome of the present research could contribute to enabling older adults to increase or maintain their mental well-being and therefore minimise the cost burden to healthcare services. Moreover, this research could suggest future directions for promoting the mental health of older adults in general as well as of those at risk of, or in need of rehabilitation from, ill-health or injury. In addition this research could contribute to uncovering issues about the care of older adults that may need to be addressed by the wider community.
1.3 Key terms

*Mental well-being* is synonymous with *positive mental health* and *psychological health*, and will refer to qualities that constitute well-being, a mentally healthy mind, in contrast to “mental illness” (Stewart-Brown & Janmohamed, 2008; World Health Organization, 1946, 2008). Positive mental health is located within a mental health promotional theoretical perspective. These notions will be described further in Chapter 2.

*Older adults* refers to people 65 years and over. The focus in this research is on *healthy* older adults. Healthy ageing is synonymous with *active ageing*, *successful ageing*, and *productive ageing*, and refers to physical, mental, and social well-being in older adults. These terms will be used interchangeably throughout the thesis. These ideas will be discussed in the Chapter 2.

*Creativity* as a complex concept has a wide meaning. It includes the arts as well as the creative thinking process (Kaufman & Sternberg, 2010; Runco & Pritzker, 1999), and in brief it involves the generation of effective novelty (Cropley, 2005). The term *creativity research* refers to studies that have been conducted by researchers who have had the clear aim of studying a particular aspect of creativity, e.g., creativity and intelligence, and cognitive processes in creativity. Traditionally this type of research has been conducted by psychologists or educationalists. *Creativity programs* are deliberate programs for fostering creativity. The term *creativity training* is synonymous with *creativity program* and with *creativity enhancement program* and these terms will be used interchangeably throughout this thesis. *Creativity training* is the usual term used in psychology and industry, and the expression *creativity enhancement program* and similar terms are more usual in healthcare promotional and community health settings. The term *creativity intervention program* will often be used in this thesis and is synonymous with the term *creativity enhancement program*. Within this thesis, the discussion of creativity is restricted to the generation of novelty that is positive or beneficial to users and society, even though there is now increasing recognition of what Cropley, Cropley, Kaufman, and Runco (2010) called the “dark side” of creativity. Because creativity is so complex, it will be discussed in greater detail in Chapter 2.
1.4 Parameters

The present research topic has several constraints that must be stated explicitly in order to appreciate the meaning of the three main concepts creativity, mental well-being, and older adults within this thesis. These concepts are complex in themselves, and therefore further descriptions and a definition of each will follow in Chapter 2. The constraints of the concepts as they are used in this thesis are as follows.

- This current research is not about mental illness or about therapy or the therapeutic use of creative activities with people diagnosed as having a mental illness. However, the voluminous wealth of the theoretical knowledge base, including the descriptive, evaluative, and qualitative studies of the therapeutic benefits of creative activities in psychiatric care / mental health, must be acknowledged because this present research topic is built on the connections with this knowledge base. In summary, the abundance of the literature is demonstrated by the numerous textbooks, journals, and university courses that exist on the therapeutic benefits of a wide range of creative arts for people diagnosed with a mental illness. Key contributors to this literature have been Atkinson and Wells (2003), Creek (2005, 2008), Fidler and Velde (1999), Schmid (2005), Leary (1994), Landgarten (1981), Feder and Feder (1981), McNiff (1998, 2009), Rhyne (1973), Karkou and Sanderson (2006), Leavy (2009), Gilroy and Lee (1995), and Rubin (2001). See also various worldwide specialty arts therapy associations’ journals (e.g., art therapy, music therapy dance and movement therapy) and the well-known The Arts in Psychotherapy journal. Psychotherapy, psychoanalysis, and humanistic theory and approaches are part of the philosophical belief systems and training of many health professionals (social work, occupational therapy, clinical psychologists), creative arts therapists (art, music, dance & movement, drama therapists) who use creative activities in therapy. Research designs and methodologies that have been used by many of these health professionals are usually qualitative in design and often seek client perspectives and outcomes of creative activity in therapy. Although researchers from the different arts therapies have been conducting research within their specific field of art and therapy, there is a marked lack of quantitative research methodologies and methods (= little investigation of
causality) and there is little research that defines creativity as a broad concept or includes creative problem solving.

- This current research is not about investigating a specific creative activity, for example painting, needlework, or pottery.

- This present research was not intended to represent one discipline’s theory or model within healthcare. This research is pertinent to and crosses a number of research disciplines and practice fields, including mental health promotion, health promotion, gerontology, creativity research, arts-based practitioners, adult education, creative arts therapy, occupational therapy, and psychology.

1.5 Researcher’s perspective

I have had a close theoretical and practising relationship with this research topic over many years (Schmid, 1996, 2004, 2005, 2006, 2012) as a practising occupational therapist and arts therapist, and for many years as an academic lecturing in occupational therapy and healthcare. During that time my notions of creativity have changed from using various creative activities as a therapeutic tool with people who have a mental or physical illness or dysfunction, to embracing a wider definition of creativity to include creative problem solving, and to examine the effects of creativity on well-being. For example, I have been exploring notions of promoting health through creativity to the general population (Schmid, 2005). The current practice of occupational therapy is generally with people who have a mental or physical illness or dysfunction. However, I do agree with Wilcock (2015), Scaffà, Reitz, and Pizzi (2010), and Clark et al. (2001) that the practice of occupational therapy could extend into the field of health promotion.

This present research topic is a continuation of exploring the notions of promoting health through creativity to the general population, as discussed above. Therefore, this research topic was developed in the spirit of mental health promotion from a generic health science perspective, not from a single discipline’s research base perspective, as stated earlier. An overarching approach was used and multifaceted sets of theories and ideas were drawn together from mental health promotion, gerontology, occupational therapy, healthy ageing, arts in health, creativity research, psychology, and education. This research topic could contribute to the knowledge base of mental health and
creativity as well as successful ageing, and therefore may be useful to policy makers and various health professionals, including occupational therapists, arts for health practitioners, creative arts therapists, and those in education. See Chapter 3 for issues and considerations pertaining to researcher’s perspective.

1.6 Outline of chapters

Chapter 2

Chapter 2 is a literature review of the three main concepts: creativity, mental well-being, and older adults. The chapter begins with an overview of the search strategies and outcomes used for the literature review. This is followed by an overview of creativity literature including a definition and theoretical perspectives that underpin the concept of creativity in this thesis. The mental well-being literature is reviewed in a similar way. A review of the literature on healthy ageing was carried out because the target population of this present research is active older adults and as well to ascertain what constitutes and maintains healthy ageing. Various insights that I gained from the review are peppered throughout this chapter because they pointed to the gaps in research and assisted in formulating the research questions and objectives that match this present research topic. The research questions and objectives follow. These were formulated at the end of the literature review and subsequently guided the design of the two studies presented in the following chapters.

Chapter 3

This chapter contains a rationale of the mixed method design used in this present research. A discussion of considerations, issues, and resolutions is presented in order to contextualise the mixed method approach within a health science perspective. In addition, a number of methodological issues regarding the studies designed for this research are discussed including the researcher’s perspective. The MM approach is illustrated by a flowchart. Details of the ethics approval and relevant ethical considerations are included.

Chapter 4

This chapter provides a report of a trial of a creativity intervention for enhancing creativity and mental well-being in older adults, both immediately and at a five-month
follow-up. The findings from this study were analysed and retained as a separate self-contained study.

Chapter 5

Chapter 5 provides a report of the second study, a qualitative study, classified as a follow up design to the principal method of the quantitative study. The findings from this study were analysed and retained as a separate self-contained study.

Chapter 6

The discussion and conclusions drawn from the comparison of the quantitative and qualitative data sets, using mixed method strategies, is presented in this chapter. Recommendations for research are presented. A concluding section proposes how this current research might contribute to knowledge and theory.
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LITERATURE REVIEW

2.1 Introduction

An overview of the search strategy for the review of literature and the search outcomes is common practice in health research. Following this customary practice, a literature review of the three key concepts of this study is presented: creativity, mental well-being, and older adults. Background literature, including relevant research and essential theoretical concepts on each of the three concepts is outlined in order to provide a context for the research topic. The literature review is interspersed with insights that I have gained during the literature review in so far as they have provided direction in conducting my research.

2.1.1 Method of literature search

A search strategy to retrieve best available evidence-based research and best practice literature was conducted by using the procedures outlined by Djulbegovic, Guvatt, and Ashcroft (2009) and Hoffman, Bennett, and Del Mar (2013). The search and review question that directed the strategy was: Is there an effect on creativity and mental well-being from participating in a creativity enhancement program for older adults? Peer-reviewed databases were searched, including The Cochrane Library, EBSCOhost databases, CINAHL, PsychLit, and ERIC. Australian and international government mental health databases were also searched, for example VicHealth in Australia and National Health Service in Scotland. Creativity and educational centres’ data bases were searched, including the Creativity Based Information Resources (CBIR) accessed through the International Center for Creativity Studies, and the Center for Creative Learning. Research was also located through extensive hand searching of relevant journal article reference lists, including the Journal of Creative Behavior, and the Creativity Research Journal. Other literature sources included publications in occupational therapy, health promotion, mental health, social sciences and humanities.
(gerontology), education, and psychology. A large majority of the qualitative studies were identified through previous research (Schmid, 2005b, 2006, 2012), and personal contact with authors and supervisors.

Key words and terms for carrying out the literature search were identified from existing health and mental health, ageing, and creativity literature sources. These comprised creativity, well-being, mental health, intervention/program/education program, group work, experimental research / quantitative research, evidence-based practice, health promotion, mental health promotion, older adults, healthy ageing, gerontology, health science, creative arts therapies, and arts and health.

Studies were included if the researchers:

- sampled older adults
- investigated causality—quantitative research, mixed methods research, and qualitative studies
- described a creativity group program or activities in areas of health promotion and in education that promoted health and well-being, fostered creativity skills, encouraged the application of creativity in everyday activities, measured creativity skills, or measured any effects of a creativity program
- used instruments that measured mental health, well-being, or creativity, for example, any instrument that was designed to measure a change of positive mental health / well-being or quality of life, or any instrument that measured changes in creativity skills, especially including problem solving and the application of problem-solving skills to everyday life activities.

Studies were excluded if the researchers:

- investigated only a single creative activity (an art or a craft activity)
- carried out a creativity intervention that aimed at changing the psycho-pathological behaviour of clients who had been diagnosed with a mental illness
- conducted the study in a mental healthcare hospital, or in a mental health community centre.
2.1.2 Outcome of literature search

A total of 84 journal articles that contained combinations of the key words and matched the inclusion criteria were retrieved. Of these 84 articles, 33 were relevant. Five studies from the 33 were regarded as the most relevant because they best matched all aspects of the criteria and matched the literature search question. They were studies that can be categorised as being at Level III research evidence according to hierarchies of evidence (see National Health and Medical Research Council [NHMRC], 2008). These studies are reviewed in Section 2.2.4.

Two main points of interest arose from the literature. First, there is little high level research evidence linking creativity and mental well-being in healthy ageing despite the voluminous literature and large number of qualitative studies on a range of creative activities in therapy and in the emerging field of applied arts and health. Second, mental well-being promotion and the factors of healthy ageing are emerging contemporary areas of practice and research. Consequently, the literature review that follows is structured to reveal the quantity and quality of the existing knowledge base of these areas and to situate this research within the three main concepts of this thesis, creativity, mental well-being, and older adults. The review of the five Level III experimental studies strongly underpins this research topic and is presented in the following section on creativity.

2.2 Creativity

2.2.1 Arts and health

Over the last 20 years there has been dramatic international interest in the interdisciplinary practice of the promotion of arts and health. As a consequence, a knowledge base has been emerging from the contributions of a wide range of arts-based practitioners, health professionals, creative arts therapists, policy makers, and researchers who have been promoting arts and health within community and healthcare settings generally, with a range of age groups and backgrounds (Wreford, 2010). According to Owen et al. (2013), this dramatic change in scope and intensity in promoting arts for health and well-being seems to originate from the desire to

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1 Applied arts and health is a term that describes a wide community of artists, researchers, practitioners, and policy-makers evidencing the effectiveness of the interdisciplinary use of arts in health and arts for health. See Journal of Applied Arts & Health.
complement the traditional scientific and technological models of medical care and promote the arts in all public health systems (hospitals and community health care settings), and there is now an opportunity for arts and health to play a vital role in increasing “social capital, more resilient individuals and communities and a secure and stable world” (Owen et al., p. 1).

Throughout these 20 years there have been many conferences and new journals that have come to the fore that focus on effective practice, interdisciplinary practice of arts and health, the inclusion of the arts for health in the medical and health professions, education, and the placement of arts in therapy in community and healthcare settings. More recently there has been an increase in the international anecdotal literature, as well as numerous evaluations of creative arts programs, community arts development projects, and arts projects that focus on building community and cultural capacity, and as a result researchers have described improved mental health and well-being outcomes (creativityteam, 2007; Dunphy, 2009; Georgeff, Lewis, & Rosenberg, 2009; Owen et al., 2013; VicHealth, 2009a). Studies evaluating arts projects include Australian Council for the Arts (2011), Caulton (2003), creativityteam (2007), Dunphy (2009), Gridley, Astbury, Sharples, and Aguirre (2011), Georgeff et al. (2009), Heenan (2006), Marsden and Thiele (2000), O’Brien (2003), Schmid (2005a), Thomas and Lyles (2007), and VicHealth (2002, 2009a).

Two peak government-funded arts organisations, the American National Endowment for the Arts and the Australian Arts Council, support various community arts projects that aim at enhancing community capacity and health and well-being. The American National Endowment for the Arts has sought to make the arts more directly accessible to older adults by engaging them in professional and participatory art programs and by increasing awareness among arts and health professionals working with older adults on the link between the arts and wellness (Thomas & Lyles, 2007). One quantitative study that was funded by the American National Endowment for the Arts investigated creative activities and older adults (Cohen et al., 2006). See Section 2.2.4. However, overall, the research that has been reported in the published literature, including evaluation studies, has not focused on healthy older adults. Instead the samples in the studies were usually composed of older adults who had various medical
illnesses or dysfunctions (McLean, Woodhouse, Goldie, Chylarova, & Williamson, 2010).

According to Craemer (2009), evidence is accumulating that a number of arts for health initiatives deliver real health benefits to people. He presented a cost-effectiveness analysis of the delivery of arts health initiatives and argued that arts projects could be used as an effective, low-cost strategy for preventing mild to moderate mental health problems such as anxiety and depression. This point holds promise and has relevance to older adults because, as stated earlier, the prevalence of depression increases with age (WHO, 2013).

Overall, there has been a lack of high level quantitative research evidence in this sector (Owen et al., 2013). In recent years this lack has not gone unnoticed. A small number of researchers have conducted literature reviews on the arts for health and community arts literature, and, as a result, practitioners and future researchers have been urged to develop research that is theoretically based and that combines quantitative and qualitative methods and integrates art, community, and health perspectives (Kelaher et al., 2009; Owen et al., 2013; Staricoff, 2004; Stuckey & Nobel, 2010; Tsai, 2013). In the UK, Staricoff (2004) reviewed medical literature published between 1990 and 2004 with the aim of strengthening existing anecdotal and qualitative evidence. She claimed that only in recent years have there been any systematic and controlled studies of the effects of the arts on clinical outcomes in mental health. Similarly in Australia, Kelaher and colleagues (2009) criticised the evidence from a community arts perspective and concluded that although there are many examples of good practice there is a need to complement these with rigorous and specifically targeted research.

2.2.2 Creative activity, older adults, and well-being

There is sound qualitative research evidence from a variety of health professionals who have explored older adults’ experience of carrying out a creative arts activity. However, in most studies the samples were of older adults who had been diagnosed with a mental illness or a physical illness, and hence are not directly relevant to the present study. This body of research (Adams-Price & Steinman, 2007; Dickie, 2004a, 2004b; Engelman, 2000; La Cour, Josephsson, & Luborsky, 2005; La Cour, Josephsson, Tishelman, & Nygard, 2007; Lemons, 2005; McNiff, 2011; Perruzza & Kinsella, 2010; Reynolds,
1997, 2000, 2002, 2003, 2004, 2005a, 2005b; Schmid, 2005, 2006; Staricoff, 2004; Yeats, 1993) is substantial and convincing because the nature of the qualitative research has elicited rich subjective experiences of creativity linking health and well-being. This amount of convincing studies indicated how useful qualitative research could be as a supplement to quantitative research.

Interestingly, quantitative research evidence has indicated that positive connections exist between creative activity and longevity in active older adults. A positive connection was identified in a longitudinal study (Dawson & Baller, 1972) involving an intervention and control group, both followed over time. The study commenced in 1960 with 58 subjects. The aim of the study was to determine the ability of people over the age of 65 to learn oil painting and to note whether any changes in other activities and interests were related to the engagement in painting. The purpose of the 1972 study was to report on the findings of the follow-up investigations conducted in 1962, 1965, and 1971, regarding whether the intervention group participants fared any differently from the participants in the control group in longevity, health status, continuance of involvement in painting, involvement in art exhibits, extent of social activity, and involvement in creative activities other than painting. Although group equivalence was determined in the 1960 study, the results of the 1972 follow-up study indicated that 67% of the intervention group subjects were still alive compared with 38% of the control group, and 65% of the intervention group subjects were rated “excellent” or “good” on an evaluation of health compared with 12% of the control group. No statistical analysis was reported in the 1972 follow-up study to determine whether the results were statistically significant or not.

In a more recent study, Turiano, Spiro III, and Mroczek (2012) reported that in a sample of active older men, higher levels of creativity predicted longer survival, and they suggested that creativity has a protective role in health. These studies indicate possibilities for future research and hold some promise regarding the notion of well-being.

2.2.3 The connection between creativity and ageing

Reynolds (2005b), in her review of creativity research in relation to ageing and health, found that there is little understanding of the factors that influence creative thinking in
older adults. Reynolds claimed that although creativity measurements have been used in various studies of older adults, the studies were limited because the researchers sampled only individuals who had demonstrated skills in productive creativity and those who had been categorised as being eminent creators, i.e., artists or extremely successful innovators from a wide range of fields.

However, some creativity researchers (Adams-Price, 1998; Adams-Price & Steinman, 2007; Romaniuk & Romaniuk, 1981; Sasser-Coen, 1993; Schultz & Heckhausen, 1996) have studied older adult artists’ perceptions of the effect of engaging in creative activity throughout their lifetime. The outcomes of these studies revealed a link between engaging in creative activities and well-being. Dickie (2004a), Fisher and Specht (1999), and Howie, Coulter, and Feldman (2004) conducted qualitative research to explore older adults’ understanding of creativity from a life-span developmental perspective. Fisher and Specht explored the meaning of successful ageing for older women artists. The results of all these qualitative studies emphasised creativity as a potential factor for successful ageing. The samples of older adults from all these studies were limited in that the researchers sampled only older adults who had exhibited a reasonably high level of creative ability. The qualitative studies discussed in this section exhibited a high level of rigour. Although these studies have advanced the study of creativity, well-being, and older adults, additional research is needed about the creative thinking processes of active/healthy older adults who are not necessarily involved in ongoing creative activities.

### 2.2.4 Quantitative studies, creativity, and older adults

Notions of creativity and the effectiveness of various creative interventions have been investigated for causality in five diverse empirical studies (Cohen et al., 2006; Engelman, 1981; Flood & Scharer, 2006; Goff, 1992; Greaves & Farbus, 2006). These studies have exhibited a high level of rigour and have provided the basis for the design of the research described in this thesis.

Engelman (1981) was the only researcher to investigate whether or not creative behaviour increased in a sample of well older adults as a result of participation in a creative problem-solving program. Although Engelman used experimental research she collected information from a teacher’s log and a questionnaire given to students at the
end of the class. This results of this information revealed that the participants’ experiences were “unusually positive and creatively beneficial” (p. 169). This information was suggestive of benefits to health and well-being. That extra data was gathered because, as Engelman (1981, p. 170) explained, “There were some observable effects of the experiment that are not evident in the statistical data”. The study involved an experimental post-test design and there was a random allocation of 40 older women in the age range 60–82 to experimental and control groups. The Torrance Tests for Creative Thinking was used as the measure of creativity. Engelman provided a definition of creativity, and the program was adapted from the creativity training program designed by Parnes (1967) and tailored to meet the needs, interests, and experiences of older adult women. The major hypothesis that “the use of a specific problem-solving program designed to increase certain creative thinking abilities will increase those abilities at a significant level in older adult women” was not supported. However, the additional qualitative data suggested that positive mental health and creativity may be linked. Engelman’s addition of a qualitative method of data collection suggested the possibility of using a mixed method approach in future research.

Goff (1992), investigated whether a program of real life activities (a quality of life program designed to enhance creativity, self-expression, and physical activity) would have an effect on the creativity of well older adults. This study employed a non-equivalent control group design in which the Torrance Tests of Creative Thinking were used for pre- and post-testing. A humanistic approach to creativity (Maslow, 1968; Rogers, 1962) underpinned the study. The creativity intervention program was a combination of various expressive arts activities (art, dance, drama, and fitness activities), and was conducted by creative arts professionals. In addition, Goff pointed out that creative thinking, especially brainstorming was a component of the creativity intervention program, but there were few details. The sample consisted of 108 adults aged 51 years and over, and the average age was 75. An analysis of covariance was used to control statistically for pre-test differences. The post-test data indicated that the total creativity scores and the sub-scores of flexibility and fluency of the experimental group had increased significantly ($p < .05$) when compared with the control group mean scores. Thus Goff reported that this was sufficient evidence to indicate that the overall

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2 Engelman (1981, p.168) did not use a pretest because she decided that “in assessing creative ability a pre-test could have a sensitising effect” on the participants.
creativity, fluency and flexibility scores of the older adults who participated in the Quality of Life Program may be attributed to the innovative, educational creative intervention. No follow-up measures were conducted. This study by Goff was included in a meta-analysis of the effectiveness of creativity training by Ma (2006) because the article contained sufficient empirical data for the calculation of effect size of the experimental and control groups. Ma praised the legitimacy of the research because Goff had used an analysis of covariance to control for pre-test differences. This kind of statistical analysis was useful in considering the statistical plan for my research.

In summary, Engelman (1981) and Goff (1992) conducted experimental research with a control group. Both researchers used the Torrance Tests of Creative Thinking as an outcome instrument to measure the effects of a creativity training intervention group for older adults. There were differences in the type of creativity program. The intervention in the study by Engelman (1981) was focused solely on creative problem solving whereas the study by Goff was a quality of life creativity program that was mainly a composite of expressive creative activities (art, dance, and drama) and included some cognitive creative thinking (brainstorming), physical, social, and emotional aspects of learning. This suggested that a mixture of approaches might be successfully combined into one creativity intervention program.

The multisite longitudinal national Creativity and Aging Study (Cohen, 2006) was designed to measure the impact of professionally conducted community-based cultural arts programs on the general health, social activities, and mental health of people 65 years and over. The study comprised a quasi-experimental design with a control group, and included measurements of physical health, health services utilisation, mental health, and social functioning of healthy older adults who were in community living situations. The creativity intervention programs were diverse intensive participatory arts programs, while the control groups continued their regular activities. The study was conducted with a sample of 300 participants whose average age was 80. The research article included a substantial discussion of a range and depth of similar quantitative and qualitative research evidence, as well as a discussion of the theoretical background of creative arts therapies. The measures adopted in the study consisted of self-reported assessments of general health and health services utilisation and three measures of mental health. These latter scales were the Philadelphia Geriatric Center Morale Scale,
The Loneliness Scale-III, and the Geriatric Depression Scale – Short Form. There was also a baseline measurement of participation in social activities. The results indicated that across the sites there were positive differences in the intervention group participants compared with the control group at the 1- and 2-year follow-up points. The differences were better general health, more positive responses on mental health measures, and more involvement in social activities.

Flood and Scharer (2006) designed a pre-test and post-test experimental study investigating the effects of a creativity intervention. The sample consisted of 60 well older adults, aged 65–85, with an average age of 76 years, who attended senior citizen centres. The researchers aimed at examining the relationships between creativity, functional performance, and successful ageing. They did not explicitly define creativity, although attributes of creativity were discussed in relation to its use as an adaptive skill in dealing with ageing life issues. They emphasised the benefits of creativity by suggesting that “greater creative ability would be a useful characteristic to have in order to more effectively cope with major life changes that often occur with old age” (Flood & Scharer, 2006, p. 942). The creativity intervention program was a creativity group syllabus, delivered in small group sessions. It consisted of brainstorming, reminiscence, storytelling, role play, poetry, and bibliotherapy. However, there were no details of the brainstorming sessions or any other aspect of creative thinking. The measures included the Arthritis Impact Management Scale Short Form (AIMS) which measured functional performance, and the Similes Preferences Inventory (SPI) which they reported to be a measure of creativity. Successful ageing was measured by the Life Satisfaction Index A (LSI-A) and the Purpose of Life Test (PIL). There were no significant differences between control and intervention groups prior to the group sessions, and there was little difference between the two groups after the creativity intervention program was completed. The researchers reported that, because the intervention did not appear to increase creativity, it failed to be predictive of successful ageing. The researchers speculated about why the relationship between creativity and successful ageing was uncertain. They postulated that it may have been due to the variety of activities that were considered in their program. They also raised the possibility that it may have been due to the wide range of instruments that they used to measure the indicators of successful ageing, and they further speculated that perhaps the creativity test (SPI) did not adequately capture creativity dimensions. This study and its results were considered
in the planning stages of this research design regarding instrumentation and type of creativity intervention.

A multi-method observational study by Greaves and Farbus (2006) was conducted with 229 socially isolated older adults. The focus of the study was to evaluate a complex intervention designed to address the social isolation of older people. The intervention was a participant-determined program of creative activities, exercise, and/or cultural activities with an emphasis on social interaction. The objectives of the intervention program were to promote active social contact, use mentoring, and encourage creativity. The range of creative activities included painting, creative writing, exploring sound and music, and various craftwork activities. The intervention was individually tailored to suit the interests and passions of each participant. There was no indication that the program contained any content involving deliberate creative problem solving skills. The observational study did not include a control group. Qualitative research was also conducted alongside the observational study. The sample was recruited from a community centre, the Upstream Healthy Living Centre, and most of the participants, whose average age was 77, were described as having limited functional performance. The researchers included a description of creativity that emphasised the psychological benefits of creativity and described creativity as a key factor in adaptation to ageing.

The instruments included the Geriatric Depression Scale, SF 12 Health Quality of Life, and Medical Outcomes Social Support Scale. These were administered at baseline and at 6 months and 12 months post-intervention. Baseline scores indicated social isolation and high morbidity for mental and physical health. The overall results suggested a wide range of emotional and physical health benefits. At 6 months there were significant improvements in the SF 12 mental component and depression scores but not in physical health or social support. At 12 months there were significant improvement in depression scores, social support, and physical ability, but the change in the mental health component of the SF12 Health Quality of Life was no longer significant. In the qualitative data, participants reported that the intervention was beneficial. Benefits included increased alertness, enhanced self-worth, positive changes in health behaviour, greater optimism about life, and increased social activity. All of
these responses can be identified as indictors of mental well-being (Ryan & Deci, 2001). Individual tailoring appeared to be a mediator of outcomes.

There were several limitations to this research. There was no definition or measure of creativity and the length of the intervention was not revealed. This research offers useful background information for planning a future experimental design with a control group as well as a creative intervention with a range of creative arts activities. Greaves and Farbus’s inclusion of a qualitative study supports the use of a mixed method approach in the present study.

2.2.5 Creativity training programs

Creative thinking has been regarded as a special kind of thinking process for decades (de Bono, 2008; Feldhusen, Speedie, & Treffinger, 1971; Guilford, 1967; Jellen & Bugingo, 1989; Kaufman & Sternberg, 2010; Runco & Pritzker, 1999; Selby, Treffinger, Isaksen, & Lauer, 2004; Treffinger, Isaksen, & Stead-Dorval, 2006). Creativity training programs have been used since the 1950s by business managers and educationalists who have designed employee training courses in creative thinking/creative problem solving in order to foster innovation and productivity. Creative problem solving (CPS) offers a well-established practical framework for promoting problem solving. It has evolved from Osborn (1953) through decades of research and scholarly review to its present state as CPS Version 6.1™ (Treffinger et al., 2006).

The core skills that are fostered by programs of the kind outlined in the previous paragraph include fluency, flexibility, originality, and elaboration. According to Treffinger et al. (2006), creative thinking is a deliberate conscious form of creative problem solving and involves encountering opportunities, paradoxes, gaps, challenges, or issues and then searching for novel connections that are meaningful by generating different, unusual, or original possibilities (perspectives or viewpoints) and expanding or improving those possibilities. De Bono’s (2008) webpage statement reflects these notions “You can have a formal creative thinking mode which you switch into deliberately, and at the same time you can integrate aspects of creative thinking into your daily thinking behavior”.
Parnes (1967) conducted the first comprehensive literature review of the scientific evaluation of deliberate creativity education programs designed to foster creative behavior. Consistent significant results have been well established, and the transferability of creativity skills from deliberate creativity training programs has been used over the years (Ma, 2006; Noller, Parnes, & Biondi, 1976; Parnes, 1999; Parnes, Noller, & Biondi, 1977; Scott, Leritz, & Mumford, 2004; Treffinger et al., 2006). A meta-analysis by Ma (2006) of 34 research studies provided solid evidence of the effectiveness of creative problem solving training programs. All studies involved creativity training programs similar to the CPS model designed by Treffinger et al. (2006). Ma found that the grand mean effect size of creativity training was large at .77. There were no studies that sampled older adults, however. Instead the samples were mostly gifted children, and undergraduate students and adults. All 34 creative problem solving training programs were conducted as group programs.

Simonton (2003), Dugosh and Paulus (2005), and Dugosh, Paulus, Roland, and Yang (2000) have all confirmed that training in creative problem solving is enhanced in a group situation. This notion is attractive to health professionals because they believe that training in groupwork and community development practices is essential in order to facilitate the participants’/clients’ movement through the stages of group development and to optimise the group experience (Schmid, 2012).

It is interesting to note that the CPS program conducted by Parnes and colleagues (1976, 1977) contained various forms of arts-oriented nonverbal exercises to supplement the main training of the structured CPS “to help individuals discern the commonality of the creative process in the arts and sciences and to help individuals experience the creative process in a variety of media” (Culbert & Fisher, 1969, p. 227). Similarly, health professionals use various creative and arts-oriented nonverbal activities to supplement particular health interventions with a range of clients (Creek, 2008; Schmid, 2005b). For example variations of arts activities (Rhyne, 1970, pp. 276–284) such as “Suggestions for developing your personal vocabulary of seeing, sounding, moving”, or “Your life time”, or “Accepting and rejecting what is offered” are used in group intervention programs in a range of healthcare settings. However, no health researcher has examined the individual components of a creativity training program or these particular arts-orientated exercises that supplement a CPS training program.
2.2.6 Creativity instruments

Over decades, a substantial number of diverse creativity tests have been developed (see Hocevar & Bachelor, 1989; Plucker & Makel, 2010; Plucker & Renzulla, 1999; Runco & Pritzker, 1999). However, the strengths and weaknesses of creativity assessment remain controversial (Plucker & Makel, 2010). There appears to be an over-reliance on classical test theory and the use of traditional assessment strategies. There also seems to be no discussion about the use of instruments in experimental designs with a sample of well older adults. In most studies, tests seem to have been administered to samples of undergraduate students, and few have been used in clinical situations or in mental health promotion. Consequently, there is some doubt about the appropriateness of such tests for use in a study such as the present one. This issue will be examined more closely in later sections of the thesis.

2.2.7 Definition and theories of creativity: A health perspective

Creativity is defined from a broad perspective because it is a complex phenomenon, and incorporates creative thinking and the creative arts (Runco & Pritzker, 1999). Creativity is the generation of effective novelty (A. J. Cropley, 2005), and can be used in ordinary everyday activities (Richards, 2010). According to Schmid (2012, p. 79), “its processes and outcomes are meaningful to its user and generate positive feelings”.

This above definition of creativity assumes that all people have the potential to be creative. It includes notions of creative potential, creative process, and the notion of everyday creativity. From the point of view of creativity and health researchers, creativity tends to act in the service of psychological health (A. J. Cropley, 1990) including mental and affective factors, and “may at times transform illness into health” (Runco & Richards, 1997, p. 175). In humanistic theory, creativity and psychological health are viewed as being directly linked to a person’s tendency to “actualise” him/herself, to realise his/her potential within most everyday activities including work, leisure, cooking, dressing, etc. (Arons & Richards, 2001; Hasselkus, 2004; Rogers, 1970a; Runco, Ebersole, & Mraz, 1991; Schmid, 2005b).

A few creativity researchers in the 1990s investigated creativity, self-actualisation, and coping skills and found that self-actualising creative individuals seem to have effective coping skills (Runco et al., 1991; Sheldon, 1995). Creativity has been related
to self-actualisation which has been described by Maslow (1971) as the epitome of psychological health. In particular, the research by Sheldon (1995) suggested that the ability to tolerate conflict is a core characteristic of creative people, implying that this ability contributes to health and well-being. In other words, creativity is viewed as not being separate from the human condition.

According to Richards (1999), Lumsden (1999), Runco and Richards (1997), and Schmid (2005d), humans have a biological need not only for creativity in survival and adaptation but also for self-expression and making something special (Dickie, 2004a). Therefore, creativity is regarded as skill based, with its origins lying in creative thinking and behaviour, which can be learnt and fostered (Breines, 2005; Sternberg, 2006). These ideas are supported by many health theorists (Graham, 1983; Hasselkus, 2004; Lewin & Reed, 1998; Schmid, 2005b), and creativity researchers (Kaufman & Beghetto, 2009; Richards, 1999; Richards, Kinney, Benet, & Merzel, 1988; Ripple, 1989; Runco & Jaeger, 2012; Runco & Richards, 1997).

A review by A. J. Cropley (2005) of creativity and madness emphasised three main points: that sound mental health, not madness, is essential for the realisation of creative potential, that creativity encourages positive mental health, and that creativity is associated with particular psychological properties, most of which are beneficial. Cropley (2005, p. 23) stated that although it is “not clear whether there is a cause and effect relationship between the two, creativity and mental health seem to be connected at least at the level of everyday creativity”. Numerous empirical studies of highly creative people were undertaken earlier in the history of creative research. The results led Cropley to speculate that the psychological characteristics of those who are highly creative in real life strongly resemble properties that are the “core elements of the healthy personality” (A. J. Cropley, 1990, p. 174). These properties include flexibility in thinking (Haensly & Reynolds, 1989; Michael & Wright, 1989; Prentky, 1989), openness to experience (Dowd, 1989; Haensly & Reynolds, 1989; Hepper, Fitzgerald, & Jones, 1989; Martindale, 1989; McCrea, 1987; Mumford, Connelly, Baughman, & Marks, 1994), and autonomy in thought and action (Dowd, 1989; Hayes, 1989; Prentky, 1989). Furthermore, Cropley (1990, p. 175) added that these properties are “highly favourable to the maintenance of positive mental health”.

2.2.7.1 The generation of effective novelty

According to A. J. Cropley (2005) the three core components of creativity are novelty, effectiveness, and ethicality. Effectiveness requires that a product or response must be appropriate to the issue at hand, and be carried to some kind of conclusion (A. J. Cropley, 2005). The role of novelty may seem self-evident. However, without a clear understanding of what is meant by novelty there is a danger that creativity may be confused with simply uninhibited activity and therefore confused with mere “pseudo-creativity” (A. J. Cropley, 2005, p. 14). Creativity research emphasises that effective novel ideas do not come from nowhere, but require preparation, problem recognition and definition, relevant knowledge, the skills required to apply the knowledge, and the ability to identify solutions when they are achieved as well as to distinguish between good and bad solutions, however “good” and “bad” are defined.

The products of effective novelty may be tangible or intangible. Creativity interventions/programs within mental healthcare settings can focus on both kinds of outcome. A tangible outcome involves a specific physical object or action such as an artwork or perhaps an aesthetic solution to a garden layout problem. An intangible outcome could be increased resilience, enhanced self-esteem, improved interpersonal skills, more active imagination, more flexible thinking, increased autonomy or skill in problem solving, or increased ability to manage stress. As Cropley (2005) pointed out, both tangible and the intangible outcomes are possible in all creative endeavours. The leaders of a creativity program usually create opportunities for participants to achieve tangible or intangible objectives (or both) by facilitating the creative process. For example, the creative process can be used as a vehicle for self-expression or for the exploration of feelings in order to gain insight (Creek, 2005, 2008; Finlay, 1993).

2.2.7.2 Creative thinking and problem solving in health care

A few health professionals refer to therapy as a creative process (Christiansen & Baum, 1997; Cukurs & Sebre, 2012; Schmid, 2005; Zinker, 1977). However, creativity as a thinking process and as problem solving is often neglected within the health literature. There is a wealth of literature about problem solving in tertiary education but not about creative problem solving with clients in healthcare settings.
There is emerging interest from scholars who have been theorising about older adults’ ability to solve problems, creativity in later life, and older adults’ adaptation to the ageing process (Hickson & Housley, 1997; Marsiske & Willis, 1998). Marsiske and Willis (1998) referred to *practical creativity*, defined as the application of creative problem solving and divergent abilities such as fluency, flexibility, and originality to the ill-structured problems of daily life. To date this literature has been mostly descriptive and the studies suggest that empirical research would advance the evidence for the adaptive importance of creativity and everyday problem solving in later life.

**2.2.7.3 The creative process: Meaningfulness of process and outcomes**

Creativity researchers and health practitioners construe the creativity process differently. For example, creativity researchers have often described the creative process as skill based and as being associated with creating a product. Traditionally the process has been regarded as having progressive linear and sequential stages (Lubart, 2000–2001). The more modern view is that it involves a nonlinear and dynamic system (Schuldberg, 1999). Nevertheless, the creative process includes the mental abilities, personal properties, and practical actions through which the creative individual deliberately goes beyond prior experience to achieve a novel and meaningful outcome (Getzels & Csikszentmihalyi, 1976; Lumsden, 1999).

On the other hand, health and arts health professionals focus on the participant or client’s immersion in the actual conduct of a creative activity. Immersion in the process is usually facilitated in order to foster imagination and self-expression, flexibility of thought, and insight into feelings and thoughts (Schmid, 2005). Although the overall outcome of a creative activity may be to produce a tangible object or learn a new skill, health professionals usually regard such outcomes as secondary to the experience of being immersed in the process of “doing”. They usually see the experience of the flow (Csikszentmihalyi, 1996) of the creative process as involving the doing of the concrete activity. Where intangible benefits are discussed, they are often described as leading to experiences of deep relaxation—similar to the benefits gained from meditation. It is mainly in this sense that health professionals link creativity to well-being/health.
2.2.7.4 Creativity and positive feelings

By contrast, creativity researchers acknowledge the positive feelings elicited by the expression of the inner self during and at the end of the creative process and regard these as beneficial to peoples’ health and well-being (A. J. Cropley, 1999; Csikszentmihalyi, 1996; Hirt, 1999; Isen, 1999; Runco & Richards, 1997; Russ, 1999; Schmid, 2012).

Research in health, immunology, neuroscience, and neuropsychology has emerged concerning the impact of positive affect resulting from creative activities (Bogan & Bogan, 1999b; Dietrich, 2004, 2007; Dietrich & Kanso, 2010; Isen, 1999; Pennebaker, Kiecolt-Glaser, & Glaser, 1997; Pennebaker & Seagal, 1999). For example, Pennebaker and Seagal (1999) reported that writing about important personal experiences in an emotional way brings about improvement in physical and emotional health. In addition, Edwards (1990, 1992) pioneered applied art drawing activities (analogue drawings of feelings and thoughts) that were designed to stimulate inner thought and feeling and make them into a tangible form of visual language. Edwards’s work has a close connection to health and well-being via positive affect.

2.3 Mental well-being perspective: Research on promoting mental well-being

Mental health promotion practice and research is an emerging field in public health (Baum, 2008). For many years, practitioners of public mental health promotion have been aware of the need to promote positive mental health within the general population, as well as to prevent mental illness (Huppert, 2007; Keyes, 2004, 2005a, 2005b, 2007, 2013; Maheswaran, Weich, Powell, & Stewart-Brown, 2012; Stewart-Brown & Janmohamed, 2008; Tennant et al., 2006; Trent, 1992a; Tudor, 1996). In addition, there is a groundswell of support from policy makers, economists, and politicians from many countries, including Australia, Ireland, Scotland, and the United Kingdom (Family and Community Development Committee, 2012; Friedl & Parsonage, 2007; VicHealth, 2002, 2009a, 2009b, 2011; Windle et al., 2007).

It is well recognised that mental illness is a serious public health issue affecting the quality of life of individuals and communities, and many services have been put in place to address the issue (Keyes, 2005b; Scaffa, Reitz, & Puzzi, 2010; Seligman, Steen, Park,
& Peterson, 2005; WHO, 2005). It has been estimated that, globally, by the year 2030 depression is likely to be the second highest disease burden, and will become the single highest contributor to the overall disease burden in high-income countries (WHO, 2011). In Australia, mental disorders are the leading cause of disability burden, and depression is the leading cause of the non-fatal disease burden (Begg et al., 2007). As already stated, the prevalence of depression increases with age, and depressive disorder is common among the elderly (WHO, 2001). Although a number of health promotion researchers (Dowie, Tannahill, & Tannahill, 1996; Keyes, 2007; Tudor, 1996; Wilcock, 2006) and practitioners support the point of view that health promotion is about what constitutes a healthy life, the healthcare system and associated funding policies are still largely based on a medical perspective of health promotion: It is looked at from the point of view of disease or illness. According to Keyes (2007),

Although mental illness prevention efforts have shown good efficacy … all prevention efforts are aimed at reducing cases of mental illness and have yet to turn any attention to investigating whether those interventions do the ‘yeoman’s service’ of promoting flourishing (positive mental health) as well as preventing mental illness. (p. 97)

Keyes (2007) emphasised that there is a long way to go in terms of research and practice and in terms of placing mental well-being firmly within a government’s agenda and within the language of the general population. Mental health practitioners and researchers have devoted a considerable amount of time and energy to studying and advocating a perspective for maintaining health and well-being without the implication of disease, and in identifying a common language that can be used to clearly describe the difference between mental health and mental illness (Global Consortium for the Advancement and Promotion in Mental Health, 2008; Keyes, 2007, 2013; Prilleltensky, 2005; Stewart-Brown & Janmohamed, 2008; Tudor, 1996).

First, researchers have demonstrated that mental health promotion can be effective in enhancing a range of positive behaviours and skills, such as resilience and adaptation to adversity, that have boundless potential to reduce the risk of mental disorders (Scaffà, Pizza, & Chromiak, 2010; Seligman et al., 2005). Second, research by Keyes (2005b) has now indicated that the notions of mental well-being and mental illness represent two separate but interacting dimensions. This view is strongly supported by mental health
researchers and practitioners, and confirms the belief that mental well-being can be a vital part of health for the whole population, not just for those who have a mental illness or those who are at risk of developing mental illness (Keyes, 2005b; Ryff & Keyes, 1995; Stewart-Brown & Janmohamed, 2008). In addition, Keyes (2005b) claimed that many people who have not been diagnosed as having a mental disorder may benefit from mental health promotional services in order to enhance their mental well-being and maximise their potential and personal development. This same point has been raised by other mental health researchers (Scaffa et al., 2010; Tudor, 1996). The study by Keyes (2005b) was a watershed in enhancing the language of mental well-being in mental health promotion and clearly enunciated the possibility, well-known to most mental health practitioners, that people with a mental illness can experience mental well-being.

2.3.1 Definitions

Definitions of well-being are derived from two traditional theoretical perspectives (Ryan & Deci, 2001). The hedonic perspective includes the subjective experience of happiness (affect) and life satisfaction—positive affect, feelings of optimism, cheerfulness, and relaxation. The eudaemonic perspective includes positive psychological functioning, satisfying interpersonal relationships, and self-realisation/acceptance—the capacity for self-development, positive relations with others, autonomy, self-acceptance, and competence (Keyes, 2005b; Ryan & Deci, 2001; Ryff, 1989b; Stewart-Brown & Janmohamed, 2008).

Notions of well-being depend on the context in which the term is being used (Ryan & Deci, 2001). For example well-being may refer to physical well-being, the most obvious aspect of well-being for health professionals, but also to social well-being, emotional well-being, subjective well-being, psychological well-being, or mental well-being. In this thesis well-being refers to all these domains. However, in the interest of brevity the single term “mental well-being” will increasingly be used as an overarching term in the course of the study.

3 Further, the origins of the definition can be seen in the inclusion of well-being within the positive definition of health (WHO, 1946), within the concepts of health promotion in the Ottawa Charter (WHO, 1986), and within the definition of mental health by the World Health Organization (WHO, 2001). Recent additions have been formulated in Australia and include the importance of culture, the environment, and harmony encompassed by the Indigenous notion of health and well-being (Commonwealth Department of Health and Aged Care, 2000). The definitions are based in humanistic psychology theory as discussed by Maslow and colleagues (Maslow, 1962b, 1971) and Chapter 5.
As the result of a solid platform of discussion, debate, and development established by researchers and practitioners, a widely accepted definition of mental well-being was formulated by Stewart-Brown & Janmohamed (2008) and is used throughout this thesis.

Mental well-being relates to a person’s psychological functioning, life-satisfaction and ability to develop and maintain mutually benefiting relationships. Psychological well-being includes the ability to maintain a sense of autonomy, self-acceptance, personal growth, purpose in life and self-esteem. Staying mentally healthy is more than treating or preventing mental illness.

Because there has been considerable confusion about the use of the term mental health to describe services for those with a mental illness, according to Stewart-Brown and Janmohamed (2008), the terms positive mental health and mental well-being are used to refer to initiatives for improving mental health and preventing mental illness.

### 2.3.2 Current issues

As stated earlier, mental health promotional research is in its infancy and this contrasts with the decades of research on the promotion of healthy physical behaviours. A large body of health promotion evidence has accumulated regarding measures for reducing risk behaviours in physical health (for example encouraging people to cease smoking, making mammography screening available, promoting healthy dietary behaviour, eliminating addictive behaviours, and encouraging physical activity) and the efficacy of behavioural intervention generally (Glasgow, Klesges, Dzewaltowski, Bull, & Estabrooks, 2004; Reitz, Scaffa, Campbell, & Rhynders, 2010; Rothman, 2004; Webb & Sheeran, 2006).

However, mental health promotional research is not as advanced, and the current focus is on developing measuring instruments, describing methodologies, and designing and evaluating intervention programs (Hodgson, Abbasi, & Clarkson, 1996; Hosman, 1995; Huppert, 2007; Huppert et al., 2007; Keleher & Armstrong, 2005; Keyes, 2013; Maheswaran et al., 2012; Seligman et al., 2005; Stewart-Brown & Janmohamed, 2008; Tennant et al., 2007; Trent, 1992b; Trent & Reed, 1995; Scaffa et al., 2010). There is some experimental research evidence about “at risk” mental illness behaviours and the factors that protect against those behaviours (Scaffa et al., 2010) but, as yet, knowledge
about effective interventions that promote mental well-being for the general population is scant.

Windle et al. (2007) conducted a systematic review concerning the current status of public health interventions aimed at promoting mental well-being in older adults. Most of the 94 studies reviewed involved physical activity interventions. The range of interventions was not extensive, and there was no study that examined creativity interventions. The researchers concluded that mental health promotion research is in its early stages of development and claimed that health promotion interventions were limited in scope.

Huppert et al. (2007) strongly urged mental health researchers to design experimental studies that fit the “gold” standard of research evidence according to the hierarchies of evidence (NHMRC, 2008) in order to investigate the effectiveness of interventions and examine any effects on mental well-being. They argued that this was necessary because, to date, most studies have been based within interpretative theory, that is, within qualitative research, and the focus has been only on participants’ subjective health experiences. Crosby, DiClemente, and Salazar (2006) and Tudor (1996) also pointed this out. Huppert (2007, p. 323) argued that the qualitative research approach may have a sound empirical basis but “the real criterion for whether an intervention should be recommended is its proven effectiveness in an adequately controlled trial and subsequent replications”. In addition, to date quantitative intervention studies have been limited in sampling because researchers have conducted their research mostly with undergraduates and have measured effects on a short-term basis. This means that there has been little research on non-clinical samples.

Glasgow et al. (2004) argued for an increase in documentation of the public health impact of behavioural change interventions. Specifically, Huppert (2007) has recommended that researchers conduct intervention studies that investigate causality on representative samples of the population, with long-term follow-up in order to establish the sustainability of changes.

Prilleltensky (2005), Keyes (2007), Scaffa et al. (2010), and Tudor (1996) have urged that the design of interventions should be proactive and person-centered and
based on, for example, Prilleltensky’s model of strengths, prevention, empowerment, and community conditions. Specifically, these researchers recommended that the design of interventions should include methods for enhancing resilience and skill building in mental acuity, increasing capacity to solve problems, developing coping strategies for resolving stressful situations, and maintaining a sense of social connection and emotional literacy. They also argued that programs should include education programs to increase physical exercise. The methods they suggested did not specify any connection with creative thinking, but from a creative researcher’s point of view some of the methods, such as building skill in mental acuity, increasing capacity to solve problems, and developing thinking strategies clearly are connected with creative thinking and problem solving. This connection with creativity suggests that interventions involving creative thinking and problem solving would promote mental health.

In the Australian state of Victoria, the formulation of The Melbourne Charter demonstrates that researchers and policy makers are concerned with the promotion of mental health, and this initiative has been strongly supported by the Victorian government (Global Consortium for the Advancement and Promotion in Mental Health, 2008). VicHealth and other Australian state health departments have funded and supported a range of creative projects that have aimed at promoting health and well-being in the broad population, and some have targeted elderly people (Australian Council of the Arts, 2011; Flying Fruit Fly Circus, 2011; Schmid, 2005a; VicHealth, 2002, 2014). See Section, 2.2.1.

2.4 Healthy older adults: A health perspective

The knowledge base of what constitutes healthy ageing is at an early stage of research development. The aim of this section is to provide an overview of what constitutes healthy ageing and this is demonstrated by the presentation of a demographic profile of Australian older adults, theories of healthy ageing and well-being, and an overview of health studies in which researchers have identified factors of healthy/successful aging—especially those researchers from fields of neuroscience and cognitive psychology. If the results from the investigations conducted in this present research suggested that mental well-being and creativity were affected positively by a creativity enhancement intervention this may suggest that creativity is a factor in healthy ageing. Furthermore,
the information could be beneficial to health professionals, active older adults, and also to those who have an illness or a dysfunction.

2.4.1 Demographic profile of Australian older adults

In June 2012 there were 3.22 million people aged 65 years and over in Australia, accounting for 14% of the total population (Australian Bureau of Statistics [ABS], 2012). Women represented 54% of people 65 years and over, and 65% of people aged 85 years and over (Australian Institute of Health and Welfare [AIHW], 2013). At age 65, on average, men can expect to live for a further 19.1 years and women for 22.0 years, and older Australians can expect to live longer and generally enjoy more years if they are without disability (AIHW, 2013). The labour force participation of men and women aged 65 and over was 12% in 2012, and women represented about one third of those who were employed. Thus, it is apparent that older people form a substantial subgroup of the Australian population and that meeting their needs is and will continue to be a major concern for, among other things, the health system.

The factors influencing healthy ageing have been identified and maintaining good mental health is central to notions of “ageing well”. Australians experience about 90% of their lifespan in good health, and the majority of Australians consider themselves to be in good, very good, or excellent health (AIHW, 2013; Begg et al., 2007). However, in 2012, 87% of people over 65 reported at least one long-term health condition, with the five most common conditions being hypertension, arthritis and related disorders, hearing disorders, heart disease, and back problems (ABS, 2012). In 2009, 20% of those aged 65 and over experienced a profound or severe core activity limitation/disability. According to the AIHW (2013), this means that they sometimes or always needed assistance with activities in self-care, mobility, or communication. Thus, older Australians not only form a substantial subgroup of the population, but as a group they also have a higher level of health issues than the overall population and experience special health needs, to which the health system needs to respond. The presence of any physical health conditions or any severe activity limitation/disability does not necessarily preclude an active/successful/productive lifestyle, or a high quality of life and well-being.
2.4.2 Theories of ageing and well-being

There are many theories of ageing within health care. These include biological, socio-emotional, and health psychology theories. The preference for one theory over another is largely based on the context of the health care. Although Pizzi and Smith (2010, p. 456) pointed out that despite the existence of many theories “no single theory explains all aging phenomena”, current thinking about successful ageing combines a psychological health approach with socio-emotional theory, with the advantage that there can now be a more holistic view of the ageing individual. In addition, there have been many attempts to define successful ageing and to determine the predictors of successful ageing (Depp & Jeste, 2009). These attempts form a general backdrop to the concepts of healthy ageing. Internationally, the prevailing health promotion model of ageing is “successful ageing”, and factors in this were spelled out by Rowe and Kahn (1988). These are freedom from disease, good cognitive and physical functioning, maintenance of skills and interpersonal relations, active engagement in productive meaningful activities (unpaid or paid), a sense of purpose or meaning, and an attitude that sees life as an opportunity for personal growth (Depp & Jeste, 2009; Pizzi & Smith, 2010; Ryff, 1989a).

The lifespan development approach is the main psychological approach currently used by health professionals and researchers, mainly because it identifies the psychological dimensions of well-being and of successful/healthy ageing. Integrating lifespan developmental theories, clinical theories of personal growth, and mental health perspectives, Ryff (1989a) identified six relevant dimensions: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. The findings from Ryff’s (1989a, 1989c) qualitative research indicated that in old age, subjective well-being does not decline. In fact, it typically increases despite the evidence that age comes with many losses and challenges. Ryan and Deci (2001) added that older adults focus more on “positive coping with change” than do any other age group.

A number of researchers using qualitative studies have reported older adults’ perceptions and understanding of ageing and well-being, and the results have assisted in developing theories about successful ageing (Andrews et al., 2002; Bryant, Corbett, & Kutner, 2001; Knight & Ricciardelli, 2003; Ryff, 1989c; Steverink, Westerhof, Bode, &
Dittman-Kohli, 2001; Strawbridge, Wallhagen, & Cohen, 2002). These studies have not been linked to creativity in any way. However, they support the value of obtaining participants’ views and indicate how useful qualitative research could be as a supplement to quantitative research.

2.4.3 Health studies: Older adults and ageing

Over the past 20 years, researchers conducting methodologically sophisticated experimental health research including randomised controlled trials and quasi-experimental studies, have examined the effects of a range of interventions by examining causality, and have sampled older adults. The outcomes have identified the factors involved in healthy ageing. The interventions included health programs in mind/brain fitness from the fields of neuropsychology (Cusack, Thompson, & Rogers, 2003; Valenzuela, 2005), healthy lifestyle activities (Rowe & Kahn, 1988; Andrews, Clark, & Lusczcz, 2002), physical, social, and productive activities (Glass, Mendes de Leon, Marottoli, & Berkman, 1999), health indicators and activities (Fisher, Day, & Collier, 1998; Fisher & Specht, 1999; Menec, 2003), lifestyle programs from occupational therapy researchers (Clark et al., 1997, 2001; Mountain, Mozley, Craig, & Ball, 2008), and falls prevention programs by Clemson et al. (2010) and Sherrington et al. (2008). In summary, these researchers found that productive purposeful activities, social activities, physical activities, and mental stimulation impact positively on successful ageing. The findings from these studies also suggest ideas for the intervention to be used in the present research, for instance, that a creativity intervention program tailored to meet the everyday needs, issues, and concerns of older adults would be required. See also Section 2.4.4. Furthermore, the studies suggest that superior outcomes can be expected when an intervention is administered by a health professional.

2.4.4 Studies from neuroscience and cognitive psychology

Perspectives and outcomes from recent research developments in neuroscience and cognitive psychology were of particular value to this research because, by identifying factors that stimulate a healthy brain/mental fitness, they suggest that promoting the deliberate cognitive processes of creativity, that is, creative problem solving, could be a useful component in a creativity intervention program. The influential research by Rowe
and Kahn (1988) reported that older men and women can improve their cognitive function significantly through appropriate practice and training. In addition, Rowe and Kahn demonstrated that participants’ cognitive improvements were sustained in follow-up testing. Their findings have subsequently been supported by the clinical trials by Smith et al. (2009) and Ball et al. (2002), the critical review by Kramer et al. (2004), the study by Valenzuela (2005), and especially the study on brain fitness by Cusack et al. (2003), and have supported the use of cognitive training and lifestyle redesign programs for well older adults.

Furthermore, earlier brain research provided evidence that bilateral integration of cerebral function is a central feature of mental health and is involved in creativity (Bogan & Bogan, 1999; Hoppe & Kyle, 1997; Myers, 1982; Vessels, 1982). Edwards (1990, 1992), an arts educator, devised a series of analogue drawings to capture various cognitive processes that promoted bilateral integration of cerebral function. Edwards suggested that carrying out analogue drawings might help participants practise shifts in cognitive thinking and promote creative thinking and mental well-being. See also Section 2.2.7.4.

Research concerning neuroplasticity (Claxton, 1997; Diamond, 2007; Doidge, 2007) and the neural basis of creativity (Dietrich, 2004, 2007; Dietrich & Kanson, 2010; Doidge, 2007) suggest that it is important for human health to deliberately practise stimulating the mind in what is now commonly called brain fitness. According to Diamond (2001, p. 7) “the brain needs new challenges if it is to remain healthy” and the brain needs “newness”, that is, to have new pursuits, new ideas, and new activities in everyday life. These findings by neuroscientists, especially cognitive neuroscientists, support the notion that deliberate stimulation of the brain is a factor in successful ageing. These studies suggest that brain fitness/stimulation for older adults in a creative intervention would be useful and that carrying out new activities (= creativity) gives the brain a “work-out”, comparable to what energetic physical activity does for the body.

2.5 Conclusion

Mental health researchers have recommended that future mental well-being research must provide research evidence in which researchers investigate causality, measure behavioural change, and use interventions that promote positive mental health and are
based on a delivery model (e.g., Prilleltensky’s 2005 model of strength, prevention, empowerment, and community conditions) in order to reduce mental health risk factors.

Health promotion studies have provided useful material for determining the type, administration, and design of components of the creative intervention for this present research. Research in neuroscience and cognitive psychology supported the idea that there are connections between practising creativity and the health of the brain. Further, the success of studies investigating brain stimulation suggests the value of conducting a deliberate creative problem-solving intervention. The research evidence regarding creativity training programs has indicated that the best practice model for fostering creative problem solving is CPS Version 6.1\textsuperscript{TM} (Treffinger et al., 2006), and that conducting a tailor-made program appropriate to the participants/clients, in a group situation, would be effective. Health practitioners, especially social workers, occupational therapists, and speech therapists have been educated in facilitating groupwork. Health researchers have established a clear link between deliberate brain stimulation (= mind fitness) and well-being by investigating various lifestyle interventions for older adults. Furthermore, these findings appear to support the evidence about the cognitive processes necessary for creativity. However, there is little understanding of the factors that influence creative thinking in older adults. So far, the value of creativity as a deliberate thinking process that can be used in everyday life as a useful tool in ageing has not been substantiated by health researchers.

Health professionals are in a unique position to foster clients’ creative thinking because they often assist them to solve problems. The usefulness of creative thinking to resolve everyday issues or problems has been shown to be substantial (Treffinger et al., 2006). Consequently, everyday creativity and its link to psychological health can easily be incorporated into creativity training programs by teaching creative problem solving techniques (see Engelman, 2000).

A few quantitative researchers have studied the application of creativity thinking and problem solving training programs with older adults. See Section 2.2.5. Those studies have provided a useful link between creativity, successful ageing, and well-being of older adults. There is a shortage of quantitative evidence on creativity and older adults. There was no evidence of any Levels I or II studies, and there were few
Level III experimental studies that had a specific mental health promotion intervention focus and were conducted with healthy older adults. Those researchers who have investigated creativity and older adults reported positive outcomes for the effectiveness of creative (arts-based) interventions, and these suggest that art-based activities would be beneficial in a creativity intervention for older adults. However, in only two of these studies were instruments used to measure creativity, and there was no participant written evaluation of the creativity intervention program, or any follow-up measurements, or an inclusion of any deliberate creative problem solving within the creativity intervention. As yet, no researchers have used an intervention combining a deliberate creative problem solving training with a range of creative arts-based activities.

Researchers using qualitative methodological research designs have substantiated associations between arts-based activities and well-being, and these appear to be indisputable. This therefore suggests two points. One is that qualitative research methodology is well suited to studying arts-based activities. The second is that research participants/subjects carrying out any type of creativity activity (arts-based or creative problem solving activities) should be interviewed regarding their views on those activities. A number of researchers using qualitative methods have found that creativity seems to be a factor contributing to healthy ageing. However, there were limitations to those arts-based activities and ageing studies because the researchers sampled only individuals with a high level of creative skill and motivation. Future research building on the findings of these studies could well reveal further factors involved in successful ageing.

Investigating creativity and mental well-being quantitatively is a new area of investigation. The mental well-being literature did reveal that it was necessary for researchers to investigate a range of intervention types. A creativity intervention program could be one such type of intervention. The increasing prevalence of depression with age also suggested that a promotional healthcare creativity intervention might assist older adults to avoid depression. A creativity intervention with a group participatory focus with an arts-based activities and deliberate creative problem-solving activities focus might be cost efficient as well as offering a range of benefits to older adults, as suggested by Craemer (2009).
Overall, the considerable evidence for using arts-based activities for therapeutic reasons and the vast number of qualitative research and evaluation studies providing evidence of a link between arts-based activities and mental health and well-being cannot be overlooked. The qualitative literature, rich with subjective experiences, provides a strong foundation for incorporating a qualitative study within this present research. However, no qualitative research has yet explored creativity from the perspective of a deliberate thinking process (creative problem solving) with older adults. As there is a shortage of quantitative evidence on creativity and older adults, and researchers are calling for increased research designs that investigate causality, cross-disciplinary research in the fields of creativity and mental health promotion could advance the study of this topic and create new knowledge at the intersection of different methodologies. This could lead to research that combined both quantitative and qualitative studies in a mixed method approach.

2.6 Research questions

The research questions were formulated to guide the research process. The research questions and objectives were devised through the critique of the literature and the identification of key gaps in the knowledge base. In doing so, multiple theories underlying creativity and mental well-being were drawn upon. However, the aim of this research was not to develop a theory. The research was designed pragmatically to examine the effect of a creativity intervention program on creativity and mental well-being in older active adults. First, there was an overall research question.

Is there an effect on creativity and mental well-being from participating in a creativity enhancement program for people 65 years and over?

From this overarching question three questions were derived:

1. Does a creativity enhancement program influence creativity and mental well-being immediately after completion of the program?

2. Are creativity and mental well-being still influenced five months after completion of a creativity enhancement program?
3. What are participants’ perceptions of any changes in creativity and mental well-being in any aspect of their lives after participation in a creativity enhancement program?

2.7 Research objectives

The following objectives were formulated to address the research questions.

- To examine the topic from two distinct methodological perspectives, from a quantitative and qualitative perspective.
- To design a mixed method approach that comprised an experimental study yielding evidence at Level II or III, and a qualitative study investigating participants’ perceptions.
- To design a creativity enhancement program that included creative problem solving and creative expressive activities.
- To investigate the effect of a creativity enhancement program on creativity and mental well-being of older adults.
- To investigate, qualitatively, older adults’ perceptions of creativity and mental well-being.
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CHAPTER
3

METHODOLOGICAL CONSIDERATIONS, ISSUES, AND RESOLUTIONS

3.1 Introduction

The overarching research question of this research was, Is there an effect on creativity and mental well-being from participating in a creativity enhancement program for people 65 years and over? This question was examined from two perspectives. The first was the quantitative question: “Did participation in a creativity enhancement program lead to significant increases in participants’ scores on measures of creativity and mental well-being?” This was the core issue with which the study was concerned. The second was the qualitative question: What are participants’ perceptions of any changes in creativity and mental well-being in any aspect of their lives after participation in the creativity program? In order to make this dual approach possible, a mixed methods (MM) research approach was adopted.

The type of mixed method design in this research consisted of a main quantitative study, and a qualitative study. The qualitative study used a subsample of participants from the quantitative study. As indicated above, both studies were intended to address the same overarching research question but from different methodological perspectives. Therefore, the studies were not “mixed” in methods or methodologies. From this standpoint, the findings from the two studies were analysed and retained as separate self-contained studies because, according to Morse (2010), and supported by many researchers, the assumptions of each method must be respected. However, in addition, in this research, after the separate analysis of the two studies, the data sets from each study were compared, analysed, and interpreted.

The type of qualitative study employed within this MM approach has been classified as a “follow up design to the principal method”, and is regarded as being of
“complementary assistance” to the quantitative study (Morgan, 1998). Many health researchers have advocated this kind of research design with the aim of enriching data gained from studies (Campbell, Quilty, & Dieppe, 2003; Donovan, Mills, Smith, & Brindle, 2002, 2002; Lewin, Glenton, & Oxman, 2009; Morgan, 1998; Weinholdt, Kacer, & Rocklin, 1995). According to Natasi, Hitchcock, and Brown (2010, p. 307), and similar to the principles stated by Sandelowski (2000), the complementary approach is one where the researcher seeks “elaboration or clarification of results for one method (e.g., quantitative) from another method (qualitative)”. This is reached by connecting the two methodologies at the level of analysis and interpretation of both data sets (Moffatt, White, Mackintosh, & Howel, 2006; Morgan, 1998). Morgan (1998) urged health researchers to connect the strengths of different methods in order to address the complexity of their research topics, especially when a project’s goals include both pure research and applied uses in practice settings.

The use of an MM approach allowed for the possibility to cross-validate the results of the quantitative method, as advocated by Morgan (1998), Barbour (1999), Weinholdt et al. (1995), Bryman (2006), and Hoffman, et al. (2013). This is also known as triangulation. Triangulation is a common strategy used by MM researchers in order to ensure internal validity of the overarching research design. Because the studies in this present research were not “mixed” in methods or methodologies and viewed as separate self-contained studies the stance taken in this research was to use triangulation at the conclusion of the research analysis phase; see Chapter 6.

The approach for this research was based on the epistemological perspectives of numerous advocates of MM, who have argued that all distinctions between quantitative and qualitative research methods lie on a continuum, where the practical demands of the research problem are primary and pragmatic, where mixed methods research approach is a method not a paradigm⁴ and therefore theory is not to be integrated or combined,

⁴ A paradigm is a concept that is commonly used in methodological discussions to explicate the ontological and epistemological perspectives of different types of research. The Oxford English Dictionary defines paradigm as “a pattern or model” (Pearsall, 1999). Thomas Kuhn used the word paradigm to refer to the set of practices that define a scientific discipline at any particular period of time. Salazar et al. (2006a, p. 151) stated that a methodological paradigm “is a discipline’s view of which research techniques and practices are promoted and should be practiced. A discipline’s methodological paradigm has strong implications for how the discipline as a whole will progress”. The most common paradigms used by researchers in the discipline of health science, are postpositivist (quantitative research) and interpretivist (qualitative research).
and that flexibility and adaptiveness are needed to determine what will work best for a
given problem (Greene, Caracelli, & Graham, 1989; Leedy & Ormrod, 2005; Onwuegbuzie & Leech, 2005; Sandelowski, 2000; Tashakkori & Teddlie, 1998). From
this broad conceptual base, the aim was to align the MM research design with what
Johnson and Onwuegbuzie (2004, p. 17) defined as “the class of research where the
researcher mixes or combines quantitative and qualitative research techniques, methods,
approaches, concepts or language into a single study”. Techniques for combining data
sets for MM research that have been useful to numerous health researchers (see
Creswell & Plano Clark, 2007; Dures, Rumsey, Morris, & Gleeson, 2010; O'Cathain,
Murphy, & Nicholl, 2010; Onwuegbuzie & Teddlie, 2003; Moffatt, et al., 2006;
Sandelowski, 2000; Teddlie & Tashakkori, 2009) were included in the present MM
study; see Chapter 6.

Two theoretical perspectives that underpin an MM approach and that are integral
within this research design were pragmatism and the notion that “the whole can be
greater than the sum of its parts” (Barbour, 1999, p. 4). Biesta (2010), Cherryholmes
(1992), and Teddlie and Tasahakkori (2009) state that a pragmatic researcher considers
perspectives from both sides of the paradigm debate in interaction with the research
questions and in real-world circumstances. As explained by Onwuegbuzie and Leech
(2005), pragmatic researchers have the opportunity to combine macro and micro levels
of a research issue. For instance, it was anticipated that a pragmatist perspective would
be useful in my research design when determining not only whether the data sets from
both studies were complementary but also in determining whether it would be useful to
triangulate, develop, initiate, or expand the data sets in order to obtain the richest
evidence with which to answer the research questions.

The second philosophical concept was “where methods have been integrated, the
whole can be greater than the sum of the parts” (Barbour, 1999, p. 4). In other words,
the comparison of both data sets has the potential to be more important and relevant
than if both studies were analysed separately. From this perspective, it was anticipated
that the use of MM could enrich the results from both studies and fill a gap that has not
been filled by previous researchers investigating creativity and mental well-being.
Various researchers have endorsed this perspective. For example, Leedy and Ormrod
(2005) have argued that researchers must take a broad stance regarding methodological
approaches, and must not limit themselves to the belief that only a true experiment constitutes research. In addition, Sil and Katzenstein (2010, p. 412) stated that the “eclectic combination of diverse theoretical perspectives in making sense of findings cautions against excessive simplification required to apply a single theoretical lens to grasp the manifold complexities on the ground”.

Over the past few decades of evidence-based practice (EBP) in medical and health services, there has been a growing awareness of the value of using qualitative methods and MM approaches to investigate complex human health conditions and situations (Baum, 1995; Hoffman, Bennett, & Del Mar, 2013; Morse, 2006; Pope, Mays, & Popay, 2007). Creswell, Fetters, and Ivankova (2004), in their defence of using an MM approach, have argued that the general logic is that a combination of MM holds the promise of being able to capture the trends and details of a situation that would not be achieved through a single methodology. Also, Maxwell and Mittapalli (2010) recommend that health researchers use an MM approach because the MM notions of pragmatism and realism are useful in designing applied research. Similarly Donovan et al. (2002), Lewin et al. (2009), and Moffatt et al. (2006) take the stance that qualitative methods and MM are able to make a significant contribution to experimental designs, clinical trials, and the evaluation complex health service interventions.

A goal of this research was to develop a multifaceted explanation capable of contributing not only scholarly findings of the kind that are yielded by quantitative methods but also, through the application of qualitative methods, to enrich discussions among creativity and mental health researchers and practitioners.

The overarching research design is depicted in Figure 3.1, and indicates the sequence and connection points between the two methodologies that were used. The quantitative study was designed as applied research, an experimental study with an intervention group and a control group, a pre-test, and two post-tests. The intervention was a 3-month, once a week, creativity enhancement program, and the measurement times extended over an 8-month period. The quantitative data collection commenced at baseline measurement and was completed after the Time 3 measurement at 5 months after the end of the intervention. The qualitative study was conducted 8 months after the
Figure 3.1. Research design: Mixed method
completion of the creativity intervention with a subsample of participants from the intervention group. The quantitative study and the qualitative study were analysed separately as single studies. After this was conducted, the data sets from both studies were compared. See Chapter 6 for more details.

3.2 Rigour

According to Moffatt et al. (2006, p. 7) it “is standard practice at the data analysis and interpretation phases of any study to scrutinise methodological rigour”. Similarly, methodological considerations need to address rigour when comparing both data sets in an MM design (Hoffman et al., 2013; Leedy & Ormrod, 2005). Teddlie and Tashakkori (2009) have pointed out that the combination of distinct methods after analysing data sets separately provides greater opportunity for accurate inferences.

Moffatt et al. (2006) concluded that robustness in MM design would be enhanced through analysis of data from both studies when there is consistency within the findings. However, Moffatt et al. (2006) also added that if the two studies produce discrepant findings the discrepancies could be harnessed to investigate each set of data more fully. Regarding the present MM research, for example, if the situation arose where the qualitative data were not consistent with the quantitative data then the qualitative method might be able to enhance the quantitative study by identifying other variables that could be measured in future research. Refer to Section 6.2.2.2 Discrepancies in mental well-being for the outcome of this method of triangulation.

3.3 Considerations pertaining to the quantitative study

The quantitative study in this research is quasi-experimental research and therefore employed methods developed in the logical positivist tradition. However this quantitative research was carried out in the present era of postmodernism and therefore in the spirit of postpositivism (Guba & Lincoln, 1994, 2005; Kielhofner, 2006). The main stance of postmodernism and postpositivism is not the classic idea that science produces truth but that science produces potentially useful knowledge, and therefore it can inform practical action. The postpositivist stance is one in which the researcher is a critic of the traditional positivist notion of objectivity. For example, the researcher maintains a focus “on ‘critical multiplism’ (a refurbished version of triangulation) as a
Critical examination, as suggested by Guba and Lincoln (1994), was carried out during the phases of this present study. Further, postmodern researchers embrace a view that all scientific knowledge is socially constructed and therefore relative (Kielhofner, 2006). This suggests that the impact of research and that of the researcher are not inherently value-free or benign. In health science a postpositivist paradigm is generally the acceptable stance in quantitative studies and researchers are increasingly explicating the research process and the investigators’ characteristics (including theoretical understandings and assumptions). An aim of this study has been to reveal the research process, to carry out the study with “real” people in a community non-government educational environment, to include additional situational information in the measurement phase, and to critique the implementation and the results of the research within the scope of this research topic in order to provide potentially useful knowledge. See Chapter 4.

3.3.1 Randomisation

A non-equivalent control group design, a particular category of quasi-experimental research (Portney & Watkins, 2009), was chosen for this research. A quasi-experimental research design approximates a true experiment (e.g., a randomised controlled trial [RCT]). It is regarded as causal research and as similar to an RCT in that there is an intervention group, a control group that does not receive the intervention, and outcome measures (Salazar, Crosby, & DiClemente, 2006b). The main difference from an RCT is that there is no randomisation to create the equality of groups that is essential for valid comparison on the outcome measures.

The current research design was originally to be an RCT. However, a non-equivalent control group design was adopted at the allocation stage of the research because participants could not be randomly assigned to the intervention and control groups (see Chapter 4). This pragmatic reconfiguration of an experimental research design has been endorsed by a number of researchers and is often reverted to by health promotion researchers (Cherryholmes, 1992; Onwuegbuzie & Leech, 2005; Salazar et al., 2006b).
3.3.2 Controlling for confounding variables

When randomisation cannot be conducted, the intervention and the comparison group are more likely to exhibit pre-intervention differences on measured or unmeasured factors and these pre-intervention differences between the groups need to be taken into account in order to ensure the internal validity and hence rigour of the research design (Creswell, 2008). In order to address this threat to the internal validity of a quasi-experimental study, it is important to measure differences between the groups before the intervention so that if there are any differences, these can be controlled for statistically when comparing the outcomes of the groups (Salazar et al., 2006b). Specifically, there are two well-known strategies for controlling these inter-group differences: a repeated measures design; and the use of a statistical technique to equate groups on extraneous variables, i.e., analysis of covariance (Portney & Watkins, 2009). Both strategies were used in this research (see Chapter 4 for details).

It is possible to control for confounding variables by the inclusion of a pre-test in both intervention and control groups (as in the design for this research) and because this type of experimental design has a control group there is some control over effects of history, testing, and instrumentation (Creswell, 2008; Leedy & Ormrod, 2005). Nevertheless, although using this type of design does allow the researcher to draw conclusions about cause and effect and other relationships within the data, the conclusions will be deemed to be weaker than those that could be drawn from an RCT with regard to threats to internal validity, and hence this would weaken inferences regarding cause and effect.

There are some threats to internal validity that could not be readily controlled in the current study, and there are others that were anticipated and for which strategies for strengthening the design were implemented. Possible threats included the threat of differential mortality or loss of participants between groups, experimental bias (mediated, for example, by the Hawthorne effect\(^5\)), demand characteristics,\(^6\) issues relating to testing and manipulations over the passage of time, the durability of effects,

\(^{5}\) The Hawthorne effect is where the participants modify their behaviour when they are in an experiment because they are being observed, and therefore respond in ways that are not representative of their normal behaviour (Portney & Watkins, 2009).

\(^{6}\) Demand characteristics is where the participants try to give the answer they think is correct (Crano, 2004; Orne, 1962). It is also known as the social desirability response bias (Portney & Watkins, 2009).
and the possibility of participants anticipating the hypothesis (Portney & Watkins, 2009). The following discussion details the methodological considerations and issues concerning the factors that were most likely to contaminate the variables and strategies for minimising their effects (Portney & Watkins, 2009).

One potential threat to the internal validity of the results based on the chosen quasi-experimental research design is the social factor (Portney & Watkins, 2009) resulting from participants being in a group situation and the effects of group belonging and associated social interactions therefore being difficult to separate from the effects of the creativity intervention as causes of any observed differences between groups in outcomes. One limitation of the current study was that the intervention consisted of two key elements, the creativity intervention and the associated social factors, and that the relative contributions of each of these to the observed outcomes could not be individually ascertained. Only the combined effects could be assessed. One strategy for countering this threat would have been to include an additional control group (e.g., a generalised social activities group which did not undertake the creativity intervention) in the overall design. However, for this research, because the number of participants could not be reached within the constraints of time, this was not possible.

The possible threat of mortality (loss of participants) could be a concern in this study design because the discontinuers from the study between pre- and post-tests might differ systematically from participants who remained in the study, so that the outcomes could lead to erroneous inferences. However, in order to control for this threat, strategies for handling missing data were identified; see Section 3.3.4.2 below. In addition, a number of administrative procedures were planned to minimise overall attrition in the research. For example, rapport was maintained by following up on nonattendance and informing participants they could attend any alternative intervention session scheduled for that week. In addition, when participants missed attendance at a measurement session follow-up telephone contacts were made to ascertain the reason for nonattendance. See also Chapter 4 Method section.

In order to assess the durability of the creativity enhancement program (i.e., durability of effects), a post-test, at 5 months after conclusion of the intervention, was included in the study design. Conducting a follow-up study is highly recommended by
health promotion researchers (Crosby et al., 2006; Glasgow et al., 2004) (see Chapter 4). However, the most common problem with a follow-up design is the mortality (Crosby et al., 2006; Portney & Watkins, 2009).

There may also be a threat related to testing. Post-test scores may be affected by practice gained by taking the pre-tests and thus becoming familiar with the test procedure. For instance, after completing the creativity test, participants might think more deeply about the test and this might change the way they completed it the second and third times. This possible consequence may be independent of the effects of any intervention designed to influence their creativity or mental well-being. A question that is useful at baseline measurement time is: Will the pre-testing have an effect on the participants’ motivation to benefit from the intervention they are about to experience? Any comments made by participants that referred to their response to the measurement process or the tests were to be noted in my research journal and considered at the data analysis and interpretation stage.

Another threat may be bias arising from the expectations of either the participants or the researcher—from the Hawthorne effect or from demand characteristics. It is common for participants to react to what they think is expected of them in order to please the researcher. It is possible that participants may talk to one another about what they did or what they thought the hypothesis was, or may detect communication, verbal or nonverbal, from the researcher that could influence their perceptions of carrying out their tasks in the research. In these situations the participants might behave in ways that would not reflect their normal behaviour. This type of bias could be avoided by researchers being careful not to make the hypothesis under investigation obvious, or by employing testers for the instruments and facilitators for the intervention group. However, for this current research this was not possible because of time and resource limitations.

3.3.3 External validity

This current research was regarded as having robust external validity in the sense that it was highly likely that the results could be generalised to a similar sample of people 65 years and over who are active and participating in various community activities. In addition, because the research was conducted with “real” people in a community
environment that is frequented by a majority of people 65 years and over, the findings would have greater external validity than, for example, findings obtained in the artificial setting of a laboratory, and would therefore yield results with a broader applicability to other real-world contexts (Leedy & Ormrod, 2005).

### 3.3.4 Issues and resolutions of procedures for data entry and statistical tests

#### 3.3.4.1 Intention to treat

Originally, as this research was to be an RCT, analysis by intention to treat (ITT)—i.e., analysis of data for all participants in the study as if they participated in the group to which they were assigned, regardless of whether they did or did not participate in the intended treatment/intervention—was considered. However, this was no longer applicable when the design was changed from an RCT to a quasi-experimental design. This was because analysis by ITT is a major procedural requirement designed to preserve the benefits of randomisation in the data analysis phase of a trial and is not applicable in studies that do not employ randomisation (Feinman, 2009; Portney & Watkins, 2009). The current study employed a quasi-experimental design in which participants were not randomly allocated to groups due to real-world constraints.

#### 3.3.4.2 Management of missing data, outliers, and skewness and kurtosis

Incomplete data decreases the power of a study and also can compromise the effect of assignment to groups (Portney & Watkins, 2009). Therefore, in this study all incomplete data, especially data regarding attendance of participants in the intervention and the control group, were checked as well as data concerning those who did not attend the measurement sessions. It was anticipated that participants from the intervention group would be omitted from the data set if they had not been sufficiently exposed to the program or had not provided sufficient data for analysis, and that details of omission due to missing data would be reported; see Chapter 4, Section 4.3.1. In addition, it was anticipated that participants in the control group would be omitted from the data set if they had not provided sufficient data for analysis.

Osborne and Overbay (2004) have argued that the accuracy of estimates in analyses is greatly enhanced as a result of removing outliers. This view was adopted in this research, and Winsorising (the process of transformation of statistics by limiting
extreme values to reduce the effect of possibly misleading outliers)\(^7\) was conducted to replace the outliers with the most extreme acceptable value. This has the advantage of not discarding any data: Large/small values were regarded as still large/small, but less likely to disrupt the mean and \(SD\) estimates and statistics that depended upon them.

Testing for acceptable levels of skewness and kurtosis was included as part of the initial analysis because it is widely recommended (Portney & Watkins, 2009, p. 402) not to take “the risk of invalid statistical conclusion”. Skewness and kurtosis were considered to be acceptable if they were within the range of +/-1.

### 3.4 Considerations pertaining to the qualitative study

In contrast to the positivist view of reality, qualitatively orientated researchers assume that reality as we know it is socially constructed, that is, that individuals create their own subjective realities and thus knower and knowledge are interrelated and interdependent (DePoy & Gitlin, 1994). The epistemological view is that it is not possible to separate the outside world from an individual’s perceptions and views of that world. In other words, reality cannot be separated from peoples’ knowledge of it. Constructivists argue that the concepts of science are mental constructs proposed in order to explain sensory experience. The essential characteristics of what is commonly called a holistic perspective are that there is no single valid methodology in science, but rather a diversity of useful methods. Human experience is complex and cannot be known through examination of its parts. “There are multiple realities that can be identified and understood only in a natural context in which human experience and behavior exist” (DePoy & Gitlin, 1994, p. 18). This description is supported by Denzin and Lincoln (2005, p. 2), who have argued that qualitative research has a multi-method focus, one that includes an interpretive, naturalistic approach in its subject matter. Therefore, qualitative researchers are mainly interested in narrative data and analysis (Teddlie & Tashakkori, 2009). They ask the “what” and “how” in order to explore, gain insights, and understand underlying issues, often with the purpose of describing and understanding the phenomena from the participants’ point of view (Leedy & Ormrod, 2005). Furthermore, qualitative research involves the studied use and collection of a variety of empirical materials gathered from personal experience, introspective reflections, life stories, interviews, and observations, and historical, interactional, and

\(^7\) This process was named after Charles P. Winsor. See Hastings, Mosteller, Tukey, and Winsor (1947).
visual texts that describe routines and issues and meanings in individuals’ lives. A constructivist approach is also referred to as a qualitative, naturalistic, or interpretive approach. The main assumption and belief that underpins the research is subjectivism, which belongs to the constructivist/interpretive paradigm (qualitative framework).

According to Curtin and Fossey (2007), Graneheim and Lundman (2004), Padgett (2012), and Patton (1990), qualitative research will be shaped by the unique perspectives of the researcher and therefore qualitative researchers will need to use reflexivity (Denzin, 1994) and methods of bracketing (Tufford & Newman, 2010) in order to be transparent about any influences that could distort results or affect the research process, analysis, and interpretation. According to Tufford and Newman (2010, p. 81) bracketing is a “method used by some researchers to mitigate the potential deleterious effects of unacknowledged preconceptions related to the research and thereby to increase the rigor of the project”. For example, it was anticipated that throughout the qualitative study I would keep fieldwork notes and a research journal in order to maintain bracketing throughout the research process. During the research I held the belief that the researcher, with sufficient reflexivity, can use his/her resources on the topic to uncover previous “deep seated” or “poorly recognized views on issues central to the topic” (Olesen, 1994, p. 165) by giving a full account of his/her biography, beliefs and values, and conduct.

The decision to conduct the qualitative study interviews at 8 months was made for two principal reasons. First, the aim was to explore the long-term effects on participants’ creativity and mental well-being, and 8 months was a reasonable, practical amount of time, without extending the time too much after the creativity program. Second, the decision to interview at 8 months was made because it conformed with the time frame suggested by Glasgow et al. (2004, p. 5), who indicated that reporting of health education and health promotion programs should refer “to the long-term effects of a program on outcomes 6 months or more after the most recent contact”.

As stated earlier in Chapter 3, the aim was to obtain the most appropriate qualitative data for the purpose of the study by interviewing participants 8 months after

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8 The use of the first person in writing qualitative research is in keeping with the epistemologies of the research and in using reflexivity (Webb, 1992).
the intervention. The research question for the qualitative study was ‘What are participants’ perceptions of any changes in mental well-being and creativity in any aspect of their lives after participation in the creativity program?’ The implementation of this kind of qualitative study was not a part of any other research project or funded study. Therefore, conducting any other alternate qualitative design, for example a longitudinal study designed to interview participants during, and immediately after the intervention, as well as at 8 months, was not feasible given the fieldwork constraints on time and resources.

Researcher’s perspective

My research methodological background had been in qualitative research, and the decision to pursue an MM design, especially the quasi-experimental study, was largely because researchers in the field were calling for this type of design in order to fill a methodological gap and consolidate the evidence base of the field. As can be seen through examining my previous writings I anticipated that a creativity intervention would positively influence mental well-being. Despite my initial views based on clinical experience, I believed that full acceptance of these views required more substantial supporting evidence. In addition, I adhere to a perspective that researchers do research in order to examine or explore a topic openly and transparently in order to advance the knowledge base of their field.

I anticipated that the close relationship I have had with the topic over many years may, through a robust MM research design, offer a rigorous methodology that could contribute to the fields of arts and health, health science, creativity research, and healthy ageing.

3.5 Ethics approval and considerations

Ethics approval was granted by the Charles Sturt University Human Research Ethics Committee, protocol number 2010/132. See Appendix A for information sheet, the content forms, and Appendix B for the advertisement.

For the participants there was a slight time burden, a slight emotional risk, and a risk to the privacy of information. There was no physical risk to the participants because
the activities planned were mostly sedentary and intellectual. Generally speaking, it was anticipated that participants in the intervention would enjoy the activities because they were designed to contain elements of fun and at times be challenging.

There was a time burden because the research spanned 8 months, and although potential participants during the research recruitment drive indicated that it seemed a big commitment, the time span was considered acceptable to participants. See Chapter 4. The participants in the intervention were expected to participate in a 3-month intervention program with a regular weekly commitment of about 3 hours. Participants in the control group were asked to commit to only three measurement dates over the 8-month research period. The commitment was detailed in the research information sheet and the consent form (see Appendix A). The participants in the qualitative study (the subsample of participants from the quantitative study) had a greater commitment to the research because they also participated in a 30 minute interview and a member check of the interview transcript.

It was predicted that there might be a slight emotional risk to participants in the intervention group because, during discussions regarding life issues relevant to those aged 65 years and over, some participants might discuss private issues or health issues. It was my responsibility as facilitator to assess any potential emotionally risky situations and attempt to constrain discussion on private issues. For example, if there was a likely emotional risk I planned to direct the group back to the purpose of the task, and emphasise the objective of the task. In some cases, I would talk to the participant privately after the session, and if I thought they needed any assistance I would direct them to a medical person or a counsellor. My health professional skills as an occupational therapist and my mental health background experience equipped me to identify any emotional threats early and implement strategies to protect participants and the group from any emotional burden.

There was a slight risk to the participants’ privacy of information. Although confidentiality of the participants was protected (see information sheet and consent form) there were limits to confidentiality. Because Albury–Wodonga is a small regional geographic area it was likely some people in the 65 years and over age bracket involved in the study would know each other. Therefore there was a potential that participants
may feel uncomfortable and inhibited about contributing in the research. There was also the possibility that participants may talk about the research participants to others outside the research. The issue of confidentiality was covered in the written research consent agreement. Confidentiality was also discussed in the first session of the intervention program (see Chapter 4). There was an additional risk to confidentiality. An assistant was engaged to help with the administration of the instruments, and there was a risk that the assistant might have known a participant. In order to address this, the assistant was provided with a copy of the Australian National Statement on Ethical Conduct in Research (NHMRC, 2013) and was briefed about participants’ rights to confidentiality. The assistant was not assigned to conduct any entry of data. The assistant was asked to assist in setting up practical tasks for the creativity enhancement program and assisted in carrying out some administrative tasks, for example photocopying (see Chapter 4).

3.6 Conclusions

In this chapter I have presented an overview and rationale of the MM research design for this current research, and discussed various health researchers’ views of MM within the context of health science. I have detailed the salient issues and resolutions facing this current MM research design, including the methodological rigour necessary for comparing the findings of the quantitative and the qualitative studies. In addition, issues, considerations, and resolutions have been presented concerning the designs of the quantitative and the qualitative studies. Included within the chapter are details of the ethics approval and relevant ethical considerations.

As stated at the outset, the study of creativity and mental well-being has not fitted neatly within single-paradigm models of research. There are very few studies using a positivist paradigm and there is a wealth of research using an interpretive paradigm, with, as yet, few studies using MM. For these reasons, an MM design was employed in this study in order for it to be enriched by the values of both paradigms.
4.1 Introduction

As was pointed out in Chapter 2, it is often assumed that creativity programs enhance mental well-being, but my search of the relevant literature did not identify a single published study that tested this idea in a formal trial. This chapter provides a report of a trial of a creativity intervention for enhancing creativity and mental well-being in older adults, both immediately and at a five-month follow-up.

Two research questions were addressed.

4. Are creativity and mental well-being influenced immediately after a creativity enhancement program? (i.e., a comparison of baseline / Time1 and Time 2 data).

and

5. Are creativity and mental well-being influenced five months after completion of a creativity enhancement program compared with before administration of the program? (i.e., a comparison of baseline / Time 1 and Time 3 data).

4.2 Method

4.2.1 Trial design

This trial employed a quasi-experimental design in which participants were allocated by a nonrandom method (described below) to either an intervention group or a control group. The trial design thus constituted, more specifically, a non-equivalent pretest-posttest control group design (Portney & Watkins, 2009) because group equivalence could not be assumed on the basis of random allocation. Both the intervention group and control group underwent a pretest (baseline/Time 1), an immediate posttest (Time 2), and a follow-up test conducted five months later (Time 3). Participants in the
intervention group underwent a 12 week creativity program but there was no intervention for the control group. The trial design involved one dichotomous independent variable reflecting group allocation (experimental group versus control group OR treated group versus untreated group), and two dependent variables (creativity and mental well-being, both measured at baseline/Time 1, Time 2, and Time 3). The primary outcome of interest in this study was mental well-being.

4.2.2 Participants

The study sample comprised active people aged 65 and over, residing within the cities, and associated regions, of Albury NSW, and Wodonga VIC, Australia. Albury and Wodonga are two co-located inland cities in south-eastern Australia, separated only by the Murray River which lies along the state border between New South Wales and Victoria. The population of the cities in 2011 was approximately 83,000, with the number of people 60 years and over (n = 16,000) being 19.4% of the total (AlburyCity, 2014).

4.2.2.1 Inclusion criteria

An important criterion was that the participants be generally healthy people 65 years and over, in the sense that they would be active and participating in various community activities. It was predicted that this qualification would provide an excellent sample for investigating concerns and issues regarding quality of life, well-being, and successful/healthy ageing. Potential participants were not formally screened for eligibility because it was expected that the sample numbers would be achieved through recruiting from typical community voluntary organisations.

4.2.2.2 Exclusion criteria

1. People who had a “moderate or profound activity limitation” (Australian Institute of Health and Welfare, 2007) that prevented them from being active and participating in everyday activities were excluded from the study because

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9 There are two meanings of the word “active” in this present study: 1. moving or tending to move about vigorously or frequently, alert (of a person’s mind or imagination), and lively, and 2. participating in a particular sphere or activity [these definitions are from the Concise Oxford Dictionary (Pearsall, 1999)]. The meaning of “participating” in this present research was participating in various community activities.
they would not be able to participate fully in the program developed for the purposes of the present study.

2. People aged under 65 years were excluded because the focus of this research was on older people. This was chosen for two reasons. First, 65 years of age is the usual Australian retirement age for most people and therefore potential participants would be active and participating in community activities. Second, potential participants needed to be available during the week for participation.

4.2.3 Recruitment, settings, and location

Participants were recruited by a combination of purposively sampling (Dickerson, 2006; Trochim, 2006), and direct appeals to community organisations according to Mountain et al. (2008). For instance, the sample was recruited in the first instance from purposively targeted voluntary community agencies and organisations known to have a large volunteer pool of active people over 65 years of age. It was also anticipated that the target population would be accessed through media releases, radio, and local newspapers, and by presenting the research to a diverse range of community organisations at their regular meetings. The majority of participants were recruited from the local community organisations following presentation of the research information at their meetings.

Planning for recruitment began in 2008. I organised meetings with coordinators and members of likely community organisations to gauge their interest in this research. The staff and members of the Albury-Wodonga Volunteer Resource Bureau, and the Age Concern Albury Wodonga Inc. expressed strong interest in the research. They provided significant support by providing meeting venues for the progressive recruitment process and offering to post and email research information to their members.

After receiving Charles Sturt University Ethics Committee approval, I began a multi-faceted recruitment drive in December 2010. I liaised with key staff in the relevant community organisations, and subsequently an advertisement, see Appendix B, was distributed to the organisations’ members in monthly newsletters via post and email. A professional profile (see Appendix B), had been prepared and was distributed at the same time. Charles Sturt University media personnel organised a press release, see Appendix B, and secured an interview with the local TV channel, and I
subsequently went to air on three local radio stations and was interviewed by a reporter from a local newspaper (see Appendix B). Some day and evening meetings with staff and members of various community organisations were arranged in order to describe the research and recruit participants. In addition, the advertisement concerning the study was posted or emailed to over 600 individuals. Eighteen formal presentations to community organisations about the research were conducted throughout the period December 2010 to March 2011 with the aim of recruiting people. For more details see Appendix B for a list of contacts.

Some people contacted me directly after the media advertisements, and others did so after hearing about the research from other people. Information and consent forms, see Appendix A, were made available immediately or were posted out in prepaid return envelopes. In addition, most people who were recruited had approached me after I had presented the research information at a community meeting. At those meetings an information sheet and a consent form were distributed. Potential participants were able to sign the consent form in the information sessions and return it to me at the end of the session, or they later posted their acceptance in a prepaid envelope or placed the signed consent form in a designated envelope box at the relevant organisation within one week after the information session.

At the information sessions, and through the advertisements, people were informed that they were able to participate in the research with a friend and/or partner/spouse. In order to avoid biasing potential participants during recruitment, the main purpose of the research was not revealed. Instead, I informed people that I was specifically looking at different types of sedentary social, intellectual, and resourceful activities and how these affected health as revealed by questionnaires. In this way the participants were blind to the precise nature of the study and the creativity enhancement program. The participants in the intervention group were told of the specific nature of the intervention (the creativity enhancement program) in the first session.

Potential participants were asked to commit to a research program that included three individual interview/testing appointments, and to a regular weekly session of two and a half hours throughout a 12-week program. They could identify their preferred day and time on the consent form. There were eight attendance session options, including
mornings, afternoons, evenings, and a weekend session. When recruiting was nearing its end it seemed likely that I would conduct sessions for four groups of about 12 participants each week.

4.2.4 Intervention: The creativity enhancement program

4.2.4.1 Design

The intervention was designed as a creativity enhancement program and was conducted in a community health promotion style of delivery and tailored to people 65 years and over (Schmid, 2012). According to the criterion of the UK Medical Research Council (2000) the creativity enhancement program could be classified as a “complex intervention”. It was guided by the core values and principles of a humanistic approach and delivered as a group-work intervention. The design of this program was informed by the humanistic theories developed by Carl Rogers (1962) and Abraham Maslow (1962b, 1971). The key concepts of the humanistic approach are respect, genuineness, nonjudgemental acceptance, deep understanding, self-actualisation, competence and motivation, and the experience of meaning/spirituality. These concepts were integrated into the delivery of the program, including the tailoring of activities to the participants’ needs and concerns, and in the choice of the activities and in the facilitation of the group program. The humanistic approach has been incorporated into the core values of many health professions including occupational therapy (Cole, 2005). Also, the humanistic concepts have underpinned the positive definition of health (WHO, 1946), they are within the concepts of health promotion in the Ottawa Charter (WHO, 1986), and they appear within the definition of mental health by the World Health Organization (WHO, 2001), as identified in the literature review footnote in Section 2.3.1. Definitions.

Recent empirical research that had a health promotion focus and included a pragmatic lifestyle designed program for older adults provided the foundation for the creativity program (F. Clark et al., 2001; F. Clark et al., 1997; Cusack et al., 2003; Engelman, 1996b; Hay et al., 2002; Mandel, Jackson, Zemke, Nelson, & Clark, 2001; Mountain et al., 2008; Sanson-Fisher et al., 1996; Schmid, 2012; Windle et al., 2007). A 12 week program was chosen because it represented a typical “best-practice” time frame for a creativity training skills program (Noller, Parnes, & Biondi, 1976; Parnes, 1960, 1967, 1999; Parnes & Meadow, 1960; Parnes, Noller, & Biondi, 1977), for adult educational activity skill programs (Birch, Kenyon, Koshy, & Wills-Johnson, 2003;
Cusack et al., 2003; Hurworth, Harvey, & Rutter, 2002), and for health behavioural change programs (Cole, 2005). Twelve people per group were chosen as the ideal number for the conduct of effective educational and social activity groups (Birch et al., 2003; Finlay, 1993; Johnson & Johnson, 1997).

A group-work written program protocol was developed, which is usual practice for community health practitioners (Cole, 2005; Johnson & Johnson, 1997). The protocol included the theoretical underpinnings of the program, its aims and objectives, a rationale for tailoring the program to meet the needs/concerns and issues of those 65 years and older, a schedule and details of the weekly session activities, details of the role and responsibilities of the facilitator, and the design of the program evaluation. Health and community professional practice techniques were employed in order to facilitate the participants’ movement through the stages of group development in order to optimise the opportunity to enhance the participants’ creativity skills (Cole, 2005; Corey, 1977; Denshire, 2005; Fidler & Fidler, 1963; Finlay, 1993; Foulkes & Anthony, 1971; Noller et al., 1976; Parnes, 1967; Rogers, 1970a, 1970b; Schmid, 2012; Schultz, 1973; Tuckman, 1965; Yalom, 1975).

4.2.4.2 Components

Over the 12 weeks of the creativity program, approximately 38% of the time was spent on creative problem-solving and creative thinking (including mind brain fitness games and puzzles), 36% on doing creative activities and presentation of a creative task, 18% on morning and afternoon teas, and 9% on extras such as evaluation of the program and the immediate post-intervention administration of the creativity and mental well-being instruments.

The creativity enhancement program had three main components.

a. A core component of the program was creative thinking and problem-solving and this formed the content for the first 6 weeks. Long-standing evidence provided by Noller et al. (1976), Parnes et al. (1977), Ma (2006) confirmed that the creativity problem solving (CPS) Version 6.1 by Treffinger et al. (2006) would be the mostly likely practice model for teaching CPS. Therefore this version was employed to suit the purposes of this present research. In addition, components of the CPS training programs carried out by Noller et al. (1976), and Parnes et al. (1977) were used in
the present research. There were a number of didactic lectures, discussions, and associated learning exercises for each CPS phase. Creative thinking and creative problem-solving techniques from the CPS Version 6.1 were applied in small group discussions to solving everyday and life issues that had been identified by the participants as being important to their age group (hypothetical scenarios), as recommended by Cropley (1990) and Engelman (1981, 1996a). Various arts-orientated activities were included in order to supplement the main activities of the CPS as carried out by Parnes and colleagues (Noller et al., 1976; Parnes et al., 1977). Knowledge and activities for a healthy brain/mental fitness for life were included (Cusack et al., 2003; Diamond, 2001). Engelman (1996b), Cusack et al. (2003), Valenzuela (2005), and Kramer et al. (2004) have championed the notions of incorporating challenging mind activities and games into a mental fitness program for older adults. Consequently, challenging and stimulating mind activities with puzzles, quizzes, debate, and dialogue were included in each program session. Herculano Houzel (2002) recommended that findings from neuroscience research, especially recent discoveries in brain/mind fitness should be promoted to the general public. Therefore this was carried out as part of the creativity intervention program.

b. Because of the wealth of qualitative research that provides evidence of a strong link between creative/arts activities and health and well-being, a few creative activities were included as components within the second half of the program and delivered as arts-based activity laboratories. Activities from the research and work of art educationalist Betty Edwards (1990, 1992), who pioneered drawing activities designed to stimulate specific and whole brain functions, were included because they are challenging and fun and provide opportunities for new possibilities in problem-solving. Creative expressive writing sessions were also introduced into the second half of the program. These were introduced because the studies by Pennebaker (1997) and Pennebaker and Seagal (1999) suggest that creative writing is a healthy activity for older adults.

c. The third component of the program was the expression of a creative idea by generating a sample creative product and carrying out a creative product
presentation with peer evaluation, according to recommendations by D. H. Cropley and Cropley (2000).

4.2.4.3 Weekly content

A content overview of the creativity enhancement program for each week’s session is presented below. The references included for each week refer to the previously described literature that has underpinned the teaching and learning of this intervention. Briefly, all weekly sessions began with a PowerPoint review presentation. The weekly sessions were developed into a draft manual that included teaching and learning objectives, a detailed list of the activities, and resources for each session.

An overview of the intervention sessions is provided below.

PART I  Weeks 1–6  Creative problem solving (CPS)

Week 1 Orientation to intention of the 12-week research study. Orientation to CPS (Steps 1-6) including overview of session content, approaches, methods, and participation.

Week 2 CPS: Steps 1-4: Constructing opportunities, exploring the data, framing problems, and generating ideas.
Activities: Mental locks to creativity (von Oech, 1998) and finding thinking preferences for creative problem-solving (Puccio et al., 2004).
Arts-orientated group nonverbal exercise – to facilitate group development. Accepting and rejecting what is offered, see Rhyne (1973, p. 283), and see Culbert & Fisher (1976).
Introduction to brainstorming. Practice exercises and applying CPS to everyday issues/problems (Engelman, 1996b; Treffinger et al., 2006).

Week 3 CPS: Steps 1–3 continued.
Activities included getting acquainted activities, brainstorming, and application of CPS to everyday issues/problems (Engelman, 1996b; Hasselkus, 2002, 2004), Sensing problems and challenges.
Getting to the real problem, problem definition, recognising the real problem, broader restatements, and wording more effectively (Parnes et al., 1977, pp. 319–324; Treffinger et al., 2006).

Week 4 CPS Step 4: Generating ideas.
Activities: Brainstorming, SCAMPER connections to CPS, mindshowering exercises (forced relationship for new ideas) (Eberle, 1989, pp. 7–31) and puzzles and exercises for the imagination and creative expression. Focus on fluent thinking and imagination.
Activities: Arts/drawing orientated individual nonverbal activities—visual spatial trickery exercises to experience how to inhibit the analytical/evaluation thinking processes in order to facilitate creative imagination. Vases & faces, and the Upside down drawing exercise. (Edwards, 1992, pp. 46-57).

Activities: Continuing to apply concepts through analysis of everyday issues/problems identified in previous weeks. Brain fitness and link to CPS.
Exercises: Encouraging the creative process (Parnes et al., 1977, pp. 325–337).
Continuing arts/drawing orientated nonverbal activities and making links between mind states and emotions (see Edwards, 1990, 1992). Link to CPS. Exercises: Capturing time in a line and the line analogue (Edwards, 1990, pp. 60–95).

Week 6 Applying the whole CPS steps/-phrases.
Activities: Practise brainstorming for improving everyday objects and new uses of everyday objects.
Activities: Practise of brainstorming and evaluation of solutions, using checklist (who, what, where, when, how, and why), developing a plan of action and applying the whole process (Parnes et al., 1977).
Continued preparation for Week 10 presentation of creative task, and peer evaluation.

PART II Weeks 7–9 Creative arts-based activities

Week 7 Expressive art activities—creative imagination development.
Activities: Expressive art exercises to foster creative expression and imagination through arts/drawing based nonverbal exercises. Use of visual language to experience the creative process and different cognitive thinking modes.
a. Warm up activity: Drawing to music.

Week 8 Expressive writing—Creative imagination development
Introduction to expressive writing (Leary, 1994; Pennebaker, 1997; Pennebaker & Seagal, 1999).
Writing exercises:
a. Word associations
b. 10 lines short descriptive piece
Preparation for presentation of writing activity Week 9.

Week 9 Presentation of expressive writing activity, and introduction to meditation and relaxation techniques/exercises for a healthy mind/brain.
Activities: Expressive writing, meditation, and relaxation
Discussion re relationship of meditation and relaxation to creativity (So & Orme-Johnson, 2001).
Activities: meditation and relaxation (Davis, Eshelman, & McKay, 2008; Shapiro, Walsh, & Britton, 2003). Brief progressive muscular relaxation, sitting meditation, metaphorical visualisation. Expressive writing activities: Mind showering technique (Eberle, 1989), and brainstorming about motivation.

PART III Weeks 10–12 Presentation of solutions/products of the creative task


Week 11 Evaluation of program (Thompson, Kegler, & Holtgrave, 2006).
- Recruitment for qualitative study. See Chapter 5.
- CPS activities: Putting it all together exercises, including making long-term goals and plans.

Week 12
- Post-test.
- Party celebration.

4.2.4.4 Program evaluation

A written evaluation of the creativity enhancement program by participants allocated to the intervention group was conducted at the end of the 12-week intervention period in order to ascertain the impact of the program from the participants’ perspective, which might not have been evident from scores on the primary measures. Inviting participants to respond to a program evaluation questionnaire is a requirement for those conducting health promotion programs (Thompson et al., 2006). (Appendix C contains a copy of the creativity program evaluation questionnaire, and the results of this evaluation are provided in Chapter 5.)

4.2.5 Instruments

4.2.5.1 Demographic and activities questionnaire

A five page questionnaire was designed to obtain data about the participants’ everyday activities as well as basic demographic information. See Appendix D.

All the questions about participants’ activities were based on the knowledge base that underpins the profession and practice of occupational therapy (see Wilcock, 2001, 2002). These questions had 3 subsections, each with five-point Likert format response categories. Subsection 1 asked participants about the frequency of their involvement in
a range of activities. There were 17 items covering a range of creative, social, physical, and other purposeful activities. The response categories for this section ranged from “Never” (1) to “More than once a week” (5). Subsection 2 asked how satisfied participants felt doing the activities that had been listed in Subsection 1. Response categories there ranged from “Completely dissatisfied” (1) to “Completely satisfied” (5). Subsection 3 asked participants to indicate the importance for them of the activities listed in the previous two subsections. Response options ranged from “Not at all important” (1) to “Very important” (5). The demographic questions sought information about age, gender, level of education, birthplace, and present or most recent occupation. Most participants completed this questionnaire in about 10 minutes after having been given a brief explanation.

4.2.5.2 Test of Creative Thinking-Drawing Production (TCT–DP)

4.2.5.2.1 Test description

The TCT–DP is a paper and pencil test (Urban & Jellen, 2010). It consists of one single test sheet of A4 size with a 16 cm x 16 cm square frame drawn on it. There are six figural fragments on the sheet; five are drawn within the square and one outside it. The fragments may be described as follows: 1) a semi-circle, 2) a point, 3) a large right angle, 4) a curved line, 5) a broken line, and 6) a small open square outside the large square. See Appendix E. For evaluation purposes each test sheet has a folded double side so that the scores may be directly recorded in the evaluation criteria boxes. The instructions by the researcher to the participant are: “In front of you is an incomplete drawing. The artist who started it was interrupted before he or she actually knew what should become of it. You are asked to continue with this incomplete drawing. You are allowed to draw whatever you wish! You can’t draw anything wrong. Everything you put on the paper is correct” (Urban & Jellen, 2010, p. 14). The researcher records the time taken to produce the drawing. The scoring requires some training and the test manual contains detailed instructions with drawing examples for testers.

The drawing production is evaluated according to 14 criteria:

1. Continuations (Cn): Any use, continuation or extension of the six figural fragments.
2. Completion (Cm): Any additions, completions, complements, supplements made to the used, continued, or extended figural fragments.

3. New elements (Ne): Any new figure, symbol, or element.

4. Connections made with a line (Cl): Any connections made with a line between one figural fragment or figure and another.

5. Connections made to produce a theme (Cth): Any figure contributing to a compositional theme or “gestalt”.

6. Boundary breaking that is fragment dependent (Bfd): Any use, continuation, or extension of the “small open square” located outside the square frame.

7. Boundary breaking that is fragment independent (Bfi).

8. Perspective (Pe): Any breaking away from two-dimensionality.

9. Humour and affectivity (Hu): Any drawing that elicits a humorous response, shows affection, emotion, or strong expressive power.

10. Unconventionality A (Uca): Any manipulation of the material.

11. Unconventionality B (Ucb): Any surrealistic, fictional and/or abstract elements or drawings.

12. Unconventionality C (Ucc): Any usage of symbols or signs.


14. Speed (Sp): A breakdown of points, beyond a certain score-limit, according to the time spent on the drawing production.

There are two forms, Form A and B. Form B is identical to Form A but rotated by 180 degrees. Form A, the version shown in Appendix E was used in this study. An extensive description of the evaluation procedure and the assessment of the drawings in relation to the criteria listed above are provided in the test manual, and are intended to produce objective and reliable scores. According to the manual, the testing procedure requires at least 15 minutes, and each drawing can be scored in approximately five minutes.

The first nine categories are scored from 0–6 points, and the subcategories of the Unconventionality items are scored from 0–3, allowing a total score from 0–66. Speed can be scored for up to 6 points. The range of scores is therefore 0–72. Although some researchers have used scores based on the sub-scales, Urban and Jellen (2010)
emphasise that only the total score should be used; therefore in this present study only the total score was be used for the primary analyses.

According to the TCT–DP manual (Urban & Jellen, 2010) and D. H. Cropley and Cropley (2000), the test is suitable for use with a broad range of people between 5 and 95 years of age tested individually or in groups.

The English version of the TCT–DP is available through the Pearson PsychCorp and costs approximately $265.00, which includes the user manual and two packs of 25 test and scoring sheets.

4.2.5.2.2 Development and theoretical background

Development of the instrument by two German academics, Hans Jellen and Klaus Urban, commenced in 1984. The test is based on a number of evaluative criteria from six components of creative thought: fluency, flexibility, originality, elaboration, risk-taking, and composition. It is intended to be a test of creative potential and was designed to reflect a holistic concept of creativity in a qualitative sense in contrast to traditional creativity tools that yield restricted quantitative information “mainly about verbally determined ideas” (Urban, 2004, p. 388). The authors’ focus was on aspects of quality: the content, the composition, elaboration, “gestalt”, (mental) risk taking, breaking of boundaries, affect, humour, and unconventionality. The instrument was designed in an attempt to break new ground by emphasising “shaping, the production and the final ‘gestalt’ as the creative end product” (Jellen & Urban, 1986; Urban, 2004, p. 388). Jellen and Urban (1986, p. 14) decided not to use symbols, concepts, or holistic figures in the drawing as they wanted fragments to suggest only general conventional meanings, with the aim of achieving maximum flexibility. In designing this test, Urban and Jellen proposed a components model of creativity and a cognitive process-oriented definition of creativity, influenced by gestalt psychology, which included components of divergent thinking and emphasised the degree of creativity being defined by the final creative product and the quality of its new gestalt.

The definition of the construct of creativity and the theoretical context in which creativity is embedded are fully explained in the instrument’s manual. The test is intended to be a screening instrument “for a rough assessment of creative abilities …
The result should not be taken as fixed, unchangeable figures; and even more than intelligence tests, the drawing productions are much more dependent on situational, motivational and emotional-affective influences” (Urban & Jellen, 2010, p. 15). Urban and Jellen even suggested that it would be helpful if other data were used in addition to this test, or if testing were repeated over time.

4.2.5.2.3 Application and norms

The first TCT–DP investigation was conducted with German school students ($N = 2,500$), and norming details and tables, including norms for teachers college students, teachers, and educators, are provided in the TCT–DP manual (Urban & Jellen, 2010). The norms were produced with data from European school children, and since then more normative research has been conducted with students from colleges and universities (D. H. Cropley & Cropley, 2000; Rudowicz, 2004). Since the first investigation of the TCT–DP (Jellen & Urban, 1986), few changes have been made to the test.

4.2.5.2.4 Reliability

More than 20 studies have been retrieved in which researchers have used the TCT-DP over the past 30 years. Urban and Jellen (2010), Karwowski and Soszynski (2008), D. H. Cropley and Cropley (2000), and Dollinger, Urban, and James (2004) provide overviews of these studies.

Few studies include information about the inter-rater reliability of the TCT–DP. In the test manual the authors reported inter-rater reliability correlation coefficients of between .88 and .97. D. H. Cropley and Cropley (2000), in a study involving undergraduate engineers, reported an inter-rater reliability of .94, and Rudowicz (2004) reported an inter-rater reliability of .76. With regard to inter-item reliability, Urban and Jellen do not provide any information. However, Cropley (2005) reported that the TCT–DP has consistently been shown to have a Cronbach’s alpha coefficient of around .75 (ranging from .73 to .77) over a number of years, in different countries, and with different age groups. Rudowicz (2004), who omitted the domain of Speed, as did D. H. Cropley and Cropley (2000), reported a Cronbach’s alpha of .73 (main test) and .75 (the retest). As yet, there is little information available regarding the test-retest reliability of
the TCT–DP. Cropley (2005) reported the test-retest reliability to be between .70 and .75, and according to Hocevar and Bachelor (1989), about .70 is typical for creativity tests.

4.2.5.2.5 Validity

According to the test authors (Urban & Jellen, 2010) it is difficult to determine the validity of the test because there is no other test that is directly comparable. The TCT–DP is a novel approach “that goes beyond the divergent-convergent thinking distinction” of most creativity tests (Cropley as cited in Urban, 2005, p. 279). However, a number of studies have contributed to the validation of the test, and some of these will be discussed. Discriminant validation of the test has been investigated by examining the relationship between intelligence test scores and TCT–DP scores. In their original study with four groups of seventh graders from different academic achievement levels, the authors showed that there were no relationships between academic achievement and TCT–DP test scores (Urban & Jellen, 2010).

Matczak and colleagues (2000, as cited in Rudowicz, 2004) compared TCT–DP scores of Polish students who were preparing to enter creative professions (fine arts, creative media) and those who were preparing to enter noncreative professions. According to Rudowicz (2004, p. 205) “as expected, the students preparing themselves for the creative professions scored much higher on the TCT–DP than public servants and military school students”. The differences were reported as being statistically significant. (As yet the study by Matczak et al. has not been translated into English.)

4.2.5.2.6 Reasons for using the TCT–DP

There are four main reasons why the TCT–DP was chosen as the test for creativity in the present study. First, the idea by Urban and Jellen (2010) of combining various cognitive and process-oriented interactive components within the one instrument appealed to my theoretical expectations (based on humanistic psychology and gestalt theory). Thus, from my perspective the instrument has content validity. Second, TCT–DP scoring is based on a number of components of creative thought including fluency, flexibility, originality, elaboration, and risk-taking, all of which have been linked to
mental health (Cropley, 1990, 2005; Maslow, 1971; Rogers, 1962), and hence the instrument is relevant to the current research topic.

Third, the test is reported to be versatile. Urban and Jellen (2010, p. 9) believed that assessment and evaluation of creative potential could be integrated within one test, where diagnosis could be combined with promoting creativity. The test can be used to assess the creative potential of individuals of various ages and from different cultural, socioeconomic, or intellectual groups (D. H. Cropley & Cropley, 2000; Rudowicz, 2004). For example, D. H. Cropley and Cropley (2000) used the TCT–DP as a pre- and post-measure of creativity with a group of undergraduate engineering students who had received lectures on creativity and who were individually counselled on the basis of the TCT-DP test scores. A separate control group also carried out the test but did not otherwise participate in the study. Upon retesting the creativity scores of the counselled students was found to have reached statistical significance compared to the control group. The versatility of the TCT–DP in that study raised the possibility of using it in health care settings. Finally, the TCT–DP avoids a number of “practical” problems associated with other tests of creativity. It is easily administered, can be completed in a relatively short amount of time, and can be administered in group situations. Furthermore, its scoring is based on clear categories and can be accomplished in a few minutes.

The TCT-DP was chosen rather than, for example, the Torrance Tests for Creative Thinking (Torrance, 1966) because the latter are limited in assessing the range of creative skills that were considered important in this current research. The only other alternative creativity tests that could have been used are really not well regarded, and are time consuming. In contrast to the Torrance Tests for Creative Thinking, the creativity test chosen for this research was easy to administer, is based on a much more differentiated model of creativity (Gestalt model), and is not based on a statistical model of creativity (in which statistically uncommon answers are said to be creative) but rather on a qualitative model (in which answers of a certain kind are said to be creative).
4.2.5.3 The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS)

4.2.5.3.1 Test description

The Warwick-Edinburgh Mental Well-Being Scale (WEMWBS; Tennant, Hiller, et al., 2007) was the primary outcome measure and was used to assess mental well-being. This instrument has a Likert format with 14 items that have five-point response categories ranging from “None of the time” (1) to “All of the time” (5). See Appendix F. All items are worded positively and relate to an individual’s state of mental well-being (thoughts and feelings) in the previous two weeks. A single overall score is calculated by adding the responses on all items, producing scores that range from 14 to 70. Higher scores indicate higher levels of mental well-being. The test takes about 5 minutes to complete.

The instrument is available free of charge, but it is copyrighted to the National Health Service (NHS), Health Scotland, and the Universities of Warwick and Edinburgh (National Health Service Health Scotland, 2008). Permission is required for its use, via Frances Taggart @warwick.ac.uk, at the University of Warwick. Frances Taggart is maintaining a register of use and is the person to contact when seeking such permission and for answers to questions about using WEMWBS. Permission was sought prior to use including the time intended for use of the scale, and feedback about the instrument’s performance has been provided, see Appendix F.

4.2.5.3.2 Development and theoretical background

The importance of obtaining a clear understanding of the concept of mental well-being when developing this test was highlighted as a core consideration by test researchers Stewart-Brown and Janmohamed (2008) in the test manual. For many years, mental health promotion and prevention of mental illness had been thwarted, first by the considerable long-standing confusion over the terms mental health, positive mental health, mental well-being, and mental illness, and second by the lack of a valid instrument for measuring mental well-being attributes (Stewart-Brown & Janmohamed, 2008). The confusion in terms has been widely acknowledged [see Chapter 2, Schmid (2005c), and Stewart-Brown and Janmohamed (2008)] Past research and practice has focused on the prevention of mental disorders, mental illness, or mental problems rather than on the promotion of mental well-being (Keyes, 2013; Tudor, 1996), and previous measures of mental well-being have been embedded within measures designed to detect
mental illness (Stewart-Brown & Janmohamed, 2008). The WEMWBS was designed to measure and monitor positive mental health, and to evaluate mental health promotion and mental illness prevention initiatives.

The WEMWBS test was developed by Stewart-Brown and Janmohamed (2008) and Tennant, Hiller et al. (2007). These researchers aimed at developing a new scale of mental well-being “with a single underlying construct … and to validate this scale using data collected from student and general population samples” (Tennant, Hiller et al., 2007, p. 2). Nine focus groups were recruited through various relevant community groups (including mental health service users) to discuss a range of mental health attributes. The participants were asked to complete the Affectometer 2 scale (Tennant, Joseph, & Stewart-Brown, 2007) and to discuss their concept of positive mental health. Qualitative and quantitative data analyses were conducted on the responses. A panel representing practitioners and academics with expertise in mental health and well-being examined all data and reported agreement on the key concepts of a new scale (Tennant, Hiller, et al., 2007). The final WEMWBS scale consisted of items that covered two well-known perspectives of mental well-being. One perspective comprised positive affect, feelings of optimism, cheerfulness, and relaxation (the hedonic perspective). The other perspective comprised satisfying interpersonal relationships, positive psychological functioning, and self-realisation and acceptance (the eudaimonic perspective).

Neither spirituality nor purpose in life are included in the WEMWBS, as these were deemed “to extend beyond the general population’s current understanding of mental well-being, and their inclusion was thought likely to increase non-response” (Stewart-Brown & Janmohamed, 2008, p. 3). Stewart-Brown and Janmohamed (2008) aimed at measuring mental well-being itself, not the determinants of mental well-being.

4.2.5.3.3 Initial application and outcomes

In the test manual, Stewart-Brown and Janmohamed (2008) provided information about internal consistency, test-retest reliability, face validity, construct validity, and response bias. Tennant, Hiller et al. (2007) provided further information about the initial validation process. They initially validated the WEMWBS with UK university student samples ($N = 348$). Two focus groups were conducted, and in 2006 the scale was
included in two Scottish population surveys, with completed WEMWBS scores for 1,749 participants; thus the scale was validated using population data. The results confirmed the validation findings conducted on the student sample (Stewart-Brown & Janmohamed, 2008). The analysis of the combined datasets from the two Scottish population surveys \((N = 1,749)\) resulted in provisional population norms being established for the WEMWBS, including the norms for the older age groups (Stewart-Brown & Janmohamed, 2008). Stewart-Brown and Janmohamed (2008) reported that the WEMWBS performed well against accepted criteria, and the results indicated the expected discriminations between population groups that were consistent with other population surveys.

4.2.5.3.4 Reliability

Stewart-Brown and Janmohamed (2008) reported a Cronbach’s alpha of .89 for the university student sample \((n = 348)\), and .91 for the population sample \((n = 1,749)\), indicating that the WEMWBS has a high level of internal consistency. In the initial validation study the authors reported the test-retest reliability from a sample of university students \((n = 124)\), using an intra-class correlation coefficient (ICC), as .83 \((p < 0.01)\) over a one-week period (Tennant, Hiller, et al., 2007). Subsequent researchers, Clarke et al. (2011), reported a test-retest ICC of .66 \((n = 212)\) in an adolescent student population. Although this figure is low, the researchers suggested that it might result from day-to-day fluctuations in mental well-being that are more typical of this age group than of adults. Tennant, Hiller et al. (2007) reported item-total correlations for the WEMWBS ranging from .52 to .80 for the university student sample, and between .51 and .75 for the population sample. All correlations were within the anticipated limits and deemed to support the internal consistency of the overall WEMWBS score.

4.2.5.3.5 Validity

The expert panel who examined the data gathered from the focus groups in the development phase of the test provided researchers with evidence regarding the face and content validity of the scale. The focus groups reported that they found the test unambiguous and clear, and believed that it assessed mental well-being.
With regard to construct validity, Stewart-Brown and Janmohamed (2008) reported that there was no gold-standard measure against which to assess the WEMWBS. However, scores on the WEMWBS were correlated with scores on other scales that measure aspects of mental health. The correlations were moderately high, with scores from the Scale of Psychological Well-Being, the Satisfaction with Life Scale, the Short Depression–Happiness Scale, the positive subscale of the Positive and Negative Affect Scale, and the WHO-Five Well-Being Index. Correlations of the WEMWBS with the EQ-5D Thermometer and the Emotional Intelligence Scale were moderate to low, which the researchers anticipated because “these two scales measure concepts that are separate from (but not unrelated to) positive mental health” (Stewart-Brown & Janmohamed, 2008 p. 6). Factor analysis was conducted on the data from the initial university student population \( (n = 348) \) in order to assess whether the scale measured mental well-being as an homogeneous concept (Tennant, Hiller et al., 2007). A scree plot confirmed the presence of a single underlying factor (Stewart-Brown & Janmohamed, 2008). Furthermore, Tennant, Hiller, et al. (2007) reported a confirmatory factor analysis of the data from the population sample of 1,749, and found that all items loaded at > .50 on the initial factor.

Stewart-Brown and Janmohamed (2008) reported that response bias was assessed by using the Balanced Inventory of Desirable Responding (BIODR). The WEMWBS scores demonstrated a low correlation with that scale and on this basis the researchers concluded that the WEMWBS did not appear to be “unduly susceptible to social desirability bias” (Tennant, Hiller, et al., 2007, p. 9).

There has been subsequent validation of the scaling properties of the test (Stewart-Brown et al., 2009), preliminary validation in a Spanish student population (Lopez et al., 2013), cross cultural evaluation of the scale with English-speaking adults representing Chinese and Pakistani ethnic groups in the UK (Stewart-Brown, 2013; Taggart et al., 2013), and a validation study for teenage students in England and Scotland (Clarke et al., 2011). Maheswaran et al. (2012) conducted a group and individual level analysis on the responsiveness of the WEMWBS in order to provide practitioners and researchers with guidance on using the WEMWBS to evaluate interventions. The authors used a combination of both group and individual level measures to evaluate responsiveness of the WEMWBS in a variety of studies.
undertaken with different populations, and sought to investigate what change in the WEMWBS score might constitute an important change. They analysed 12 cases collected from a register of groups with whom the WEMWBS had been used to evaluate an intervention. The authors suggested that the WEMWBS is capable of detecting change in relatively small samples, but indicated that it may be useful to have a separate, self-reported, independent measure to assess whether an intervention was effective.

4.2.5.3.6 Reasons for using the WEMWBS

The WEMWBS appears to be a robust and appropriate measure for mental health promotion research, and a close match to the concept of mental well-being that is the primary outcome of interest in the present study. The measure has been validated in two population studies and norms have been established for older adults. One limitation of this test is that it has not been assessed with an Australian population. However, it has been assessed across a range of other cultural groups and appears to be quite versatile.

This present study required an instrument that seemed likely to measure change in participants’ mental well-being after engaging in a creativity enhancement program. Maheswaran et al. (2012) confirmed that the instrument was responsive to changes occurring in response to a wide range of mental health interventions in different populations. Research is ongoing. However, as yet, there are no published experimental studies that have included a sample of more than 30 participants, and a control group. The WEMWBS was also chosen for pragmatic reasons. It is time-efficient, easy to administer and score, and would be of use in a range of healthcare settings with different populations.

The WEMWBS was chosen rather than, for example, the SF-12 Health Survey (Ware, Kosinski, & Keller, 1996) because it is regarded as the first validated instrument designed to measure health and well-being without the implication of disease.

4.2.6 Sample size

In order to determine the appropriate sample size for the quantitative study I relied on three sources of information. These were an extensive discussion by Depoy and Gitlin
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(1994) regarding appropriate sample sizes, sample size indicators according to Cohen (1992, p.157), and detailed information provided by the developers of the WEMWBS (Stewart-Brown & Janmohamed, 2008). The alpha level was set at .05, and .80 was set for the level of statistical power, because traditionally these are the levels that health and occupational therapy studies use (DePoy & Gitlin, 1994). The aim in this research was to obtain a total sample of about 52 participants in each group because, according to Cohen (1992, p. 157), a sample size of 52 (a total of 104) would be sufficient to detect moderate effects with a power of .80 and a significance level of 0.05. The test developers of the Warwick-Edinburgh Mental Well-Being Scale (Stewart-Brown & Janmohammed, 2008) indicated that a sample size of 96 (48 people per group) would be adequate if a two-tailed significance level of 0.05 and a power of 80% were applied in conjunction with a target difference of 5 points. There was no similar recommendation made by the authors of the creativity test.

There appeared to be no fixed sample size recommended among researchers for a non-equivalent control group design. Onwuegbuzie, Jiao, and Bostick (2004, p. 101) indicated between 51 and 64 subjects per group. Gay (1981) indicated a minimum of 30 subjects per group for many experimental studies. Creswell (2008) indicated a rough estimate of 15 participants in each group in an experiment. Moreover, because this was a field study there were pragmatic time and resource pressures to finalise the numbers. Opportunely, 99 participants had enrolled in the research at the time when I needed to finalise the enrolment process. This number was within the bounds of the sample size indicated in the literature (Creswell, 2008; Gay, 1981; Onwuegbuzie, Jiao, & Bostick, 2004).

4.2.7 Allocation to intervention and control groups

This study was initially conceived as being a randomised controlled trial in which participants would be randomly allocated to either the intervention or control group. However, as people indicated their willingness to be involved in the research it became obvious that this was not feasible because a number of them indicated that they could not attend any or only some of the intervention sessions but were willing to serve as control group members, and, in addition, some people indicated that they could attend all intervention sessions only at times of the week that few others could attend. Therefore, for pragmatic reasons, a non-random method was used to allocate
participants to the intervention and control groups. First, a master log was created to record prospective participants’ details and a parallel coding scheme was created to ensure their anonymity. Then, using the code numbers, an assistant (see Sections 4.2.8.1 and 4.2.8.2 for the tasks of the assistant) allocated the people to the control group if they did not indicate a preferred time slot, could not commit to all 12 intervention sessions, or could attend only intervention sessions that few other participants could attend. Prospective participants who indicated their ability to attend all 12 intervention sessions, and at a time that at least 12 others could also attend, were regarded as comprising the intervention group. This process ensured that four intervention groups, each with approximately 12 participants, could be guaranteed.

By the time the four subgroups comprising the intervention group had been finalised, there were insufficient participants for the control group and it became obvious that all those who subsequently offered to take part in the research would need to be assigned to that group. Because of this, an application was made to the Charles Sturt University Human Research Ethics Committee seeking approval to alter the research design from that of a randomised controlled trial to a quasi-experimental study. Approval was granted, and recruitment continued until there were 48 people assigned to the control group and 51 people assigned to the intervention group. By that time it was evident that it would be very difficult to recruit more participants in the available time frame, and so recruitment then ceased.

The above approach to allocation raises the potential for volunteer bias (Ganguli, Lytle, Reynolds, & Dodge, 1998), and therefore it is likely to limit the internal validity of the study results because of the increase of uncontrolled independent variables associated with volunteering status. Because of this, subsequent attention was paid to determining whether the intervention and control groups could be regarded as equivalent to each other at baseline. See previous Sections in Chapter 3 3.3.2 Controlling for confounding variables for extensive discussions in this matter.
4.2.8 Administration of instruments and intervention

4.2.8.1 Administration of instruments

After allocation to either the intervention or the control group, see Section 4.2.7, the potential participants were notified of their acceptance into the study and were given an appointment time for the baseline measurements. There were three measurement points: at baseline (2 weeks before commencement of the 12-week intervention), Time 2 (immediately after the end of the intervention), and Time 3 (5 months after Time 2). The baseline measurement consisted of three instruments: the activities and demographics questionnaire, the TCT–DP, and the WEMWBS. The Time 2 and Time 3 measurements involved only the latter two measures.

All measurements were arranged by telephoning all participants and arranging 30 minute appointments for the baseline/Time 1 time point. Time 2 measurements for the intervention group participants were completed in the last session of the creativity enhancement program. Time 2 measurements for the control group participants were arranged by telephoning the participants and organising the 30 minute appointment. Time 3 measurements for the intervention and the control group were arranged by telephone to organise the 30 minute appointments. All appointment times were scheduled during a working week and between the hours of 9.00 a.m. and 5.00 p.m. The staff at Age Concern Albury Wodonga Inc. offered a venue that included office space for the baseline and Time 1 and Time 2 measurements. Time 3 measurement was conducted in rooms at the Charles Sturt University Allied Health Clinic in Albury city. In addition, both organisations offered a waiting room and administrative assistance in scheduling the availability of the interview room.

In the case of the baseline/Time 1 measurement point, all instruments were administered by me. First, I oriented the participant to the research by referring to the information sheet and their signed consent form, and checked their commitment to the research. I explained the purpose of the 30 minute interview, and assured them that I had confidentiality procedures in place regarding their responses. I explained my role in the administration of the instruments, what questions I would be able to answer and which ones I would not be able to answer. Second I explained the two questionnaires and the third instrument—the creativity drawing test—including how long each would
take and what the specific required instructions were for each. I also asked them if they had any questions for me about the instructions.

An assistant helped me with some of the administration of Time 2 and Time 3 instruments by setting up the paperwork and distributing, providing instructions about, collecting, and returning the questionnaires and the tests to me. The assistant was trained in the procedures and tasks. Confidentiality of the participants was protected as much as possible in this process. For example, before the assistant handled the participants’ questionnaire and test forms they were asked to fold over their completed forms. This eliminated any personal information being seen by the assistant. The code number (see Section 4.2.7) that was given to each participant at the beginning of the allocation period was marked on all participants’ score sheets to ensure confidentiality when entering data. Follow-up telephone calls and mail contacts were used during the study period to maintain the cohort of participants and to minimise attrition in both the intervention and control groups.

### 4.2.8.2 Intervention

The Age Concern Albury Wodonga Inc. offered a venue for the creativity enhancement program. This consisted of a large room with private access for the intervention, and a kitchenette for morning and afternoon teas. All materials were brought in for each session. The room for the program was used by various community groups outside the program sessions. Consequently, after each session the furniture and materials needed to be rearranged. The assistant helped with these tasks, including arranging the flexible configuration of chairs and tables for each activity, provision of whiteboard and activity space, photocopying of session resources, distribution of literature, paper, and tools, and morning and afternoon teas.

At the start of the program, and depending on the content of each weekly session, the participants were reminded that the content of the discussions that took place during the session was to be kept confidential. In addition, participants were told that they could attend another weekly time slot if they were unable to come to their allocated session. One of two approaches was taken to ensure participants did not miss key elements of the missed activity. In some cases it was possible to conduct a simplified version of the missed activity in the next weekly session. In others, it was more
appropriate or feasible to explain the missed activity to the participants, and give them the resources they required to undertake the activity in their own time. An attendance list was kept for each week of the creativity enhancement program so that anyone allocated to the intervention group who had not attended could be followed up by telephone.

4.2.9 Data preparation prior to data entry

4.2.9.1 Demographic and activities questionnaire

A small amount of processing was undertaken with data from the activities and demographic questionnaires before the data were entered into the research database. The responses to Question 55 regarding the participants’ birthplaces were too disparate to permit meaningful analyses, and were therefore discarded. Responses to Question 56, present occupation or life stage, were divided into two categories: working and retired. Responses to Question 57, most recent full-time occupation of participants, were coded into five categories according to the occupational hierarchy from the Australian Bureau of Statistics (ABS, 1997). The category “Home duties” was added to these categories.

4.2.9.2 Dual scoring of TCT-DP forms

Dual scoring of some of the TCT-DP forms was undertaken with a contracted research assistant (hereafter abbreviated to as RA) to gauge the degree to which my ratings reflected a “known ‘true’ state of affairs” (Stemler & Tasai, 2008, p. 30), particularly as I had not used the test before (nor had the RA).

As an initial step in this process, I administered the TCT-DP to six volunteers (family and friends), and then scored their resulting drawings in accordance with the instructions provided in the test manual. Following that, I spent approximately three hours with the RA indicating how I believed the drawings should be scored. She then scored the six volunteers’ drawings, after which we compared our scores and resolved differences in accordance with instructions in the test manual. Consequently, we appeared to agree on how each of the 14 TCT-DP items should be evaluated. Afterwards, the RA was given photocopies of all baseline and Time 2 drawings (there were only 85 of the latter because of post-baseline attrition—see section 4.3.1), and the RA and I evaluated both sets. During the process of scoring both of us were blind to the
group to which the particular participant belonged and we conducted our ratings independently. (I did the Time 3 scoring of the drawings.)

### 4.2.9.3 Preparation of the WEMWBS data

Of the total number of WEMWBS forms collected—at baseline, Time 2, and Time 3—28 forms had missing data. Of those, there were 21 forms with only one item response missing, and 7 forms with two responses on a single item instead of one. All missing data in participant responses to the WEMWBS were replaced with the mean of the remaining responses for that participant for that particular measurement time, as recommended by the test authors (Stewart-Brown & Janmohamed, 2008, pp. 16–17). Where multiple responses were selected by any participant within a particular question, the highest-score for that item was used as the response.

### 4.2.10 Data checking, modification, and analyses after data entry

All data were entered (and subsequently analysed) using IBM SPSS Statistics Version 20. When data entry was complete, all variables were checked to ensure that their minimum and maximum values were within the permissible ranges. Any errors were identified and corrected. On question 54 of the demographic and activities questionnaire the educational categories were collapsed from eight to six by combining the two categories of diploma level courses (because it was difficult to distinguish them definitively from each other), and the two categories of postgraduate degrees were combined (because there were very few people in either of these categories).

#### 4.2.10.1 Determining usage of dual scores on the TCT-DP

In order to determine how the data that resulted from the duplicate scoring of the TCT–DP data should be used, several analyses were conducted. I began by comparing the means and standard deviations produced by the RA and me at baseline as well as Time 2, for the intervention and control groups separately. These are shown in Table 4.1.
**Table 4.1**

*Creativity Scores from the Researcher and Research Assistant at the First Two Points of Data Collection*

<table>
<thead>
<tr>
<th>Time of administration</th>
<th>Rater&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Intervention group Mean (SD) (n = 41)</th>
<th>Control group Mean (SD) (n = 44)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>TS</td>
<td>30.7 (11.7)</td>
<td>28.6 (12.5)</td>
</tr>
<tr>
<td></td>
<td>RA</td>
<td>26.1 (11.0)</td>
<td>19.3 (6.6)</td>
</tr>
<tr>
<td>Time 2</td>
<td>TS</td>
<td>36.8 (10.8)</td>
<td>30.8 (12.4)</td>
</tr>
<tr>
<td></td>
<td>RA</td>
<td>32.3 (11.7)</td>
<td>26.4 (10.7)</td>
</tr>
</tbody>
</table>

<sup>a</sup> TS refers to the researcher; RA refers to the research assistant.

The information in Table 4.1 is disconcerting in a number of respects. First, the RA’s average scores were consistently lower than mine—for both groups and at both measurement points. Second, whereas the RA’s average scores were approximately four points lower than mine in three of the four cases, they were lower than mine by a much larger nine points for the control group at baseline. Third, although the intervention and control groups might be expected to have similar scores at baseline (the means and SDs that my scoring produced conformed to that expectation), the RA’s means and SDs were noticeably lower for the control group than for the intervention group at that measurement point. Fourth, contrary to reasonable expectations, the RA’s control group’s scores increased by more than seven points from baseline to Time 2, and that increase in scores was greater than the increase in the RA’s scores for the group that had been exposed to the creativity intervention, despite the control group having received no intervention. Finally, the RA’s average scores at baseline were lower than the closest normative group of the TCT–DP norms (mean = 31.0, SD = 10.4, whereas my scores were very similar to the TCT–DP norms.

Given that the RA’s data were noticeably different from mine, and problematic, I did not calculate ICCs as a measure of inter-rater reliability. Instead, I inspected the 20 pairs of score sheets that had the greatest discrepancies between the RA and me, and having done so it became obvious that the RA had not followed the scoring instructions as closely as I had. For example, in 12 of the 20 score sheets the RA did not provide...
scores for three of the dimensions: Perspective; Unconventionality; and Humour, affectivity, emotionality, expressive power of the drawing. In addition, analysis of the numerical discrepancies in individuals' total scores revealed even greater inconsistency than had been apparent from inspection of grouped means. The RA had not consistently given lower scores to the participants than I had, but had quite often given higher scores. For example, among the baseline scores 21% of the RA’s scores were higher than mine, with one score 14 points higher (interestingly, one of her scores was 25 points lower). Apart from the above, irregularities existed in the distribution of the RA’s data for the baseline scores. Skew and kurtosis, at 1.6 and 4.2 respectively, were not within the acceptable range of +/-1. By contrast, my data, at both baseline and Time 2 were within the acceptable range.

Given the number of deficiencies in the data produced by the RA, I decided not to include those data in any subsequent analyses. Furthermore, given the analyses that were provoked by the discrepancies in scores between the RA and me, I felt confident that the way I had scored the TCT–DP sheets was satisfactory.

4.2.10.2 Final data inspection and adjustments

The distributions of data on the TCT–DP and the WEMWBS were checked for outliers, kurtosis, and skewness. Histograms were used to check for normality of distributions on both instruments at all three time points. Two low outliers in WEMWBS baseline scores were more than three standard deviations from the mean and were Winsorised (see Osborne & Overbay, 2004). They were both changed to 36 given that the lowest acceptable score was 37, to replace the unacceptably extreme value with the most extreme acceptable value. (See Chapter 3, section 3.3.4.2.) Another outlier, a score of 26 which was also three standard deviations lower than the mean, was identified on the WEMWBS at Time 3; this was Winsorised to 32. Kurtosis and skewness of all distributions were within the range of +/-1.

4.2.11 Statistical analysis

Subsequent to the above processes, descriptive statistics including means, medians, modes, ranges, standard deviations, minimum and maximum values, percentages, and
correlations were calculated to examine scores on the demographic information, the TCT-DP, and the WEMWBS.

Inferential statistics (t-tests, Mann-Whitney U tests, and F-tests) were employed. The t-test was used in order to ascertain whether there was equivalence of groups at baseline. Mann-Whitney U tests were carried out to examine any differences between the intervention and control groups for variables in the demographic information.

Parametric tests were carried out to examine differences in primary outcomes between the intervention and control groups. According to Norman (2010), parametric tests can be used with Likert scales (for example with the WEMWBS). The creativity test was considered compatible with the use of parametric tests (Urban & Jellen, 2010). The test manuals from both tests detailed examples where both parametric as well as nonparametric tests were used (Stewart-Brown & Janmohamed, 2008; Urban & Jellen, 2010). Together, these papers indicated that either parametric or non-parametric approaches were acceptable for these purposes.

Analysis of covariance (ANCOVA) was employed to determine any significant differences between creativity and mental well-being scores relative to the control group. The primary method of outcome analysis was the use of a reliability-corrected ANCOVA (Trochim, 2000) because it was able to account and adjust for any observed pre-test group differences and pre-test measurement error.

The baseline demographic questionnaire was useful in exploring possible covariates for the ANCOVs, which were entered in the analyses in order to control for the possible effects of extraneous variables (Portney & Watkins, 2009). Several assumptions were satisfied before the analysis of covariance was carried out (Plichta & Kelvin, 2013; Portney & Watkins 2009). For example, the dependent variables and covariates comprised interval data that were within group variances and were approximately equal, and the variables were approximately normally distributed. Other assumptions, namely homogeneity of regression slopes and homogeneity of variance between groups were also satisfied.
One of the initial considerations in this process was to determine which variables needed to be treated as covariates. Two requirements needed to be satisfied in this regard (Plichta & Kelvin, 2013; Portney & Watkins, 2009), and these were satisfied. The first was that all of the covariates had to be sufficiently related to the dependent variable. No definitive criterion for determining the degree of correlation required for this. According to Plichta and Kelvin (2013), correlations greater than .30 are acceptable, but Portney and Watkins (2009) state that correlations greater than .60 are desirable. In light of this discrepancy, the criterion used in this research was correlations greater than .45—i.e., mid-way between .30 and .60. The second consideration regarding covariate correlations was to ascertain that that they had low or statistically insignificant correlations with other prospective covariates. These requirements were also satisfied. See Table 4.8.

With regard to instrument characteristics, a brief exploration of the reliability of the TCT-DP and the WEMWBS was carried out to assess whether they were likely to generate accurate and meaningful indicators of creativity and mental well-being. According to Portney & Watkins (2009) tests need to be reliable and it is important to demonstrate the extent to which they are consistent and free from error, and to assess whether they provide a satisfactory foundation for measuring what they were intended to measure. Internal consistency and temporal stability for each measurement instrument are briefly discussed in Section 4.3.5. Pearson’s product moment correlations and interclass correlation coefficients were used in the analysis.

4.3 Results

4.3.1 Baseline characteristics

4.3.1.1 Participant flow

The flow of participants through the study is provided in Figure 4.1. A total of 99 participants entered the trial, with 51 in the intervention group and 48 in the control group. Fourteen participants were eliminated from the study, 10 from the intervention group, and 4 from the control group. The reasons given by most of those participants were that they lived too far away to attend, they were sick, the intervention or the Time 2 and Time 3 measurements times were not convenient, or they were too busy. The data
Volunteered to participate, \( n = 99 \)

- Assigned to intervention, \( n = 51 \)
  - Testing, Time 1
    - Pre-intervention
  - Intervention
    - Received intervention (\( n = 41 \))
  - Testing, Time 2
    - Immediate post-intervention
  - Testing, Time 3
    - 5 months post-intervention
    - Analysed, \( n = 41 \)
      - Excluded from analysis, \( n = 10 \), because insufficiently exposed to intervention and/or not available for testing at Time 2 or Time 3.

- Assigned to control, \( n = 48 \)
  - Testing, Time 1
    - Pre-intervention
  - Testing, Time 2
    - Immediate post-intervention
    - Withdrawals (\( n = 4 \)). Reasons: too far away or too busy; one died.
  - Testing, Time 3
    - 5 months post-intervention
    - Analysed, \( n = 44 \)
      - Excluded from analysis, \( n = 4 \), because not available for testing at Time 2 and/or Time 3.

*Figure 4.1.* Flowchart of participants through trial.
from all of these participants were eliminated from the analysis because intention to
treat analysis is not a characteristic of quasi-experimental designs (see Chapter 3).
These 14 participants were eliminated because the participants were deemed to have
been insufficiently exposed to the intervention or they did not provide data at one or
both of the two subsequent time points.

Information about the 99 participants at baseline is provided in the following
section, followed by information about the 85 remaining participants and finally by
information about the 14 participants whose data were eliminated from the analysis.

4.3.1.2 Baseline characteristics of all participants who had volunteered to participate
in the research

Because 14 participants were eliminated from the dataset prior to the primary analyses,
a set of analyses based on the total sample of people \((N = 99)\) who had volunteered to
participate in the research was conducted. This served three purposes. First, it provided
a descriptive snapshot of all people who had volunteered to participate in the research.
Second, it provided an opportunity to test whether intervention and control groups were
approximately equivalent at the commencement of the research. Third, the
characteristics of this original sample were able to be compared with the characteristics
of the 14 people eliminated from the study to determine whether the elimination of
participants was likely to have some impact on the results. See Section 4.3.1.4.

Entries in Table 4.2 indicate that the average age of the participants was 71.9 years
\((SD = 4.9)\) and most (72%) were women. The most noticeable difference between the
intervention and the control groups in terms of demographic characteristics was age.
The intervention group members were younger than were those in the control group
(means of 70.7 and 73.2 respectively), and this difference was significant, \(t(97)=2.60, p=0.11\). The next most noticeable difference between the intervention and control
groups was a lower percentage of women in the intervention group than in the control
group, but this difference was not statistically significant. There was a wide range of
educational levels, from people who had not completed high school (34%) through to
those who had completed a postgraduate degree (8%). Most participants were retired, as
might be expected in this age group, but most had previously been (or, for a few, were
Table 4.2

**Demographic Characteristics and Creativity and Mental Well-Being Scores, at Baseline for Participants (N = 99) Who Had Volunteered to Participate in the Research**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total sample (N = 99)</th>
<th>Intervention group (n = 51)</th>
<th>Control group (n = 48)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in years Mean (SD)</td>
<td>71.9 (4.9)</td>
<td>70.7 (4.0)</td>
<td>73.2 (5.5)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>28 (28)</td>
<td>16 (31)</td>
<td>12 (25)</td>
</tr>
<tr>
<td>Women</td>
<td>71 (72)</td>
<td>35 (69)</td>
<td>36 (75)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school or less</td>
<td>3 (3)</td>
<td>1 (2)</td>
<td>2 (4)</td>
</tr>
<tr>
<td>Some secondary school</td>
<td>31 (31)</td>
<td>18 (35)</td>
<td>13 (27)</td>
</tr>
<tr>
<td>Completed high school</td>
<td>12 (12)</td>
<td>6 (12)</td>
<td>6 (13)</td>
</tr>
<tr>
<td>Technical college or diploma</td>
<td>35 (35)</td>
<td>17 (33)</td>
<td>18 (37)</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>10 (10)</td>
<td>6 (12)</td>
<td>4 (8)</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>8 (8)</td>
<td>3 (6)</td>
<td>5 (10)</td>
</tr>
<tr>
<td>Current occupational status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working</td>
<td>7 (7)</td>
<td>3 (6)</td>
<td>4 (8)</td>
</tr>
<tr>
<td>Retired</td>
<td>92 (93)</td>
<td>48 (94)</td>
<td>44 (92)</td>
</tr>
<tr>
<td>Most recent full-time occupation**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home duties</td>
<td>6 (6)</td>
<td>1 (2)</td>
<td>5 (10)</td>
</tr>
<tr>
<td>Labourers &amp; related workers; elementary clerical, sales, &amp; service workers</td>
<td>10 (10)</td>
<td>5 (7)</td>
<td>5 (11)</td>
</tr>
<tr>
<td>Intermediate production and transport workers; intermediate clerical, sales, &amp; service workers</td>
<td>17 (17)</td>
<td>10 (20)</td>
<td>7 (15)</td>
</tr>
<tr>
<td>Advanced clerical &amp; service workers; tradespersons &amp; related workers</td>
<td>26 (26)</td>
<td>12 (24)</td>
<td>14 (29)</td>
</tr>
<tr>
<td>Associate professionals</td>
<td>25 (25)</td>
<td>15 (29)</td>
<td>10 (21)</td>
</tr>
<tr>
<td>Professionals; managers, &amp; administrators</td>
<td>11 (11)</td>
<td>5 (10)</td>
<td>6 (13)</td>
</tr>
<tr>
<td>TCT-DP Mean (SD)</td>
<td>29.4 (11.8)</td>
<td>30.0 (11.6)</td>
<td>28.8 (12.1)</td>
</tr>
<tr>
<td>WEMWBS Mean (SD)</td>
<td>54.1 (8.4)</td>
<td>52.8 (8.5)</td>
<td>55.5 (8.1)</td>
</tr>
</tbody>
</table>

---

**Notes:**

a Values are numbers (percentages) unless stated otherwise.

b Numbers are reduced because a small number of participants did not respond to this question.

c WEMWBS scores contain two outliers, one in the intervention group and one in the control group, that were subsequently Winsorised.
currently) associated with a wide range of occupations. Twenty six percent of them had been, or still were, advanced clerical and service workers or tradespersons and related workers, and 25% had been, or still were, associate professionals.

Data regarding creativity indicated that the intervention group had a slightly higher mean score (30.0) than did the control group (28.8), and the mental well-being mean score was lower for the intervention group (52.8) than for the control group (55.5). Neither of these differences was statistically significant. The standard deviations indicated that both creativity and mental well-being had a wide dispersion of scores but that the dispersion was greater for the TCT-DP than for the WEMWBS.

Overall, apart from the age discrepancy, initial equality of groups had been achieved despite non-random allocation of participants to the intervention and control groups.

4.3.1.3 Baseline characteristics of participants retained for analyses

The demographic characteristics at baseline of the 85 participants included in the analysis are shown in Table 4.3. Overall, there were very few differences between the participants in the intervention and the control group with respect to any characteristic and it appeared that the results are similar to the initial total sample of people (\(N = 99\)) who had volunteered to participate in the research. In terms of the two most noticeable differences, again the intervention group was significantly younger than the control group, \(t(83) = 2.73, p = .007\) but the lower percentage of women in the intervention group compared with the control group was not significant. An interesting consequence occurred after the elimination of the data from the 14 participants. There was greater equality in the distribution of occupations among the intervention group participants retained for the primary analysis.

The baseline questionnaire items regarding frequency of participation in activities, and the satisfaction provided by, and importance of, those activities were analysed by examining the means, medians, and modes of participants’ responses. See Appendix G.
Table 4.3

Demographic Characteristics of Participants (N = 85) at Baseline\(^a\)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Intervention group (n = 41)</th>
<th>Control group (n = 44)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>70.3 (3.7)</td>
<td>73.1 (5.5)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>13 (32)</td>
<td>10 (23)</td>
</tr>
<tr>
<td>Women</td>
<td>28 (68)</td>
<td>34 (77)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school or less</td>
<td>1 (2)</td>
<td>2 (5)</td>
</tr>
<tr>
<td>Some secondary school</td>
<td>13 (32)</td>
<td>12 (27)</td>
</tr>
<tr>
<td>Completed high school</td>
<td>3 (7)</td>
<td>6 (14)</td>
</tr>
<tr>
<td>Technical college or diploma</td>
<td>15 (37)</td>
<td>16 (36)</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>6 (15)</td>
<td>4 (9)</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>3 (7)</td>
<td>4 (9)</td>
</tr>
<tr>
<td>Current occupational status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working</td>
<td>2 (5)</td>
<td>4 (9)</td>
</tr>
<tr>
<td>Retired</td>
<td>39 (95)</td>
<td>40 (91)</td>
</tr>
<tr>
<td>Most recent full-time occupation(^b)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home duties</td>
<td>1 (2)</td>
<td>5 (11)</td>
</tr>
<tr>
<td>Labourers &amp; related workers; elementary clerical,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sales, &amp; service workers</td>
<td>3 (8)</td>
<td>4 (9)</td>
</tr>
<tr>
<td>Intermediate production and transport workers;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>intermediate clerical, sales, &amp; service workers</td>
<td>6 (16)</td>
<td>7 (16)</td>
</tr>
<tr>
<td>Advanced clerical &amp; service workers; tradespersons &amp;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>related workers</td>
<td>12 (32)</td>
<td>12 (28)</td>
</tr>
<tr>
<td>Associate professionals</td>
<td>11 (29)</td>
<td>10 (23)</td>
</tr>
<tr>
<td>Professionals; managers, &amp; administrators</td>
<td>5 (13)</td>
<td>5 (12)</td>
</tr>
</tbody>
</table>

\(^a\) Values are numbers (percentages) unless stated otherwise.

\(^b\) Numbers are reduced because a small number of participants did not respond to this question.
Few participants were engaging in craft making, dancing, drama, writing, and art activities, but most were engaged in other activities, particularly socialising (including phoning and emailing) and physical activity. In both groups, the two most important reasons identified by participants for engaging in the activities were to improve or maintain mental alertness and to increase fitness.

Mann-Whitney $U$ tests for the 56 variables were conducted to examine any differences between the intervention and control groups. Given the number of tests, two or three variables would have been significant at the .05 level by chance. There were four significant differences at the .05 level. The first of these referred to frequency of participation in craft making—and the control group was higher than the intervention group. The other three significant differences referred to the satisfaction with involvement in craft making, art activities, and with club, church, or community group activities—and the control group was again higher than the intervention group on each of those. However, the numbers involved were usually small because participants were asked about their satisfaction with activities only if they engaged in those activities. For participation in craft making, $n = 20$ in the intervention group and $n = 25$ in the control group. For art activities, $n = 15$ in the intervention group, and $n = 8$ in the control group. For club, church, or community group activities there were data from 32 participants in the intervention group and 38 in the control group. In summary, therefore, the intervention and control groups can be regarded as very similar at baseline in terms of the frequency with which they engaged in a range of activities and the satisfaction that they derived from those activities. Largely this was a socially involved group of people undertaking a range of activities, although not many were engaged in activities that are traditionally regarded as creative.

Whether it was the original sample, those who were not included in the final analyses, or those who were retained for the final analysis, the intervention and control groups were very similar to each other with the exception that the intervention group was significantly younger. Thus, the people who dropped out were not members of some special group that was different from the group containing those who remained.

Table 4.4 contains the means and standard deviations of scores from participants ($n = 85$) in the intervention and control groups on creativity and mental well-being at
each of the three points at which measurements were taken. At baseline, the intervention group had a slightly higher mean creativity score relative to that of the control group (30.8 vs. 28.6), but that difference was not significant, \( t(83) = .84, p = .417 \). However, the intervention group had a noticeably lower mean score on mental well-being relative to that of the control group (52.5 vs. 56.3)—and that difference was statistically significant \( t(83) = 2.39, p = .019 \). Subsequent analyses took this baseline difference into account. See Section 4.3.4.

### Table 4.4

**Creativity and Mental Well-Being Scores at the Three Points of Data Collection (n = 85)**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention group Mean (SD) ((n = 41))</th>
<th>Control Group Mean (SD) ((n = 44))</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Creativity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>30.8 (11.7)</td>
<td>28.6 (12.5)</td>
</tr>
<tr>
<td>Time 2</td>
<td>36.8 (10.8)</td>
<td>30.8 (12.4)</td>
</tr>
<tr>
<td>Time 3</td>
<td>34.5 (11.6)</td>
<td>30.4 (10.8)</td>
</tr>
<tr>
<td><strong>Mental well-being</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>52.5 (8.1)</td>
<td>56.3 (6.7)</td>
</tr>
<tr>
<td>Time 2</td>
<td>52.2 (6.8)</td>
<td>56.7 (7.3)</td>
</tr>
<tr>
<td>Time 3</td>
<td>51.9 (8.5)</td>
<td>56.3 (7.1)</td>
</tr>
</tbody>
</table>

Descriptive statistics (mean, median, minimum, maximum, range, and standard deviation) for baseline creativity and mental well-being of the sample in the main analyses appear in Tables 4.5 and 4.6. None of the samples in the TCT-DP test manual closely matched the sample in this current research. One of the closest samples in the TCT–DP manual was a group of 367 students (teachers college), teachers, and educators who had a mean of 31.0 and an SD of 10.4 (Urban & Jellen, 2010, p. 65). The mean score for the 85 participants in this current study was 29.6, and the SD was 12. These scores were not statistically different from each other, \( t(450) = 1.08, p = .279 \).
The mental well-being scores are difficult to compare because standard deviations are not provided among the normative data in the WEMWBS manual. There, however, normative scores comprising means and 95% confidence intervals (CIs) were reported for two age groupings of older adults: People aged 65–74 had a mean score of 52.4 and a CI of 51.3 to 53.4, and those aged 75+ had a mean of 51.2 and a CI of 48.9 to 53.4. In this current study, the mean score of 54.5 was higher than the upper limit of the 95% CI for both of the WEMWBS age groupings. Therefore, it appears that the mental well-being scores of participants retained for analyses in this present study were higher than those reported for similar samples in the WEMWBS test manual.

Table 4.5

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Total sample</th>
<th>Intervention group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>29.6</td>
<td>30.8</td>
<td>28.6</td>
</tr>
<tr>
<td>Median</td>
<td>33.0</td>
<td>33.8</td>
<td>33.0</td>
</tr>
<tr>
<td>Minimum</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Maximum</td>
<td>57</td>
<td>57</td>
<td>52</td>
</tr>
<tr>
<td>Range</td>
<td>50</td>
<td>50</td>
<td>45</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>12.1</td>
<td>11.7</td>
<td>12.5</td>
</tr>
</tbody>
</table>

The mental well-being scores are difficult to compare because standard deviations are not provided among the normative data in the WEMWBS manual. There, however, normative scores comprising means and 95% confidence intervals (CIs) were reported for two age groupings of older adults: People aged 65–74 had a mean score of 52.4 and a CI of 51.3 to 53.4, and those aged 75+ had a mean of 51.2 and a CI of 48.9 to 53.4. In this current study, the mean score of 54.5 was higher than the upper limit of the 95% CI for both of the WEMWBS age groupings. Therefore, it appears that the mental well-being scores of participants retained for analyses in this present study were higher than those reported for similar samples in the WEMWBS test manual.

Table 4.6

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Total sample</th>
<th>Intervention group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>54.5</td>
<td>52.5</td>
<td>56.3</td>
</tr>
<tr>
<td>Median</td>
<td>54</td>
<td>52.0</td>
<td>55.5</td>
</tr>
<tr>
<td>Minimum</td>
<td>36</td>
<td>36</td>
<td>43</td>
</tr>
<tr>
<td>Maximum</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Range</td>
<td>34</td>
<td>34</td>
<td>27</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>7.6</td>
<td>8.05</td>
<td>6.74</td>
</tr>
</tbody>
</table>
4.3.1.4 Baseline characteristics of participants eliminated from the analyses

Table 4.7 contains information about the participants who were eliminated from the primary analyses, \( n = 14; 12\% \), were those participants in the intervention group who attended half or fewer of the creativity enhancement sessions and were therefore deemed to have been insufficiently exposed to the intervention, or they were participants in the control group who did not provide data at one or both of the two subsequent time points. Their average age was 73.4 years. Most were women \( n = 9; 64\% \), with far fewer being men \( n = 5; 35.7\% \). However these were in similar proportions as in the main group. The women eliminated from the analysis also tended to have had less education than did those whose data were retained in the primary analysis. Educational levels and recent occupations varied widely. The majority of participants eliminated were retired (94%), as expected in this age group. There was a noticeably greater attrition of intervention group participants from two main occupational groupings (intermediate production and transport workers / intermediate clerical, sales, & service workers / tradespersons & related workers, and associate professionals) than from the control group.

The analyses indicated that overall the baseline demographic characteristics of the 14 participants whose data were eliminated and the 99 who volunteered for the research were similar. However the creativity and mental well-being scores of those eliminated from the analyses indicated that participants from the intervention group \( n = 10 \) had noticeably lower mean creativity scores, and higher mean mental well-being scores than did those who were retained for the final analysis.
Table 4.7

Demographic Characteristics, and Creativity and Mental Well-Being Scores, at Baseline for the 14 Participants Eliminated from Analyses

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>((n = 10))</td>
<td>((n = 4))</td>
</tr>
<tr>
<td>Age in years (\text{Mean}^b)</td>
<td>72.4</td>
<td>74.5</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>3 (30)</td>
<td>2 (50)</td>
</tr>
<tr>
<td>Women</td>
<td>7 (70)</td>
<td>2 (50)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some secondary school</td>
<td>5 (50)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Completed high school</td>
<td>3 (30)</td>
<td>-</td>
</tr>
<tr>
<td>Technical school or diploma</td>
<td>2 (20)</td>
<td>2 (50)</td>
</tr>
<tr>
<td>Bachelor degree</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Postgraduate degree</td>
<td>-</td>
<td>1 (25)</td>
</tr>
<tr>
<td>Current occupational status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working</td>
<td>1 (10)</td>
<td>-</td>
</tr>
<tr>
<td>Retired</td>
<td>9 (90)</td>
<td>4 (100)</td>
</tr>
<tr>
<td>Most recent full-time occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home duties</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Labourers &amp; related workers; elementary clerical, sales, &amp; service workers</td>
<td>2 (20)</td>
<td>1 (25)</td>
</tr>
<tr>
<td>Intermediate production and transport workers; intermediate clerical, sales, &amp; service workers</td>
<td>4 (40)</td>
<td>-</td>
</tr>
<tr>
<td>Advanced clerical &amp; service workers; tradespersons &amp; related workers</td>
<td>-</td>
<td>2 (50)</td>
</tr>
<tr>
<td>Associate professionals</td>
<td>4 (40)</td>
<td>-</td>
</tr>
<tr>
<td>Professionals; managers, &amp; administrators</td>
<td>-</td>
<td>1 (25)</td>
</tr>
<tr>
<td>TCT-DP (\text{Mean (SD)})</td>
<td>26.7</td>
<td>31.5</td>
</tr>
<tr>
<td>WEMWBS (\text{Mean (SD)})</td>
<td>55.3</td>
<td>47.2</td>
</tr>
</tbody>
</table>

\(a\) Values are numbers (percentages) unless stated otherwise.

\(b\) SDs are not provided because the small numbers would render them meaningless.

\(c\) WEMWBS scores contain one outlier in the control group that was subsequently Winsorised.
4.3.3 Correlations among variables

Correlations were calculated among the demographic variables and scores for creativity and mental well-being. This was undertaken for two reasons. The first of these was to capture the nature of the sample at baseline and describe it more comprehensively. The second was to determine which variables could subsequently serve as covariates in ANCOVAs. All of the relevant correlations are shown in Table 4.8.

As can be seen from cell entries in Table 4.8, age was negatively correlated with creativity at baseline \( r = -0.31 \), but was not related to any of the other variables. As might be expected, education and occupational level were positively correlated with each other with a Spearman’s rho \( r_s = 0.56 \), indicating that people with more education tended to have higher status occupations—or at least occupations that usually require higher levels of education. People with more education also had significantly higher levels of creativity at baseline \( r_s = 0.24 \), as did participants from higher occupational status backgrounds \( r_s = 0.18 \). The only variable (see Table 4.8) that could serve as a covariate for ANCOVAs conducted to assess changes in creativity was baseline creativity scores (with correlations of 0.52 and 0.57 with creativity scores at Time 2 and Time 3, respectively). Similarly, the only variable that could serve as a covariate for ANCOVAs conducted to assess changes in mental well-being was baseline mental well-being scores (with correlations of 0.71 and 0.69 with mental well-being scores at Time 2 and Time 3, respectively).
Table 4.8

Correlations Among Demographic Variables, Creativity, and Mental Well-being for Final Group of Participants (Intervention and Control Groups Combined, n = 85)

<table>
<thead>
<tr>
<th>Variable</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>-.14</td>
<td>-.02</td>
<td>-.31</td>
<td>-.21</td>
<td>-.16</td>
<td>-.02</td>
<td>-.07</td>
<td>-.07</td>
</tr>
<tr>
<td>Highest education</td>
<td>-.56</td>
<td>&lt;.001</td>
<td>.24</td>
<td>.14</td>
<td>.31</td>
<td>.18</td>
<td>.28</td>
<td>.28</td>
</tr>
<tr>
<td>Main occupation</td>
<td>.18</td>
<td>.26</td>
<td>.13</td>
<td>.21</td>
<td>.18</td>
<td>.36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity at baseline</td>
<td>.52</td>
<td>.57</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity at Time 2</td>
<td>.71</td>
<td>.69</td>
<td>&lt;.001</td>
<td>&lt;.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental w-b at baseline</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental w-b at Time 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental w-b At Time 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

All correlations are Pearson’s product moment correlations except those shaded in light grey related to education and occupations, which are Spearman’s rank order correlations because the categories for education and occupational were ordinal in nature (some reservations might even be held concerning whether occupations form an ordinal scale).

For each pair of variables the level of significance is shown below the correlation coefficient; non-significant correlations are identified with “ns”.

People who indicated “domestic duties” as an occupation are excluded because domestic duties do not provide an indication of occupational status, as is intended by that variable.

Correlation coefficients that are of no methodological or theoretical importance for this study have been omitted.
4.3.4 ANCOVAs

4.3.4.1 Testing of assumptions

The ANCOVAs were conducted using baseline scores on creativity and mental well-being as the only covariates in exploring post-intervention differences between intervention and control groups in creativity and mental well-being, respectively. The baseline scores were reliability adjusted, as described in Section 4.2.11. As stated in that section, the upper and lower reliability estimates (indices) used in these adjustments were, respectively, the Cronbach’s alphas and ICCs obtained from the intervention and control groups’ baseline scores. These indices are presented in Table 4.9.

Table 4.9

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Cronbach’s alpha</th>
<th>Test-retest ICCa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity</td>
<td>Intervention</td>
<td>.785</td>
<td>.617</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>.821</td>
<td>.685</td>
</tr>
<tr>
<td>Mental well-being</td>
<td>Intervention</td>
<td>.916</td>
<td>.764</td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>.846</td>
<td>.868</td>
</tr>
</tbody>
</table>

a All test-retest ICCs are based on comparisons between baseline and Time 2.

As has already been stated (see Section 4.2.11), the data satisfied the pre-requisites for analysis of covariance: The data for the dependent variables were at the interval level of measurement, the covariates were unrelated to the independent variable (i.e., group membership), no outliers existed because they had been adjusted, the relationships between the covariates and dependent variables were linear and the covariates were linearly related to the dependent variables, and no valid covariates had been omitted. As recommended by Plichta and Kelvin (2013) homogeneity of regression and homogeneity of variance within groups were tested in the process of conducting the ANCOVAs.

In the subsequent analyses, ANCOVAs using reliability corrections with Cronbach’s alphas were conducted before performing ANCOVAs using reliability
corrections with ICCs. This sequence was followed because, as can be seen from the indices in Table 4.9, in all but one case Cronbach’s alpha values represented the higher estimates of reliability. The exception occurred for the control group on the WEMWBS, where the Cronbach’s alpha was only slightly lower than the ICC.

4.3.4.2 ANCOVAs with creativity scores

ANCOVAs were first conducted on the creativity scores, comparing the intervention and control groups’ scores at Time 2. The Cronbach’s alpha reliability-corrected ANCOVA indicated a significant difference between intervention and control groups in creativity scores at Time 2, \( F(1, 82) = 4.54, p = .036 \). The associated partial eta squared \((\eta_p^2)\) of .052 indicates that 5.2% of the variance in creativity scores across the two groups at Time 2 was accounted for by the intervention. The effect size for the post hoc comparison between the adjusted means was .465. According to Bakeman (2005) this indicates the existence of a small to medium effect. A similar outcome was produced by the ICC reliability-corrected ANCOVA, in which a significant difference between the intervention and control groups in creativity scores was again identified, \( F(1, 82) = 3.96, p = .05 \). The associated \( \eta_p^2 \) of .046 in this analysis indicates that 4.6% of the variance in creativity scores across the two groups at Time 2 was accounted for by the creativity enhancement intervention. The effect size for the post hoc comparison between the adjusted means in this case was .436. Thus, both reliability-corrected ANCOVAs indicated that creativity scores increased significantly more at Time 2 in those who received the creativity enhancement intervention than in those who did not.

When examining differences between the intervention and control groups in creativity scores at Time 3, the Cronbach’s alpha reliability-corrected ANCOVA indicated no significant difference between the intervention and control groups \( F(1, 28) = 1.75, p = .189 \). A subsequent ICC reliability-corrected ANCOVA was therefore not performed for creativity scores at Time 3.

4.3.4.3 ANCOVAs with mental well-being scores

Visual inspection of the mental well-being scores in Table 4.4 indicates that there was minimal movement in mental well-being scores for both the intervention and control group from baseline to either of the subsequent time periods. Nevertheless, ANCOVAs
were performed for the sake of thoroughness, to rigorously assess these differences between groups. As with the creativity scores, an ANCOVA on the mental well-being scores comparing the intervention and control groups’ scores at Time 2 while adjusting for baseline mental well-being scores was first planned using the Cronbach’s alpha reliability-corrected baseline scores as a covariate. The pre-requisite of homogeneity of regression could not be met, so an ICC reliability-corrected ANCOVA was conducted. It satisfied all necessary assumptions but yielded a non-significant outcome, $F(1, 28) = 1.24, p = .269$, as expected. When differences between the intervention and control groups in mental well-being scores at Time 3 were tested while adjusting for baseline mental well-being scores, the Cronbach’s alpha reliability-corrected ANCOVA again indicated no significant difference between the intervention and control groups, $F(1, 28) = 1.11, p = .296$, as expected. A subsequent ICC reliability-corrected ANCOVA was therefore not performed.

### 4.3.4.4 Summary of ANCOVA results

In summary, the ANCOVA results indicated that the level of creativity of participants in the intervention group was significantly higher after the intervention than that of the control group. However, 5 months later at Time 3, the intervention group’s creativity scores were no longer significantly different from those of the control group, indicating that at least some of the effect of the creativity enhancement intervention on creativity scores in the intervention group had been eroded by the passage of time (5 months). Mental well-being scores for the intervention group were not affected by the creativity enhancement intervention.

### 4.3.5 Supplementary analysis of instrument characteristics

The TCT–DP and the WEMWBS were examined to the extent to which these tests could be relied on to generate accurate and meaningful indicators of creativity and mental well-being. For both the TCT-DP and WEMWBS, Cronbach’s alphas were calculated as indicators of internal consistency for the baseline data of the 85 participants retained for the main analyses. The Cronbach’s alpha values were .80 for the TCT–DP, and .90 for the WEMWBS. According to some sources, a reliability of 0.70 or higher is considered acceptable in most social sciences (George & Mallery,
2008), medical education (Travakol & Dennick, 2011), and health promotion research (Clayton & Crosby, 2006).

The reliability of each measure was checked by examining the control group’s scores, which should not be expected to change over the research period. This was carried out because the intervention group had been subjected to the creativity enhancement program at the three-month period and the program was expected to influence both creativity and mental well-being scores from that group and therefore it would be inappropriate for test-retest purposes. For both the TCT-DP and WEMWBS, Pearson’s product moment correlations (r’s) and intraclass correlation coefficients (ICCs) were calculated as indicators of temporal consistency (essentially test-retest reliability). ICCs are the preferable index for this form of reliability because correlation coefficients do not indicate whether or not scores move systematically up or down over a time period (Portney & Watkins, 2009). However, Pearson’s r values were calculated because these are the only indices of consistency over time provided by some researchers, and they are the only indices of temporal stability that are available in the TCT-DP manual. Table 4.10 contains all of these as the temporal stability (test-retest reliability) indices for the two tests.

Table 4.10

<table>
<thead>
<tr>
<th>Inventory</th>
<th>Pearson’s r (^a)</th>
<th>ICC (^b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity</td>
<td>.52</td>
<td>.69</td>
</tr>
<tr>
<td>Mental well-being</td>
<td>.77</td>
<td>.87</td>
</tr>
</tbody>
</table>

\(^a\) Both Pearson’s r values are based on associations between data at baseline and Time 2, and are significant at < .001.

\(^b\) The test-retest ICCs are based on associations between data at baseline and Time 2.

By way of comparison, the only test-retest index of reliability for a control group that is referred to in the manual for the TCT-DP is a Pearson’s r of .81. It was obtained over a similar time span as in this study (i.e., 8–12 weeks) but with a sample dissimilar
to the one in this research, namely a group of gifted school students. The ICC of .87 for the WEMWBS obtained in this research is similar to the ICC of .83 over a one-week period reported in the WEMWBS manual. The WEMWB ICC of .87 indicates satisfactory temporal stability of scores, and the TCT–DP seems a little low at .69.

Portney and Watkins (2009, pp. 594–595) discussed general guidelines for the use of ICCs in clinical health measurement, and stated “values above .75 are indicative of good reliability, and those below .75 poor to moderate reliability. For many clinical measurements, reliability should exceed an ICC value of .90 to ensure reasonable validity”. In light of this the TCT-DP appears to be associated with some temporal instability and internal inconsistency (depending on the criteria used) because the test-retest reliability was an ICC of .69, and Pearson’s $r$ was .52. The WEMWBS appears to have quite a satisfactory internal consistency and temporal stability. However, any further exploration or interpretation of these findings is beyond the aim of this research.

4.4 Discussion

The results indicated that the creativity scores of the intervention group were significantly higher than were those of the control group immediately after creativity training, even after adjusting the analysis for the slight difference between the groups in creativity scores that existed at the commencement of the creativity training. The conclusion can be reached, on this basis, that the creativity enhancement training was effective in enhancing the creativity of participants, and this result supports the decades of findings by creativity researchers who have claimed the same (Isaksen & Treffinger, 2004; Ma, 2006; Noller et al., 1976; Parnes et al., 1977; Treffinger et al., 2006). Further findings of this nature are discussed in the Encyclopaedia of Creativity (Runco & Pritzker, 1999), A. J. Cropley (2005), and major journals Creativity Research Journal and the Journal of Creative Behavior. The increase in creativity scores observed in the intervention group following the intervention seems to support a growth theory of creativity in later life, as described by creativity researchers (G. D. Cohen, 2006; G. D. Cohen et al., 2006; Engelman, 1981; Fisher & Specht, 1999; Goff, 1992; Hickson & Housley, 1997; Landau & Maoz, 1978; Maslow, 1971; Phillips & Flood, 2007; Romaniuk & Romaniuk, 1981; Sasser-Coen, 1993; Simonton, 2000; Smith & van der Meer, 1997; Sylcox, 1983). Thus the findings from this study could be further trialled and applied to older unwell adults, and perhaps other sample populations, in various
healthcare services, specifically in assisting them to use creative problem-solving with any life issues.

There was, however, no significant difference between the groups in creativity scores at Time 3 after the intervention concluded. The creativity training appeared to be successful but the effect of the training dissipated during the course of the next 5 months. It did not disappear in the raw mean scores (Table 4.4), but became numerically smaller and statistically insignificant. This decline in the creativity scores is difficult to explain. One explanation may be that the participants lacked experience in maintaining creative thinking and harboured habits of conformity that created barriers to creative learning (Engelman, 1981). Hence it could be that the creativity training was not long enough, and perhaps required more time to develop more durable creative habits. Some participants did indicate that the program was not long enough and enquired about future sessions for themselves and their friends. It might be fruitful to design future longitudinal experimental studies to incorporate additional booster/maintenance intervention sessions before a follow-up measurement, as recommended by Glasgow et al. (2004). Another explanation could be that the drop in creativity scores at Time 3 may have been moderated long term by methodological issues. For instance there may have been a threat related to testing (Crosby et al., 2006; Portney & Watkins, 2009) in that the reduction of participants' posttest scores may have been due to boredom or over familiarisation with the forms. There was no record in my research journal of comments that were made by the participants about being bored or tired of carrying out the tests or test procedures. However, in defence of the rigour of this research, methodological processes, including appropriate statistical adjustments, were put in place to eliminate the effect of bias in the design of the study (see Sections 4.2.8–11).

Speculation about the decrease in creativity scores at Time 3 led to questioning the statistical significant increase in creativity scores at Time 2. For instance, was the statistically significant increase in scores at Time 2 a reflection of something else such as the Hawthorne effect (Portney & Watkins, 2009). Perhaps the participants produced better TCT-DP drawings than they would normally because they were being observed in a formal research project (Hawthorn effect). If this was so, the result would mean that the increase in scores was due to the attention paid to the participants by me and or the research assistant (Burton, 2014; Portney & Watkins, 2009). However, a positive
view of this is, “In providing health care it has been found that the application of the Hawthorne effect has been able to add to the patients’ good results as well as their satisfaction with the treatment” (Burton, 2014, para. 5). In other words, it is recognised by health practitioners that the more attention paid by practitioners to their clients, the better the end result. Or perhaps the statistically significant increase in creativity scores at Time 2 was due to the biasing effects of demand characteristics (Crano 2004; Orne, 1962). If the result was attributable to demand characteristics that would mean the participants tried to produce TCT-DP drawings that they thought were imaginative. Further speculation raises the question about whether the result might be because the participants enjoyed the novel experience of being in the research study, or they liked socialising with new people, or they liked the researcher. It is often the case that confounding variables like these are inevitable. Further research is suggested to examine the creativity instrument over time, specifically targeting older adults, because there is little information available regarding its test-retest reliability, and because there appeared to be some temporal instability of the creativity instrument, see Section 4.3.5. However, it is outside the scope of this study to conduct further examination of the test. Further, perhaps a future experimental study could be designed that could duplicate the present intervention program and include an additional control group, multiple testers, and additional facilitators for the intervention.

The implications of changing from an RCT design to a quasi-experimental design meant that extra recruiting needed to be undertaken because the potential participants were not able to fulfil the commitment to an intervention spanning 12 weeks. It is therefore recommended that for a future similar study the decision to conduct an RCT or a quasi-experimental design is not made until the optimum number of participants are obtained, based on power calculations.

The primary aim of the study was to question whether creativity enhancement training improves mental well-being. Despite the fact that the intervention was observed to improve creativity scores, no accompanying effect on mental well-being was observed. This result is unexpected and very difficult to explain. The lack of movement in the well-being scores of the intervention group is extremely challenging to a creativity advocate like me, especially considering that there is a plethora of qualitative research that supports the perception of a strong and intrinsic connection between
creativity and mental health, and that several experimental researchers have provided evidence of this connection (Cohen, 2006; Cohen et al., 2006; Greaves & Farbus, 2006; Phillips & Flood, 2007; and see Chapter 2). There are, however, several possible explanations.

One explanation could be that the WEMWBS was not the best choice for measuring mental well-being change in older adults. There is some evidence that it can measure change at a group and individual level analysis (Maheswaran et al., 2012), but the lack of movement in the mental well-being scores does indicate that further investigation is warranted into the mental well-being measures of older adults.

Another explanation could be that the comparison of mental well-being scores for the current participants with the norms reported in the literature (Stewart-Brown & Janmohamed, 2008) showed the scores of participants in this study were higher than those for people in similar age groups in the UK. The lack of observed effects of the creativity intervention on mental well-being scores might therefore be due to the participants being unable to readily increase their scores during the course of creativity training because they were already at a relatively high level of mental well-being. If this was the case, according to Spence and Grant (2007, p.192), “their already elevated scores would have created a ceiling effect”. However, the intervention group scores could have moved up in this case as they were statistically significantly lower than the control group to begin with. See Section 4.3.1.3. In addition, the participants seemed to be already exhibiting a range of healthy behaviour through participating in a range and frequency of physical activities, appeared to be socially active, interested, and participating in activities that were mentally stimulating. However, this speculation leads the possibility that creativity enhancement training in fact does not increase mental well-being in older adults, and that mental well-being may be linked more to physical activity for exercise and mental alertness. These two activities are regarded as connected to well-being (Almeida, Norman, Hankey, Jamrozik, & Flicker, 2006a; Ryff, 1989a). Further research investigating creativity and mental well-being may need be designed that includes a battery of mental health and well-being and quality of life instruments.
It was not feasible to undertake participant validation of the program beforehand because of the restricted timelines for conducting the research. Although this could be viewed as a shortfall, it is not unusual practice. However, this shortfall was deliberately counterbalanced with a questionnaire designed for participants to evaluate the program. This was described in Sections 4.2.4.4. *Program evaluation* and 5.6 *Supplementary analysis*. As well, all components of program design were built on the outcomes of well-established previous quantitative and qualitative studies. Moreover, the limitations and recommendations were described in Section 6.2.5 *Exploring the effectiveness of the creativity intervention*. However, I would recommend that researchers in conducting similar studies in the future involve older adults in assessing the design of a questionnaire for program evaluation.

Limitations of the present research are that the results may not be generalised to people aged 65 years and over in other circumstances (e.g. those in nursing homes or those who have a chronic illness that prevents them from being active in a variety of community activities). On the other hand, a significant strength of the research is that the outcome of the increase in creativity scores at Time 2 indicated that the creativity intervention was effective.
THE QUALITATIVE STUDY

5.1 Introduction

The overall intent of this qualitative study was to broaden and differentiate the quantitative approach and enrich the analysis by examining the way participants conceptualised and made sense of their experiences in connection with the creativity enhancement program. It was also anticipated that the findings would stand alone as a single study.

The main focus of this study was to answer the question:

What are participants’ perceptions of any changes in mental well-being and creativity in any aspect of their lives after participation in the creativity program?

5.2 The study design

This study was based in the theoretical notions of qualitative interviewing, and the interview data were analysed by means of content analysis (King & Horrocks, 2010; Quine & Taylor, 1998). Further, this study was viewed as having a generic qualitative design embedded firmly within the theoretical underpinnings of the interpretivist paradigm. Specifically, the design adheres to the characteristics of qualitative research that make it “qualitative”. It is naturalistic, the data are descriptive, there is a concern with process, it is inductive, and revealing meaning is the goal (Salazar et al., 2006b). This design was not based on any traditional theoretical perspectives of critical theory, phenomenology, heuristic research, life history, or ethnography (DePoy & Gitlin, 1994).

The rigour of this qualitative study was maintained through the employment of rich data description, respondent validation, triangulation, and the provision of a clear audit trail of the study’s processes and procedures (Walsh & Downe, 2006). See the section about rigour at the end of this chapter.
Content analysis, as described by Cropley (2002) was used in this study. Gifford (1998) and Graneheim (2004) reported that content analysis has been used in public health research across a wide range of research areas and is well suited for interviews. The data analysis was conducted through the technique of coding, and substantive and theoretical coding was used (Cropley, 2002) to analyse the content units of each participant’s explanations and descriptions. Substantive coding refers to identifying specific concrete references (content units) to the object of interest. Theoretical coding refers to linking the content units to the relevant health, psychological, or educational models from which categories or concepts can be derived. Analysis was completed after saturation had been reached (Cropley, 2002). Saturation refers to the point at which researchers cannot identify any additional information in the material they have gathered; “no new codes are developed and themes and subthemes have been fully fleshed out” (Padgett, 2012, p. 196). The procedure of analysis involved a cycle of analysing the content units and obtaining categories (that is, the results), then using these categories as a starting point for a new analysis (examination of the relationship between categories and theory/concepts) which then had its own results. Connections among data were made via constant comparison whereby comparison of data set to data set was conducted initially, followed by comparisons from data to theory (Dick, 2005; Glaser & Strauss, 1967).

Face-to-face semi-structured 30 minute interviews were used to investigate any changes in participants’ behaviours. The main reason for choosing this method was that, according to Bryman (2006), semi-structured interviewing is the most common qualitative method for combining a qualitative study with a quantitative study because it yields the easiest data to transform. Second, according to Quine and Taylor (1998), the data can be used in association with quantitative questionnaires to enhance validity. Moreover, Quine and Taylor argued that qualitative methods are suitable for use with a quantitative study in those particular complex situations where the relevant variables associated with the outcomes of interest are not obvious.
5.3 Method

5.3.1 Sample

It was estimated that approximately 25 participants from the intervention group in the quantitative study would provide sufficient data to cover the interview topic and would meet general guidelines regarding saturation of data. According to Salazar et al. (2006, p. 187) the number of participants for a qualitative study “is sufficient when the selected participants represent the range of potential participants in the setting, and at the point at which the data gathered begins to be redundant, that is, when consistent themes are repeated”. A total of 25 participants lies within the range of 20–30 people needed for interviewing (Creswell, 1998, p. 118; Luborsky & Lysack, 2006).

Twenty four participants were recruited through self-selection which, according to Portney and Watkins (2009), is a form of convenience sampling. The aim was to recruit participants who attended the whole intervention program, were interested and available and therefore likely to provide information-rich data. The decision to use self-selection was also pragmatic because of the time and resource constraints in conducting this research. The biases that might be introduced through self-selection are those of experimenter/researcher bias where the researcher influences the results in order to portray a certain outcome. An essential aspect of conducting qualitative research is to understand that researcher bias will happen no matter what type of sampling method is used by the researcher. Therefore it is important for the researcher to declare his/her biases and personal perspectives, and to employ strategies to minimise the effects. Researcher bias and personal perspectives are identified in Section 1.5 Researcher’s perspective, in Section 3.4 Considerations pertaining to the qualitative study, and the types of actions that I employed to enhance credibility and rigour of the study are detailed in Section 5.5 Rigour. Information about the research was presented and consent forms were explained and distributed within an intervention session of the quantitative study. See Appendix A. The consent form was returned via hand-delivery at a later intervention session or by post in a pre-paid envelope. Participants were asked to commit to a 30-minute interview and to provide feedback on the accuracy of written summaries of their transcribed tape recorded interviews at a later time. This study was approved by the Charles Sturt University Ethics Committee in the original application that encompassed both studies. The interviews took place at a Charles Sturt University
community venue. All interviews were conducted within a 2-week period, 8 months after the end of the intervention program.

Although it is not important in qualitative research to describe every detail of the participants’ characteristics the follow overview is presented. Of the 24 participants, eight were men and 16 women, with an average age of 71 years. There was a wide range of educational levels, from people who had not completed high school \((n = 6; 25\%)\) through to those who had completed an additional degree (bachelor or postgraduate; \(n = 1; 5\%\)). There was also a range of most recent full-time occupations: home duties \((n = 2; 8.3\%\)), advanced clerical and service workers, and tradespersons and related workers \((n = 8; 33.3\%\)); and professionals, managers, and administrators \((n = 4; 16.6\%)\).

Creativity and mental well-being scores were compared at the three points of data collection for the participants who were interviewed for the qualitative study \((n = 24)\) and those who were not interviewed but had also been members of the intervention group \((n = 17)\). Independent samples \(t\)-tests indicated that there were no statistically significant differences between the two groups on either creativity or mental well-being, at any of the three points of the data collection.

### 5.3.2 Data collection

Prior to data collection a coding list was prepared. According to Cropley (2002) and Ritchie and Spencer (2002), developing a coding list based on pre-existing theory can commence prior to the data collection phase. This is where the researcher approaches the whole study with particular questions in mind that form a schema not only for analysis but also for data collection. These a priori questions are reflected in the interview questions and again in the analysis. This technique is well suited to the study aims as I was specifically interested in verifying the existing theory of creativity and well-being, and in responding to emerging data that may generate new theory. The pre-existing theories of creativity and mental well-being are placed in Section 5.3.6. In addition, the pre-existing theories are detailed in the literature review in Chapter 2.

A coding list was drawn up in tabular form according to the procedure outlined by Ritchie and Spencer (2002). Although this coding list defined in advance the theories
and concepts that were expected to emerge, it was not regarded as fixed. The aim was to allow theory and concepts to emerge from the data rather than using strictly prescribed categories. According to Creswell (2008) it is important for the researcher to leave space for comments about any unanswered questions and silences because these might provide additional content units/ideas that could be added to existing theories and form part of future research for identifying appropriate variables to be measured.

Interview questions were developed using inductive analysis at the same time as the coding list based on pre-existing theory. Subsequently, an interview schedule to guide the interviewer was drawn up with the aim of gathering participants’ explanations of behaviour for later analysis (see Appendix H for the interview schedule). Participants were not required to delve into the meaning of their feelings and behaviours, as is the case with other qualitative methods (phenomenology, autobiography, etc.), but instead to identify and explain their perceptions of any changes in mental well-being and creativity since participation in the creativity enhancement program.

Although the coding list drew on pre-existing theories, the main question was worded in a very open way that did not lead or predetermine the participants’ responses, in order to allow for the emergence of theory. This increased the likelihood that the data would derive from the participants’ own experiences, not from the questions asked. The interview was introduced with the following words:

Looking back over the last eight months since participating in the creativity program, did you notice any effects of participation on anything in your life? ... If so, did this happen immediately after the program? ... If so, did the difference continue?

A 30-minute timeframe was regarded as sufficient for three reasons. First, according to Cropley (2002, p. 64) this type of interviewing is considered to be a “low level of intensity contact”, and therefore would take little time to conduct. Second, because I conducted the intervention program, I knew the participants and therefore anticipated that I would quickly be able to ease them into the interview procedures and situation. Third, there were few questions.
Semi-structured interviewing was regarded as most likely to elicit optimum descriptions and explanations in this study. According to Sorrell and Redman (1995) and Quine and Taylor (1998), semi-structured interviewing allows the interviewer to have a balance of structure and flexibility with a mixture of open-ended questions and closed questions in a directed and predetermined order. In addition, the interview guide can provide useful probing questions that enable the interviewer to guide the interview (Sorrell & Redmond, 1995). The use of probing is a characteristic of semi-structured interviewing which is intended to clarify the meaning that the participants attach to the interviewer’s main questions. Quine and Taylor (1998) argued that the ability to probe and the acceptance of this by the participant is what distinguishes face to face interviews from ordinary conversations.

As the interviewer, my aim was to maintain rapport and to direct the interaction with a focus on the scheduled questions. The respondent was seen more as an informant responding to the questions by specifically elaborating upon them rather than as, for example, a partner in establishing the deep meaning of a topic. Quine and Taylor (1998) and Cropley (2002), among other researchers, recommended that the social construct of the language of interviews needs to be considered by the interviewer. Because of my prior contact with the participants, I was familiar with the language of the participants and I anticipated that some of them might veer from the topic. Therefore, the following probing and prompting questioning techniques, were considered, including repeating questions and slightly rephrasing questions, in order to keep the focus and flow of the conversation on the topic. First with a focus of mental well-being behavioural changes the following questions were considered: For example, in the way you felt about yourself? or Any difference in the way you felt about yourself? Second if participants had difficulty in discussing creativity the following questions might be asked: Over the last eight months did you notice any changes in the way you think? For example, about the way you solve problems or in the way you go about doing anything new in your life?” or, “Could you please tell me more about …?"

Additional questions were asked in order to collect any other descriptions of mental well-being and creativity. For example, “Did you have any feelings, thoughts, or experiences from participating in the creativity program that we have not covered?” and, “Is there anything else that I have missed, or that you might like to discuss about
how the research program affected you?” In addition, I sometimes asked, “Was there anything that was new for you in the program?” As a result, through their participation in the interviews the participants were able to expand on their notions of mental well-being or include other aspects of mental well-being and creativity.

Interviews were tape recorded and subsequently transcribed verbatim, resulting in 113 pages of raw data, averaging about five pages per participant. These transcriptions were analysed. Each transcript had line numbering inserted so that quotations could be exported, enabling an audit trail.

5.3.3 Organising the raw data

Because it is difficult in qualitative research to separate organisational and management actions from analytical actions, many different strategies have been recommended that can be employed at different points in the process (DePoy & Gitlin, 2005). However, in this study one strategy taken from a particular approach to qualitative research, framework analysis (Ritchie & Spencer 2002), was initially used as a guide because it was an uncomplicated way to manage the raw data files. Specifically, framework analysis is a systematic approach for classifying and organising data according to key themes subdivided by a succession of related subtopics, concepts, and emergent categories. According to Ritchie and Spencer (2002), framework analysis is well suited to applied studies of health practice and policy. The purpose was to use framework analysis solely to manage the data. For example, it was used to extract the data that are required, and subsequently develop a matrix framework with which to examine the data for patterns and connections. For example, an Excel matrix table can be drawn up in which each case has its own row, and the columns represent subtopics. The matrix cells can contain relevant summaries from the data set. In the present study, an Excel framework matrix was developed. Each row involved a particular interview question, and each participant had his or her own column containing content units and sub-content units, so that there was a parallel structure for all participants.

5.3.4 Summarising and clarifying content

Many transcripts contained passages of text of meaningless elements that had to be removed in the process of summarising and clarifying and before the coding of the
content units (Cropley, 2002; DePoy & Gitlin, 2005). The following example demonstrates this process of preliminary analysis and the typical language of many participants. On first reading, the following response from Margaret appeared to be unrelated to the main question. In addition the response was clouded in irrelevant language, for example, “um”s, “and that sort of”, “you know”, “yeah, you know like um” etc.

My ah, stepson and his wife, they um divorced and got remarried again. They’ve got three beautiful little children. Anyway um, they sort of um. To me they got married too quick. I sort of said to them, you shouldn’t have done that because you should have taken more time, but you know, that was their business. They got married. Anyway uh, it um, you know, she’d keep ringing up and uh, he’s doing this and he’s doing that, and he’s been up the sale, and she’ doing this and she’s doing that, and uh [pause] and any way, Boxing day when we went up they’re having this, oh you know, having little digs at each other in front of the kids, and uh so I just uh I’d had enough, I’d had a couple of wines so I was in the right mood [big laugh] and I went um, I just said to them, Right, in this room both of you right now. And uh, so they came in. I said, sit down. What is between you and Helen, and Helen between you and David, is your business. I said, your children don’t have to hear about it. I said, and the problem with you both is, you can tell me to mind my own business, but the problem with you both is neither one of you talks about your problems to somebody else. I said, right, we’re here in this room right now. I said, David, I want you to tell Margaret what … you off, oh, I better not say that.

Eliminating irrelevant language and re reading her transcript revealed its “true” meaning from the point of view of the present study. It was noticeable that Margaret’s first response above to my main question was an elaboration, an explanation of a newfound behavioural change of assertiveness, a new way of “working it out” with her family. Margaret attributed this change to the effect of participating in the creativity intervention.

I think the program, I’m sure the program, has helped me because I feel, you know, well yes it does make sense. You’ve, there is a way of working things out. It mightn’t take today, it mightn’t be, it mightn’t take tomorrow, it might take six months, but, there is ways of, of working it out.
5.3.5 Substantive coding

The initial analysis began by examining the transcript of each participant’s interview and highlighting content units (passages of text) involving specific words or phrases referring to events, behaviours, feelings, changes in attitude, or actions concerning creativity and mental health. Each new content unit was compared with other content units in the participant’s transcript (Luborsky & Lysack, 2006). A short note identifying code ideas and code labels was written in the margin of the transcript. Each transcript was reread in order to grasp the sense of the whole transcript, and patterns and irregularities in the transcript were sought to differentiate these from each occurrence of particular content units. The frequency of each content unit was identified and from this process similarities of content units were sought (Cropley, 2002; Gifford, 1998).

The analytical process continued throughout each reading of each participant’s transcript. A coding list was developed separately in which changes in behaviour and feelings were summarised. Every time a new content unit was selected it was added to the coding list. This list was then used in further readings to mark up participants’ transcripts and content units and to compare them with other participants’ content units. The process of constant comparison resulted in a combination and reduction of relevant content units, resulting in about 49 content units. A “mapping” technique was then used. This involved physically cutting out the 49 content units from a Word document and moving, grouping, regrouping, and sub-grouping them according to their respective similarities and differences. Using this technique it was possible to count the number of participants who mentioned a particular content unit and how often they mentioned the content unit. At that point in the analysis there was a repetition of content units/themes and no new codes were being generated. The process of grouping the content units according to data similarities and differences revealed that data saturation was being reached and that the 49 content units could be reduced to 10 themes/categories. Subsequently respondent validation / member checking was conducted via telephone with all 24 participants. All participants confirmed the data from their interview transcripts, and only one participant revealed new material. As a result of the participant confirmation, and various critiques with colleagues about the data analysis the 10 categories were collapsed into five categories. See Appendix I. These were then coded and definitions were created for the following five codes.
**Code 1:** I am stronger, more confident (13 participants). Definition: The participants took deliberate action to change an aspect of themselves for the better either an intrapersonal or interpersonal communication aspect, and this made them feel emotionally or mentally stronger in themselves. The participants’ accounts described increased assertion or autonomy. The new actions were the result of thinking through issues and a way of working things out. The intervention program was a catalyst for personal change. Participants felt validated by the group experience, especially about issues concerning the ageing process, and were confirmed in their personal values, attitudes, and beliefs.

**Code 2:** More outgoing and changed my thinking about people (8 participants). Definition: Being in the midst of other people, getting to know new people, and doing activities together resulted in being more outgoing. Group members gave others confidence and courage in dealing with life’s issues by problem solving together. Participants felt they were involved more in the community, and this was brought about by meeting people in an emotionally safe environment. Participants related having realised some of their personal communication weaknesses and as a result made changes in their interpersonal behaviour. Participants made positive comments about enjoying others and appreciating their different outlooks in problem solving and everyday issues.

**Code 3:** Thinking more in a different way (9 participants). Definition: Participants reported that they now had a way to work things/issues through (referring to the intervention), and this had increased their self-esteem. This implied that the participants felt stronger and more confident in themselves. Participants described a range of new problem-solving techniques that they had applied to various everyday activities. Participants related being motivated to keep their mind/brain active.

**Code 4:** Planning and doing things in a new way (9 participants). Definition: Participants related putting plans into action in their daily lives, and in that sense they had made some lifestyle changes. Participants described a variety of lifestyle changes and their positive feelings about the changes.
**Code 5:** Calm, content, open to life (3 participants). Definition: Participants strongly described the positive affect of changes they had made either in an attitude or on outlook on life.

These categories were given labels that reflected the most common language contained in the content units defining each category (see Denzin & Lincoln, 2005). In qualitative research, because a text always involves multiple meanings, it is the researchers’ responsibility to hold in check their own particular perspective on the object of interest and let the text talk and not impute meaning that is not there (Graneheim & Lundman, 2004; Patton, 1990). The five categories that emerged here were *Confident and stronger; More outgoing, changed my thinking about people; Thinking more in a different way; Planning doing things in a different way; and Calm, content, open to life*. See Appendix I, Substantive Coding of Interview Transcripts.

### 5.3.6 Theoretical coding

An initial theoretical overview of the five categories revealed a broad range of individual benefits that included intrapersonal and interpersonal characteristics, encompassing cognitive and lifestyle domains. For example, *Confident and stronger* and *Calm, content, open to life* involved intrapersonal benefits, *More outgoing—changed my thinking about people* equated to interpersonal benefits, *Thinking more in a different way* related to cognitive benefits, *Planning doing things in a different way* referred to lifestyle benefits. The descriptions of the terms intrapersonal and interpersonal are based on Howard Gardner’s theory of multiple intelligences (Solomon, Powell, & Gardner, 1999).

Subsequently the data were specifically analysed to ascertain whether pre-existing theories were evident in the content units within the five categories. Words and terms that were the same, or similar, or closely implied pre-existing theoretical concepts of mental well-being and creativity were regarded as verifying or at least supporting that particular theory.
The pre-existing theories of mental well-being were drawn from the definition of mental well-being\textsuperscript{10} and the literature by leading theorists and researchers (see Chapter 2; Keyes, 2005; Ryan & Deci, 2001; Ryff, 1989b; Stewart-Brown & Janmohamed, 2008). Any word that described either of the two dimensions, hedonic and eudaimonic, that underpin the theory of well-being was seen as theoretical evidence in the data. Any reference to a subjective experience of happiness (affect), and life satisfaction (hedonic dimension), and including positive affect, feelings of optimism, cheerfulness, and relaxation was noted, and any reference to positive psychological functioning, satisfying interpersonal relationships, and self-realisation/acceptance (eudaimonic dimension), including personal growth/the capacity for self-development, positive relations with others, autonomy, self-acceptance, and competence was regarded as support in the data for both the hedonic and the eudaimonic theories.

The pre-existing theories of creativity were educed from the literature and the definition of creativity\textsuperscript{11} as presented in Chapter 2. Any words, or terms, and descriptions that reflected, or resembled, the main theoretical components of creative thinking, creative problem solving, and the process involved including fluency, flexibility, originality, elaboration, and mental risk-taking were taken as signs of matches with existing theory. Any accounts of change in the conduct of activities that highlighted a new way of thinking about problem solving, or taking up a new activity, or doing an activity in a new way, or changing relationships in a new way was marked as matching the theory. Any apparent descriptions that appeared to provide evidence of the humanistic theory of self-actualisation and its connection with creativity, the theoretical concepts of everyday creativity (Richards, 2010), practical creativity (Marsiske & Willis, 1998), and the theoretical concepts within the Four C model of creativity (Kaufman & Beghetto, 2009) were treated as signs of theoretical verification within the data.

\textsuperscript{10}Mental well-being relates to a person’s psychological functioning, life-satisfaction and ability to develop and maintain mutually benefiting relationships. Psychological well-being includes the ability to maintain a sense of autonomy, self-acceptance, personal growth, purpose in life, and self-esteem. Staying mentally healthy is more than treating or preventing mental illness (Stewart-Brown & Janmohamed, 2008).

\textsuperscript{11}Creativity is a complex phenomenon and incorporates creative thinking and the creative arts (Runco & Pritzker, 1999). It involves the generation of effective novelty (Cropley, 2005), and can be used in ordinary everyday activities (Richards, 2010). Its processes and outcomes are meaningful to its user and generate positive feelings (Schmid, 2012).
5.4 Results and discussion

The results of the five categories, Confident and stronger, Calm, content, open to life, More outgoing—changed my thinking about people, Thinking more in a different way, Planning doing things in a different way, arose from the substantive data analyses, and are presented below. Direct quotations illustrate the main findings. The aim was also to illustrate how the method of theoretical coding was used to link the substantive data/content units with pre-existing health, psychological, and education theories, as identified in the literature review. Within each category a table highlights the findings of the main content units and theoretical coding. Issues that arose from the results and discussion are presented within the final Section 5.7 Conclusion.

5.4.1 Category 1: Confident and stronger

Thirteen participants stated that they experienced an increase in confidence (for example, feeling confident, feeling stronger). “Feeling confident” has been identified as a concept of mental well-being (Ryan & Deci, 2001). The term was included as an item in the WEMWBS by Stewart and Janmohamed (2008). Table 5.1 contains the main content units and theoretical concepts that emerged in this category.

The following account by Corinne strongly indicates that she took deliberate action to change her behaviour as a result of participation in the intervention. Furthermore her account illustrates self-knowledge and is one in which she sees herself as growing and expanding.

It definitely has given me the courage to go in and fight for myself … I’ve taken charge of my life a bit better within my family…specifically in relation to negotiating with people and for some reason, a group of people around that are being themselves and being open, gave me that courage … so it’s given me the confidence.
Table 5.1

Content Units and Concepts. Category 1: Confident and Stronger

<table>
<thead>
<tr>
<th>Content units</th>
<th>Concepts</th>
</tr>
</thead>
</table>
| Definitely given me the courage to go in and fight for myself… I’ve taken charge of my life a bit better… I feel stronger… it’s OK to be me again … I was pleased for that reawakening. | Personal growth
Positive affect, assertion, Autonomy, confident Creativity |
| I’m a stronger person … there is a way of working things out.                  | Personal growth
Self-realisation
Self-esteem
Positive affect, confident Competence |
| More confidence not to keep thinking how stupid I was.                         | Satisfaction with life
Competence |
| More confident at being myself … to express myself and it was alright to be how you are. | Positive affect, feeling confident
Self-acceptance |
| I could understand my own problems, helped me to have a better understanding, it gave me more self-esteem. | Feeling confident
Competence
Self-realisation |
| I’m capable of dealing with things … I’m not old and silly … satisfied.         | Self-realisation
Satisfaction
Positive affect
Competence |

Corinne’s account revealed that she experienced personal growth in two areas: assertion and autonomy. Personal growth/the capacity for self-development is viewed as a component of mental well-being according to Stewart-Brown and Janmohamed (2008). Ryff (1989a) operationalised and contextualised the concept of personal growth within the model of successful ageing, and it is also included within the theory of psychological well-being (Ryff & Keyes, 1995). These data supports Ryff’s (1989a) theory of mental well-being and successful ageing, especially the perspective that in old age subjective well-being does not decline. According to Ryff (1989a, p. 46) an older adult who scores high on personal growth “has a feeling of continued development; sees self as growing and expanding; is open to new experiences; has sense of realising one's potential; sees improvement in self and behaviour over time; is changing in ways that
reflect more self-knowledge and effectiveness”. The attitude that one sees life as an opportunity for personal growth has also been identified as a factor of successful ageing by Rowe and Kahn (1988). This meaning of personal growth has also been echoed since by numerous researchers, including Ryan and Deci (2001) and Marks and Shah (2007), and has been further developed by creativity and humanistic psychology theorists (see Arons & Richards 2010).

Ryff (1989a, p. 46) also included autonomy as one of the six criteria of successful ageing, and operationalised the concept. According to Ryff (1989a, p. 46) a person rated as a high scorer on autonomy would be one who “is self-determining and independent; able to resist social pressures to think and act in certain ways; regulates behaviour from within; evaluates self by personal standards”. Furthermore, Ryff and Keyes (1995) included autonomy as one of six dimensions within the model of psychological well-being, and Ryan and Deci (2001) included autonomy as a condition that facilitates well-being in their discussion of the theory of self-determination. From the perspective of humanistic theory, it is apparent that Corinne’s account (see above) comes from a person who has “actualised” her full potential, at that point in time, in order to make a change in her life. According to humanistic psychology theorists a self-actualised person is mentally healthy and “fully functioning” (Buckmaster & Davis, 1985; Maslow, 1962b). The concept of “personal growth” employed by well-being theorists appears to be synonymous with the concept of “self-actualisation”. “Feeling confident” infers the concept of positive affect, which has been recognised as a component of the hedonic dimension of mental well-being (Ryan & Deci, 2001; Stewart-Brown & Janmohamed, 2008).

The following account is also an illustration of personal growth, increased autonomy, and assertion. Margaret described how she made a decision half-way through the intervention that “life was too short” and that she needed to stand up more for herself in her interactions with her family. See Section 5.2.4 for Margaret’s full account. Margaret’s increase in autonomy is reflected in the words “life was too short”, and this also implies that she was experiencing a sense of urgency to achieve personal behavioural change and to fulfil a need for psychological growth. Margaret’s account also suggests that the intervention, the creativity program, was a catalyst for personal change. Ryan and Deci (2001) argued that the concepts of autonomy and fulfilment of
the need for psychological growth are anchored in the theory of self-determination and are linked to well-being. Thus, this account can also be interpreted as a reflection of Maslow’s theory of self-actualisation (1962b; Arons & Richards, 2015). That is, Margaret was actualising her full potential to make a change in her behaviour. Margaret concluded her account by stating “I’m a stronger person … there is a way of working things out”. Finding a “way to work things out” implies that this was a “new” way, and this also suggested that she deliberately used creative problem solving in finding a form of expression that suited her needs, concerns, and situation. In Margaret’s and Corinne’s accounts there are apt descriptions of the solutions to everyday life issues and problems through the use of creative thinking, and they are typical examples of the usefulness of exerting everyday creativity and “little-c” creativity as related in creativity research (Kaufman & Beghetto, 2009; Richards, 2010). From a humanistic point of view it would not be unusual to link Margaret’s “self-actualisation” to her use of creative thinking to resolve her everyday issue.

In the following account Barbara reported that the creativity program

gave me more confidence not to keep thinking ‘how stupid I was because I couldn’t express myself’ and that really did perk me up with a lot more confidence. … I felt as though my brain was starting to get back to what it was before, because I felt that I was getting senile. I was going to say words, and I had a picture of them in my mind, but I couldn’t get them out of my mouth. I found that I was sparking [referring to her experience of being in the creativity program], and I was linking into things, that made me personally feel much better.

This account indicated that Barbara increased her confidence because she realised how her thoughts had become negative. Strong positive affect is clearly visible within this account, revealed by the use of terms “feel much better”, and “it did perk me up with a lot more confidence”. Positive affect is a component of the hedonic dimension of mental well-being (Huppert, 2007; Ryan & Deci, 2001; Stewart-Brown & Janmohamed, 2008).

In addition, within Barbara’s account there is a distinct link to the concept of competence (Ryff & Keyes, 1995). Barbara’s increase in confidence led to increased self-esteem because she was able to connect in a way that was previously difficult.
According to Ryan and Deci (2001, p. 146), the concept of competence lies within the theory of self-determination. The theory is based on the concept of active “individual self-realisation”, and is strongly linked to the human psychological need for fulfilment (Ryan & Deci, 2001). Competence is also regarded as a component of positive psychological functioning (= eudaimonic dimension of well-being). Ryff (1989a), in formulating the theory of successful ageing included competence, and operationalised it within the concept of environmental mastery. For example, “a person who would score high on environmental mastery is one who has a sense of mastery and competence in managing the environment; controls complex array of eternal activities; makes effective use of surrounding opportunities; and is able to choose or create contexts suitable to personal needs and values” Ryff (1989a, p. 46). In addition, Ryff and Keyes (1995) positioned the concept of mastery within their theory of psychological well-being, and Stewart-Brown and Janmohamed (2008) included the concept of competence within their definition of mental well-being. In reference to Barbara’s account, it was apparent that it was only through self-realisation that she gained positive affect and increased competence. Barbara’s account conclusively aligns with the theory of mental well-being and successful ageing by Ryff (1989a) and supports the predictive factors of successful ageing that have been elaborated by Rowe and Kahn (1988), Depp and Jeste (2009), and Pizzi and Smith (2010).

Other participants’ accounts echoed Barbara’s increased feelings of competence in slightly different ways. Ann reported she had a

better understanding of self. … I couldn’t bend to get to things so I had to work out how to live … so … I had a way of thinking about how to live … it helped me to understand my own problems to have a better self-understanding, it gave me self-esteem.

Another participant, Esther, explained how important it was to be able to deal with things capably and that this gave her satisfaction, “I’m capable of dealing with things … when a problem comes up, I can really think it through”, and to have it confirmed made her “satisfied”. According to Ryan and Deci (2001, p. 156), as indicated earlier, feeling confident has been associated with well-being through a connection with perceived competence, as well as self-efficacy. Being satisfied with life is a recognised component
of subjective well-being, a component of the hedonic dimension of well-being, and Ester’s account in particular revealed her satisfaction.

Another four participants stated they felt increased confidence in a range of different contexts. For example, Beth reported she was “more confident at being myself”, and “It’s alright to be myself”; Jerry claimed he was “a better listener”; Kevin admitted that “I’m more conscious of other people's feelings now than I used to think”; and David affirmed that “It [refers to the creativity program] opened me up … I’m not just going to sit away and rot just because I have difficulties. I’m going to get out and do something”. These content units also pertain to other categories and are discussed in subsequent sections of the results.

In summary, all accounts in this category implied beneficial changes in participants’ personal growth and that these benefits occurred from participating in the creativity program. Within the accounts a combination of hedonic and eudaimonic theoretical perspectives of well-being was presented, matching the theory by Ryff (1989a) and the predictive factors of successful ageing according to Depp & Jeste, (2009), provided evidence that the 13 participants in this category were participating in life in a more positive healthy way since the creativity program.

5.4.2 Category 2: Calm, content, open to life

The following two accounts strongly articulated the changes made in either an attitude, or an outlook on life as a result of participating in the creativity program. Table 5.2 contains the main content units and theoretical concepts that emerged in this category. The first account by Celia is particularly interesting in that she pointed out how she made changes to how she thought about getting older.

My whole outlook has become very positive. Before I was locked into that, ‘I’m getting too old to do this’ and it jolted me out of something that could have gone into self-pity…I picked up in the program about positive thinking, how to think outside the square … I was even able to support my son … this helped me and I use it.

The feeling of optimism, positive affect, is noticeable in Celia’s account as well as the change she made to her thinking. Celia recounted that she used the creative problem
solving process taught within the intervention to help her solve problems with her family. Feeling optimistic is a concept of the hedonic dimension of well-being, and has been included as an item within the WEMWBS (Stewart-Brown & Janmohamed, 2008). The account by Celia is a particularly strong example of a connection between mental well-being and creativity. This account demonstrated the participant’s ability to solve problems in later life and also reflected her adaptation to the ageing process. These data match the theories of everyday creativity (A. J. Cropley, 1990; Kaufman & Beghetto, 2009; Runco & Richards, 1997), but especially the theory of practical creativity, according to Hickson and Housley, (1997) and Marsiske & Willis (1998) who theorised about the ability of older adults to solve everyday life problems creatively.

Table 5.2

<table>
<thead>
<tr>
<th>Content Units</th>
<th>Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>My whole outlook has become positive.</td>
<td>Personal growth</td>
</tr>
<tr>
<td></td>
<td>Positive affect, optimism</td>
</tr>
<tr>
<td>My attitude to life is brighter.</td>
<td>Personal growth</td>
</tr>
<tr>
<td></td>
<td>Positive affect, optimism</td>
</tr>
<tr>
<td></td>
<td>Relatedness</td>
</tr>
</tbody>
</table>

The account by Evelyn is where she acknowledged that her attitude to life is brighter now. When I telephoned her to discuss the interview transcript Evelyn disclosed that being a participant in the program “opened her up” in a very meaningful way. She explained that for the first time in her life, during the creativity program, she “felt a part of a group”. Her explanation for this was that she had a very difficult early emotional life and that she had always felt like an outsider in terms of relating to groups of people. At 79 years of age, she stated that she now felt able to talk about it, and that “it has surfaced for the first time … it has taken me until now to put it into words”. Her account is an illustration of self-knowledge, and one of deep personal growth, and, as stated earlier, personal growth is regarded as being connected to mental well-being. The description by Evelyn is an example of how the combination of two dimensions of mental well-being, the hedonic (positive affect) and eudaimonic (personal growth)
dimensions, can be displayed in one account (Ryan & Deci, 2001). The account is also a reflection of the theory of self-actualisation (Arons & Richards, 2015; Maslow, 1971), and again indicates that participants are active in ageing successfully because they demonstrated an attitude that sees life as an opportunity for personal growth (Depp & Jeste, 2009; Pizzi & Smith, 2010; Ryff, 1989). This account therefore revealed that older people are eager to make new changes in their life.

A central message from these results indicated that personal growth and maintaining and learning cognitive skills in ageing were of foremost importance in the participants’ lay formulations of mental well-being and creativity. The descriptions reinforce the growing evidence that older age for many is a time for personal growth, a time to confirm values and beliefs with others, and a time to make changes that have been overdue. These data also support the findings of previous studies by Rowe and Kahn (1988), Smith et al. (2009), Ball et al. (2002), Kramer et al. (2004), Valenzuela (2005), and Cusack et al. (2003) who reported that older men and women can improve their cognitive function.

5.4.3 Category 3: More outgoing, changed my thinking about people

There were eight participants’ content units grouped in this category. Most participants specifically pointed out that being in the midst of other people in the creativity program, getting to know new people, and doing activities together resulted in being more outgoing than they had been before participating in the intervention. Table 5.3 contains the main content units and theoretical concepts that emerged in this category.

Some participants acknowledged that being with others in the sessions on solving problems creatively validated the way they thought about life and problems, and subsequently this made them feel confident in themselves. For example, Evelyn claimed that “being in a group, made us more outgoing, made us think more, and made us more active with other people”. Evelyn declared that this experience made her confident about “coping with life”. Georgina explained that “it opened up new people for me”. David pointed out just how important it was being with others in the creativity program.
Table 5.3

**Content Units and Concepts. Category 3: More Outgoing, Changed My Thinking About People**

<table>
<thead>
<tr>
<th>Content units</th>
<th>Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being in a group made use more outgoing made us think more and made us more active with other people…coping with life</td>
<td>Motivation</td>
</tr>
<tr>
<td></td>
<td>Relatedness</td>
</tr>
<tr>
<td>It opened up new people for me…to get out and involve myself, which is good.</td>
<td>Self-realisation</td>
</tr>
<tr>
<td></td>
<td>Relatedness</td>
</tr>
<tr>
<td>I feel more of a participant in the community again…I got very interested.</td>
<td>Relatedness</td>
</tr>
<tr>
<td></td>
<td>Sense of belonging</td>
</tr>
<tr>
<td></td>
<td>Relatedness</td>
</tr>
<tr>
<td>Reinforced in the view that others don’t owe you…you owe yourself and family…be positive.</td>
<td>Self-realisation</td>
</tr>
<tr>
<td></td>
<td>Relatedness</td>
</tr>
<tr>
<td></td>
<td>Optimism</td>
</tr>
<tr>
<td></td>
<td>Relatedness</td>
</tr>
<tr>
<td></td>
<td>Personal growth</td>
</tr>
<tr>
<td>Better listener</td>
<td>Personal growth</td>
</tr>
<tr>
<td></td>
<td>Positive affect</td>
</tr>
<tr>
<td>Everyone’s got something special.</td>
<td>Personal growth</td>
</tr>
<tr>
<td></td>
<td>Positive affect</td>
</tr>
<tr>
<td>More conscious of other peoples’ feelings now</td>
<td>Personal growth</td>
</tr>
<tr>
<td></td>
<td>Positive affect</td>
</tr>
<tr>
<td>Negotiating with son.</td>
<td>Personal growth</td>
</tr>
<tr>
<td></td>
<td>Positive affect</td>
</tr>
</tbody>
</table>

But I think the real trouble was, when my wife died I found out I didn't know anybody, I mean literally … and so it's pretty hard just not knowing people. So anyway you gradually build up people you meet and things, and of course they've all disappeared now so I'm on a second wave of people ... so (the program) it's helped me to get out and involve myself, which is good”.

Corinnee related that she now felt that she belonged more to the community.

I feel more a participant in the community again through meeting people in a very safe environment, without making a personal commitment to the other people, so that was very positive for me … for some reason, a group
of people around who are being themselves and being open, gave me that courage … I just felt … I was just emotionally reaching out but I felt it back”.

Some participants were interested and enjoyed listening to other people and appreciated peoples’ different outlooks because it furthered their ability to problem solve. For example, Corinne stated “I got very interested listening to people speak, different outlooks on similar subjects, I always find interesting, because we all see things so differently”. This account is distinct in its connection to mental well-being because Stewart- Brown and Janmohamed (2008) itemised the notion of “being interested in new things” in the WEMWBS.

Jerry confirmed that through the interaction with others he felt reinforced in his view of thinking positively.

Hey, there’s more to life than locking yourself up. Get out and be proactive, and get into it, so the interaction with those people reinforced in me the view that others don’t owe you. You owe yourself and your family to get up and about, and be positive when you get up every day.

Positive relations with others is a dimension of mental well-being identified by Ryff (1989a), and echoed by all well-being researchers including Stewart-Brown and Janmohamed (2008), Keyes (2013), and Huppert et al. (2007). Specifically, a person who would score high on positive relations has warm, satisfying, trusting relations with others, is concerned about the welfare of others, is capable of strong empathy, affection, and intimacy, and understands give and take of human relationships” (Ryff, 1989a, p. 46). Ryan and Deci (2001) recognised that positive relatedness is a condition that facilitates well-being, and they included it as a component within the theory of self-determination. Stewart Brown and Janmohamed (2008) also acknowledged that satisfying interpersonal relationships is a component of positive psychological functioning, and described it as resting rests within the eudaimonic view of mental well-being. Moreover, the significance of positive relatedness is evident by it being included in the WEMWBS instrument in three ways; “I’ve been interested in other people”, “I’ve been feeling close to other people”, and “I’ve been feeling loved” (Stewart-Brown & Janmohamed, 2008).
Four participants related changes that had positive benefits for their interpersonal relationships, and these changes had increased their confidence. The participants appeared to be aware of their own strengths and weakness in social relations, and the interpersonal communication/relatedness areas in which they made their changes were unique to each participant. For example, Jerry became a better listener, Evan related a new awareness that changed his thinking about people, and “everyone’s got something special”. Kevin stated that he was more conscious of other peoples’ feelings now than he used to be. Celia related changes in her negotiating skills with family. These accounts were also included in the first category because there is some interconnectedness between being more outgoing, changed my thinking about people with feeling confident and stronger.

The participants’ accounts were imbued with descriptions of increased positive affect. Participants described how being in a group situation, in the creativity program, encouraged them to see different viewpoints, and that as a result feelings of optimism grew which enabled them to realise their capabilities. The participants declared that working in a group helped them make decisions about communicating with others in a different and meaningful way, and that this enabled them to feel that their interpersonal relationships were more satisfying that they previously thought. These notions of positive relatedness were explicatated in humanistic psychology theory and were strongly associated with the 1960s Human Potential Movement. These notions are now visible in the contemporary transpersonal psychology, and positive psychology theories (Ryan & Deci, 2001; Schultz, 1973; Seligman & Csikszentmihalyi, 2000). Mental health theorists have continued to support the term self-actualisation. However, the term often appears as “personal growth”, or “self-development”. Maslow and Rogers linked self-actualisation to creativity (see Arons & Richards, 2015; Maslow, 1962a; Rogers, 1970b). However, as yet, current mental well-being theorists have not elucidated any link between self-actualisation/personal growth and creativity.

Nevertheless, satisfying positive relatedness is a component within the eudaimonic dimension of well-being (Ryff, 1989a; Ryff & Keyes, 1995; Stewart-Brown & Janmohamed, 2008). From a creativity theory perspective, research findings by Simonton (2003), Dugosh and Paulus (2005), and Dugosh et al. (2000) suggested that creative problem solving training is enhanced when participants are in a group situation.
This is also apparent in the accounts above. All participants’ accounts in this category were descriptions of personal growth/self-actualisation where the participants related that they had increased their understanding of themselves as a result of being a participant in the creativity group program. The participants in this category realised more about their own personal communication weaknesses and strengths than other participants in the intervention, and their accounts revealed that they were pleased about that (= positive affect of well-being).

5.4.4 Category 4: Thinking in a different way

Nine participants in this category directly attributed a change in their daily thinking because they were applying the creative thinking techniques as taught in the creativity program to everyday activities. Table 5.4 illustrates the main content units and theoretical concepts that emerged in this category, Thinking in a different way. Participants described a range of creative problem solving techniques that they use. For example, participants reported that they were either thinking more about problems before they resolved them, or were thinking in a different way, or were seeing things from different points of view, or were generating new ideas, or were elaborating on issues, or they were mentally stimulated by the mind/brain fitness activities in the program.

Ida declared, “I think through things more in trying to find out how to solve a problem”. Hilda described how she looks “at problems in a slightly different way, from different angles”. Ann claimed she now had “other ways to think about things”. Hilda’s account implied that she was referring to elements of elaboration, or flexibility, or fluency, all attributes of the creative thinking process (Urban & Jellen, 2010). The account by Ann shows how she linked her feelings to her new behaviour, “It gave me other ways to think about that … I think more quickly … I felt my self-esteem grow, become more positive, because I have weeks of sometimes where I’m low with self-esteem”. Therefore, the concept of positive affect is apparent in Ann’s account and demonstrates the link she has made to thinking in a new and different way. Ann did not use the language of creativity to identify, or link this change directly. However, it is visible through her attribution of behavioural change. Dorothy referred to the value of how the group members, within a session in the creativity program, used one of her everyday problems as an example to practise creative problem solving. She reported:
Table 5.4

(Content Units and Concepts. Category 4: Thinking in a Different Way)

<table>
<thead>
<tr>
<th>Content units</th>
<th>Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>I think through things more in trying to find out how to solve a problem.</td>
<td>Deliberate creative thinking, elaboration</td>
</tr>
<tr>
<td></td>
<td>Competence</td>
</tr>
<tr>
<td>Look at problems slightly different way, different angles.</td>
<td>Positive affect</td>
</tr>
<tr>
<td></td>
<td>Competence</td>
</tr>
<tr>
<td></td>
<td>Creativity, flexibility, problem solving</td>
</tr>
<tr>
<td>It gave me other ways to think I think more quickly…my self-esteem grew.</td>
<td>Deliberate creative thinking: fluency,</td>
</tr>
<tr>
<td></td>
<td>flexibility</td>
</tr>
<tr>
<td></td>
<td>Positive affect</td>
</tr>
<tr>
<td></td>
<td>Competence</td>
</tr>
<tr>
<td>Made me aware of different, different things that are a possibility and how</td>
<td>Creativity, flexibility, originality, problem</td>
</tr>
<tr>
<td>you can use them… Opened that up to ideas that I would never have thought</td>
<td>solving</td>
</tr>
<tr>
<td>of.</td>
<td>Competence</td>
</tr>
<tr>
<td>Woke my ageing brain up again and made me take in more.</td>
<td>Motivation, mental stimulation</td>
</tr>
<tr>
<td></td>
<td>Creativity open to experience</td>
</tr>
<tr>
<td>Reinforced the idea I’ve had about keeping my brain working</td>
<td>Motivation</td>
</tr>
<tr>
<td></td>
<td>Competence</td>
</tr>
<tr>
<td>I have been stimulated to look more into the mind …was very good. It</td>
<td>Deliberate creative thinking, flexibility</td>
</tr>
<tr>
<td>stretched me…things I would not have done before.</td>
<td>Mental stimulation</td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
</tr>
<tr>
<td>More motivated, more active to keep my brain working</td>
<td>Motivation</td>
</tr>
<tr>
<td></td>
<td>Positive affect, feeling confident</td>
</tr>
</tbody>
</table>

I thought it was good because you used my living situation, and opened that up to ideas that I would never have thought of. Very interesting. I think there is a big, a huge value in brainstorming with people on issues that trouble you.
All participants’ accounts centered around competence where participants appeared to be “making effective use of surrounding opportunities and able to choose or create contexts suitable to personal needs and values” (Ryff, 1989a, p. 46). Therefore, it was apparent that the creative problem solving component of the intervention was used because the participants described how they increased their competence by making changes to their everyday activities. These accounts reflected a connection between the theories of mental well-being and successful ageing (Ryff, 1989a), and everyday creativity (A. J. Cropley, 1990; Runco & Richards, 1997).

Five participants strongly pointed out that they were mentally stimulated by the activities within the creativity program, and that was an enjoyable experience. For example, Corinne claimed that the activities in the program “woke my ageing brain up again and made me take more in, which I thought was very good”. Esther believed that the “program reinforced the idea I've had about keep my brain working”. Evan asserted “I have been stimulated to look more into the mind … I continue with my cross word puzzles”. Dorothy admitted that she was “more motivated, more active to keep my brain working” and she also said that she felt more confident as a consequence. These examples indicated the positive affect gained by the participants in doing the body/mind fitness exercises within the creativity program. Furthermore, these accounts demonstrated that the participants felt motivated to keep mentally alert, and within these accounts there is an inference of competence. The accounts in this section also support the findings by Rowe and Kahn (1988), Smith et al. (2009), Ball et al. (2002), Kramer et al. (2004), Valenzuela (2005), and Cusack et al. (2003) who reported that older adults can improve their brain fitness significantly through appropriate practice and training.

This study supports the notions by various neuroscientists including Claxton, (1997), Diamond (2007), Dietrich (2004, 2007), Dietrich and Kanson (2010), and Doidge (2007) that it is important for older adults to deliberately practise stimulating the mind. Participants in the creativity intervention program indicated that they were keen to practise brain-stimulating activities. It is apparent from these accounts that the creativity program provided external motivation that it was a catalyst, and as a consequence they were able to sustain intrinsic motivation to continue practising the exercises in their everyday activities. Ryan and Deci (2001) theorised that intrinsic motivation is essential for psychological growth and placed these concepts within the theory of self-
determination. It appears that these participants were exercising positive well-being, and ageing successfully.

The literature on well-being appears to indicate the importance of using creative thinking as a tool for dealing with adversity and for increasing psychological resilience and competence (Scaffa et al., 2010; Seligman et al., 2005). Stewart-Brown and Janmohamed (2008) included measurement items in the WEMWBS that link cognition and mental well-being. For example, Item 7 of the WEMWBS scale is “I’ve been thinking clearly”, and Item 6 is “I’ve been dealing with problems well”. In addition, there is voluminous creativity literature and research evidence on the benefits of creativity training that have supported the usefulness of creative thinking in seeking solutions to all kinds of work and everyday issues (see Chapter 2). Moreover, using creativity as a thinking tool for adaptation to the ageing process has been researched by Flood and Scharer (2006) and Engelman (1981, 1996a, 1996b, 2000).

In summary, the accounts by participants attributed changes in their thinking to the creative problem solving training provided in the intervention. However, it is difficult to comment on the degree of creativity change that participants have made because many participants provided little context and only fragments of what would be described as new ways of thinking. Participants did report that they were thinking more in a different way, and they used a lay language to formulate their responses regarding mental well-being and creativity. Nevertheless, it was possible to discern that they were describing the use of some core components of creative thinking, for example fluency, or flexibility, or elaboration. Although this type of creativity is not to be confused with the concept of the “Big-C” creativity, which is considered the highest level of creativity and is reserved for the great (Kaufman & Beghetto, 2009). The accounts in this section do indicate that participants were using aspects of the creative thinking process and applying it to everyday issues and problems. Therefore, two theories of creativity, everyday creativity (Engelman 1981; Hasselkus, 2004; Richards, Kinney, Benet, & Merzel, 1988; Richards, 2010; Schmid, 2005) and the “little-c” creativity (Kaufman & Beghetto, 2009) are perceivable within these accounts. The theory of practical creativity (Marsiske & Willis, 1998) is similar to the theory of everyday creativity.
In conclusion, the participants’ rich descriptions impart a strong connection between the parallel cognitive components of mental well-being and creativity. This indicated that the eleven participants within this category had increased their mental well-being that was gained through realising their competence and initiated through practising creative thinking in their everyday situations.

5.4.5 Category 5: Planning and doing things in a new way

This category shows how deliberate new actions were taken by participants as the result of making changes in their thinking processes. Table 5.5 illustrates the main content units and theoretical concepts that emerged in this category.

Eight participants reported beneficial lifestyle changes, either through making decisions about doing practical activities in a “new” way, or adding new activities to their lives. They were either changes in attitude, or thought processes or social relations. For example, Evan declared, “I’ve gone off a lot of what I would now classify as airy fairy stuff that I was involved in, and I’ve become more practical, in my thinking, I believe”. Bruce asserted that he now uses a deliberate conscious creative approach to problem solving.

I do use creative problem solving … it was very enlightening it was covering new territory for me … I’m tending to get into the habit of doing it as a matter of procedure no matter what. Because you might take a task that you’ve done many times before, and you’re into old ways and you’re not, you’re not thinking creatively.

Kevin explained that the program “defined quite a few things … I’ve put a lot of plans in place that I wouldn't have normally done … I think it actually changed a lot of, or sharpened a lot of the way I think”. Kevin reported that he had made changes in his lifestyle by reducing his workload so he could spend more time with his partner.
### Table 5.5

**Content Units and Concepts. Category 5: Planning and Doing Things in a New Way**

<table>
<thead>
<tr>
<th>Content units</th>
<th>Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>I’ve become more practical in my thinking.</td>
<td>Self-realisation</td>
</tr>
<tr>
<td></td>
<td>Personal growth</td>
</tr>
<tr>
<td></td>
<td>Flexible</td>
</tr>
<tr>
<td>I do use creative problem solving … it was very enlightening it was covering new territory for me.</td>
<td>Deliberate new habit/creativity problem solving</td>
</tr>
<tr>
<td>Defined quite a few things…I’ve put a lot of plans in place… I think it actually changed a lot of, or sharpened a lot of the way I think.</td>
<td>Competence</td>
</tr>
<tr>
<td></td>
<td>Creative thinking, original, elaboration</td>
</tr>
<tr>
<td>I can make better decisions (in committee work).</td>
<td>Competence</td>
</tr>
<tr>
<td></td>
<td>Creativity, problem solving</td>
</tr>
<tr>
<td>I’m still doing some cooking that I didn’t do before.</td>
<td>Motivation</td>
</tr>
<tr>
<td></td>
<td>Creativity</td>
</tr>
<tr>
<td>How to think outside the square…and I have used it (in negotiating).</td>
<td>Competence</td>
</tr>
<tr>
<td></td>
<td>Creative problem solving, flexibility, elaboration</td>
</tr>
<tr>
<td>I get myself more motivated, more active…certainly keep up doing puzzles to keep my brain moving.</td>
<td>Motivation</td>
</tr>
<tr>
<td></td>
<td>Mental stimulation</td>
</tr>
<tr>
<td>Reawaken the expressive writing side of me.</td>
<td>Creativity, expressive writing</td>
</tr>
<tr>
<td></td>
<td>Self-realisation</td>
</tr>
<tr>
<td>It reinforced me…the way I’m going about things in the right fashion, which may help me later on when I’m older.</td>
<td>Self-realisation</td>
</tr>
<tr>
<td></td>
<td>Reinforced values</td>
</tr>
<tr>
<td></td>
<td>Competence</td>
</tr>
</tbody>
</table>
Jerry claimed that he is now able to “make better decisions” because he is a better listener, and that he now uses the creative problem solving activities to make better decisions in his work for a national committee.

Making better decisions that in my view is going to help the work [the committee], it’s going to make a major difference over the next three to four years, to the way we work with the community across Australia, in changing behaviour... so obviously, making better decisions I hope is going to be of great value for our national organisation and, literally, for our, Australia.

David revealed that “I’m still doing some cooking that I didn’t do before”. This was described as an active decision, a changed state in attitude, and David gave an account of a new practical action (cooking). This change made a difference in his lifestyle that connected thoughts and practical activities. Celia asserted that she now knows “how to think outside the square … and I have used it in negotiating”. Dorothy affirmed that, “I get myself more motivated, more active … certainly keep up doing puzzles to keep my brain moving”. Corinne discovered that she had “reawakened the expressive writing side of me”. Hilda reported that “it reinforced me … in the way I’m going about things in the right fashion, which may help me later on when I’m older”.

The positive changes to lifestyle indicated that participants were strongly affected by participating in the creativity program. Making and sustaining deliberate changes which are manifested in a change in lifestyle is the epitome of behavioural change and is of extreme interest to health promotional practitioners and researchers (Crosby et al., 2006; Pizzi & Smith, 2010; Reitz et al., 2010). The accounts conveyed the experiences of personal growth, motivation, and competence, in making decisions to affect a change in lifestyle. Making changes to one’s life was not described explicitly by participants as a creative activity. However, making “new” or “different” behavioural changes would be regarded as belonging to the “little-c” category of creativity (Kaufman & Beghetto, 2009), or as reflecting aspects of practical creativity (Marsiske & Willis, 1998), or as exhibiting everyday creativity (Richards, 2010). These accounts suggest that participants are leading a life of positive mental well-being and this appears to be strongly suggestive of successful ageing.
5.5 Rigour

The employment of rich data description, respondent validation, and triangulation strategies, and the provision of a clear audit trail of the study’s processes and procedures have contributed to the rigor of this qualitative study (Sandelowski, 1993; Walsh & Downe, 2006). Rich description of the text provided an authenticity of the subjective experiences as described verbatim by participants. Respondent validation, commonly known as member checking was conducted to enhance credibility of the data. For example, participants were sent a summary of their transcript for verification and comment (Leedy & Ormrod, 2005; Sandelowski, 1993). This enabled some reciprocity in the research relationship, which is a characteristic of the qualitative methodology. Respondent validation/member checking was conducted at the end of the saturation point of analysis. Data source triangulation (Denzin & Lincoln, 2004) was used by gathering the qualitative data from two sources, from the interviews, and the responses from Question A of the creativity program evaluation questionnaire. See Section 5.6 Supplementary analysis for the outcome. Researcher triangulation was used by inviting colleagues to comment on the data analysis. See Section 5.3.4 Substantive coding for the outcome. Theory triangulation was used to match existing mental well-being and creativity concepts to the data. Refer to Section 5.4 Results and discussion for the outcome.

A field journal was kept to log the methods and procedures used in the study. In addition memoing and reflexive journaling was maintained throughout the research process in order to “mitigate the potential deleterious effects of unacknowledged preconceptions related to the research and thereby to increase the rigor of the project” (Tufford & Newman, 2010, p. 81). A field journal was also kept so that the research could be audited by others (Donner & Klar, 2000; Koch, 1994; Krefting, 1990; Quine & Taylor, 1998).

5.6 Supplementary analysis

The creativity program evaluation questionnaire—see Appendix C—was distributed to all participants in the creativity intervention in order to ascertain participant’s evaluation of the overall content and effectiveness of the creativity program. Program evaluations are regarded as informative dynamic processes for effective health promotional practice
(see Chapter 4). It was anticipated that the data would assist in the comparison and interpretation of the quantitative and qualitative data sets that occurs in Chapter 6. Only the data from Question A, *List any changes you have noticed in yourself as a result of participating in this program* were analysed and presented in this thesis, because only this question directly related to the main question of this qualitative study.

Thirty six participants completed the questionnaire and there were 85 comments regarding question A from 35 participants. The concepts pertaining to mental well-being and creativity were noted, as were the numbers of participants’ responses. The method of data analysis was content analysis, according to Gifford (1998), Graneheim (2004), and Cropley (2002).

There were four main resulting themes, *thinking differently, increased positive feelings, increased social skill, and changes in lifestyle*. The main themes revolved around intrapersonal, interpersonal and cognitive characteristics.

Twenty one comments related to *thinking differently*. The typical comments in this theme were “now thinking outside the square”; “now looking at problems from different perspectives, more carefully, by using brainstorming”; “thinking more clearly”; “sitting ‘outside’ a problem before deciding how to solve it”.

Sixteen comments identified *increases in positive feelings/affect*. There was a range of comments in this theme “greater confidence”; “more courage”; “better self-esteem”; “calmer”; and “more reflective”; “better insight”; “stimulated—motivation”; “self-acceptance”.

Eight comments demonstrated *increases in social skills*. For example “listening to others more”, “trying to understand others more”, “being more tolerant”, “seeing how others tackle challenges resulted in being more outgoing”.

There were four comments that were themed *changes in lifestyle*. These included “I can fit in doing more things”, “plan more”, “my writing has improved”, and “more active”.
There were 12 comments that were puzzling because they lacked sufficient detail for interpretation. These comments included “I found the people in the group were interesting”, “I looked forward to attending”, “it gave me more to think about”, and “I enjoyed the exercise”.

In summary, the key finding indicated that the participants were thinking differently and, as a result, had increased positive feelings. The participants attributed this to their involvement in the creative problem solving component of the program. Also, participants reported that they had increased their social skills, and this suggested that they had taken an opportunity in the program to activate their need for personal growth and self-actualisation to improve an aspect of their interpersonal behaviour or circumstances. In conclusion, the key findings were similar to the findings from the interviews, where the main themes revolved around intrapersonal, interpersonal, and cognitive characteristics.

5.7 Conclusion

The main question of the qualitative study was focused on different kinds of change and as a result the majority of participants reported on a range of mental well-being changes that they had sustained since their involvement in the creativity intervention. The participants’ rich descriptions are of particular importance in my field of mental health because they refer to psychological processes and suggest further directions for practice. The qualitative methods explicatated the core of meaning of mental well-being for those older adult participants. This was in contrast to the findings from the mental well-being instrument in the quantitative study. See Chapter 6 for further discussion regarding the outcomes of comparing both data sets. In particular, the operationalisation of the theoretical concepts of psychological well-being by Ryff and Keyes (1995), of successful ageing (Ryff, 1989a), and the continued international support for these concepts (Huppert et al., 2007; Keyes, 2013), strongly confirmed the link between the mental well-being theory, and the theory of successful ageing. This might be of particular interest to practitioners and researchers alike who are involved in mental health promotion, gerontology, and elder care. As yet, current mental well-being theorists have not elucidated any link between self-actualisation/personal growth and creativity.
Overwhelmingly, the findings of this study support the well-established findings of previous qualitative studies with regard to the benefits of creative activity to participants’ psychological and social relationships (Adams-Price & Steinman, 2007; Reynolds, 1997, 2000, 2002, 2003, 2004, 2005a, 2005b; and see references in Sections 2.2.2 Creativity activity, older adults and well-being, and 1.4 Parameters, and Section 5.5 Results and discussion). However, this study advances the findings of previous studies because the data provided novel descriptions that attributed changes in participants’ psychological and social relationships to the deliberate practice of creative problem solving, and participants’ needs for self-actualisation / personal growth, and well-being. The findings reflected, and therefore supported, the theory of creativity that there is a connection between creativity, self-actualisation, and well-being, as discussed by Maslow (1962a; 1971) and Rogers, (1970b), and supported by Arons and Richards (2015).

Moreover this study advances, in particular, the knowledge of practical and everyday creativity in older adults because the sample was active older adults who were not especially involved in arts or craft based activities in their everyday lives. Therefore the data would be of interest to researchers from a variety of disciplines, especially those researchers who have predicted the factors of successful ageing (see Deep & Jeste 2009; Pizzi & Smith, 2010; Rowe & Kahn, 1988; Ryff 1989a). Future research building on the findings of this study is very likely to reveal that creativity is a predictive factor of successful ageing. A potential outcome of future research may inform health and arts-based practitioners about the benefits of creativity in the psychological care for clients and their careers.

The accounts from the majority of participants were striking in that the participants indicated that the creativity intervention, and especially the creative problem solving aspects, was a catalyst for personal growth. The accounts from the participants revealed that they had used the knowledge from participating in the creativity intervention for psychological growth. As illustrated in Section 5.5 Results and discussion, the similar theories of everyday creativity (A. J. Cropley, 1990; Runco & Richards, 1997), “little-c” creativity Kaufman & Beghetto (2009), and practical creativity (Hickson & Housley, 1997; Marsiske & Willis, 1998) were visible in all of the resulting categories. This demonstrated older adults’ ability to solve problems creatively in later life, and provided
insights into older adults’ ability to adapt to the process of ageing. Therefore this study contributes to new knowledge by increasing understanding about how important problem solving is to older adults, and provides insights into potential factors that influence creative thinking in older adults.

The findings of this study also support the findings of previous studies by Rowe and Kahn (1988), Smith et al. (2009), Ball et al. (2002) Kramer et al. (2004) Valenzuela (2005), Cusack et al. (2003) who reported that older men and women can improve their cognitive function significantly through appropriate practice and training. In addition, this study support the notions by various neuroscientists that it is important for older adults to deliberately practise stimulating the mind (Claxton, 1997; Diamond, 2007; Dietrich, 2004, 2007; Dietrich & Kanson, 2010; Doidge, 2007). Consequently not only was the theory of creativity verified but the theory was extended. Further investigations examining causality into the psychological connections between creative problem solving and health effects is recommended.

In this qualitative study, 24 participants were interviewed. Because there were no statistically significant differences between the participants who were interviewed for the qualitative study and those who were not interviewed but had also been members of the intervention group on either creativity or mental well-being at any of the three points of the data collection, there does not appear to be a positive bias created by the sampling method of self-selection among those who were subsequently interviewed. If purposive intensity sampling had been used instead of self-selection, or if the total number of participants from the intervention had been interviewed, different results may have been obtained. Nevertheless, the results from this qualitative study showed that older adults enjoyed learning and maintaining mental alertness.
DISCUSSION AND CONCLUSIONS

6.1 Introduction

The aim of this chapter is to present the outcomes of the mixed method research in relation to the overarching research question, “Is there an effect on creativity and mental well-being from participating in a creativity enhancement program for people 65 years and over?” A comparison of the data sets from the two studies will be presented. A section follows that contains a discussion about the limitations and strengths of using the mixed method approach. Finally, conclusions and recommendations are presented for future research, practice, and education. As discussed in Chapter 3, using mixed method strategies has the potential to be more useful than if the studies are analysed separately. It was anticipated that this approach would enrich the results in a way not achieved in previous investigations of creativity and mental well-being. However, a comparison of the results of the two studies raised substantial issues because they were in conflict in some respects. First, the quantitative study results did not show a link between creativity and mental well-being, whereas the qualitative study results showed a very strong link. Second, although in the quantitative study there was a noticeable increase in creativity scores at Time 2, and the creativity scores decreased at Time 3, the qualitative data suggested that creativity had improved. To investigate these discrepancies, the MM strategies recommended by Moffatt et al. (2006) were applied. These strategies consisted of treating the methods as fundamentally different, exploring whether the outcomes of the two data sets match, exploring the methodological rigour of each study, exploring the data set comparability, and exploring whether the creativity intervention was effective.
6.2 Comparison of data sets

6.2.1 Treating the methods as fundamentally different

Originally the purpose of including the qualitative study within the MM approach was to confirm as well as to complement the results of the quantitative study. There were improvements in creativity reported in both the quantitative and the qualitative studies but there was no confirming match between the timing of these improvements. For example, the data gathering of the qualitative study took place eight months after Time 2, and three months after Time 3. The increase in creativity scores of the quantitative study was at Time 2. Also, while mental well-being did not improve in the quantitative study, the qualitative study seems to have revealed a marked improvement. Hence the results of both data sets could not confirm the increase in creativity or mental well-being. Because such a confirmation was not possible, the data sets were treated as complementary and no attempt was made to integrate them. Accordingly, from this point on the different findings of these studies were considered as indicative of different aspects of creativity and mental well-being revealed by different study designs, aims, and methods. Consequently, the focus of discussion is in comparing the outcomes of the quantitative data with the extent to which the qualitative study revealed improvements for the participants in both creativity and mental well-being.

6.2.2 Exploring whether the outcomes of the two data sets match

6.2.2.1 Discrepancies in creativity

There was no match between data sets in connection with creativity. The results from the quantitative study suggested that creativity was not sustained. On the other hand, the qualitative data, revealed that not only had creativity increased, but it had been sustained and that new descriptions of creativity and its link to mental well-being had emerged. Specifically, the qualitative data revealed that creative thinking, as fostered within the creativity enhancement program, influenced the participants, and that the participants used the creative thinking process for personal development/growth. This suggested that participants actively used the creativity intervention as a catalyst for self-actualisation. This did not match the quantitative data at Time 3. It seemed that the TCT-DP was not able to detect the type of changes that participants described in the qualitative accounts, scarcely surprising since it was not designed to detect this kind of
information. A qualitative approach, by contrast, provided the most informative outcomes. It is not unusual for discrepancies to occur between data sets. For example, in the research of Engelman (1981) and Flood and Scharer (2006) there was not a match between the quantitative and qualitative data sets with regard to creativity.

6.2.2.2 Discrepancies in mental well-being

As indicated previously, there were noticeable discrepancies in the data sets regarding mental well-being. The quantitative data showed no significant differences in mental well-being between the intervention group and the control group at Time 2 or Time 3, which suggests that the intervention had no influence on the outcome measure, and therefore would be of no interest to practitioners or researchers. However, the qualitative data indicated a wide range of mental well-being benefits, suggesting that the intervention had a positive effect. The positive effect was also confirmed by the data from the creativity program evaluation questionnaire, especially from Question 1.

In order to explain the mental well-being discrepancies between the two data sets, an MM coding triangulation technique (Bryman, 2006; O'Cathain et al., 2010) was used. This was done by highlighting differences and analysing any connections. For example, the findings from each data set were listed on the same page and any matches were highlighted. Notes were kept where there appeared to be new or conflicting data. The outcome revealed several issues. The statements of the WEMWBS matched many words and phrases in the content units from the qualitative data. A checking process followed by identifying a sample of participants who were in both the quantitative and the qualitative studies and cross referencing their WEMWBS scores with their content units from the qualitative study. There was a strong match between the participants’ scores from the WEMWBS items and the qualitative mental well-being content words and phrases, for example “feeling confident”, and “thinking better”. However, there was no match between the lack of mental well-being movement in the WEMWBS scores at Time 3 and the qualitative data of reported change over time. In other words, the quantitative data from the WEMWBS did not match the essence of the qualitative mental well-being data.

The likely explanation for the disparity is that the two studies focused on different kinds of mental well-being. The qualitative data contained rich descriptions of the
occurrence and attribution of mental well-being changes in behaviour and feelings, and revealed the environments/contexts in which changes in mental well-being behaviour took place. This was not shown in the quantitative data because the WEMWBS was not designed to encapsulate or contextualise participants’ accounts.

Unlike the discrepancies found in this mixed method research, Greaves and Farbus (2006) and Cohen et al. (2006), in their MM research, revealed a close match between the quantitative and qualitative data sets with regard to physical and mental health. No other mixed method researchers reported discrepancies between their quantitative and qualitative data sets regarding physical and mental health. The implications of these findings are discussed in Sections 6.2.3, 6.2.4, 6.2.5, and in 6.3 Conclusions.

6.2.3 Methodological rigour of each study
Standard practice in the analysis and interpretation stages of any study involves a thorough scrutiny of the design, the methods, and the data set in order to ensure scholarly rigour (see Chapter 3). The discrepancies between the results concerning creativity and mental well-being led to scrutinising each data set individually and then together, in the hope of uncovering possible reasons.

No sources of weakening effects in the design of the quantitative study (see Chapters 3 and 4) were found. The experimental trial design—a non-equivalent controlled group design matched the quality criteria according to the National Health and Medical Research Council (2013) of a level III evidence-based study.

It was clear that the creativity enhancement program did not influence mental well-being as measured by the WEMWBS. The WEMWBS appears to have quite satisfactory internal consistency, temporal stability, and validity, and has been reported on as being sensitive to change. Perhaps, the WEMWSB was not the best choice for measuring mental well-being changes in older adults. A closer examination of the TCT-DP instrument might also reveal areas that could explain the divergence in the quantitative data for creativity at Time 3 from the qualitative data. However, there was a relative strength in the TCT—DP in that it was an actual task that respondents could use to actively problem-solve, through drawing, change, add, and create meaning to the content.
There did not appear to be any important issues that challenged the methodological rigour of the qualitative study. For instance, the number of participants was within the recommended range (Creswell, 1998; Luborsky & Lysack, 2006). A triangulation strategy was used to enhance the credibility of the subjectivity perspective of the qualitative study and strengthen the validity of the mixed method approach (Bryman, 2006; Hoffman et al., 2013). For example, data were gathered from the interview transcripts and from the supplementary data of the creativity program evaluation questionnaire. The results from the supplementary data extended, and supported the data from the interview transcripts.

In summary, all components of the research fieldwork, the data collection, analysis, and interpretation of both studies were transparent and demonstrated the degree of methodological rigour recommended by MM researchers (Barbour, 2001; Creswell, Fetters, & Ivankova, 2004; Creswell & Plano Clark, 2007), indicating that the results were an accurate reflection of what was studied.

6.2.4 Exploring data set comparability

The quantitative and qualitative study samples were compared on a number of demographic characteristics and on the mean creativity and mental well-being scores. However, there was nothing to indicate or account for the lack of movement in the mental well-being scores at Time 2 or Time 3.

6.2.5 Exploring the effectiveness of the creativity intervention

It was evident through the qualitative results that the creativity intervention was effective—it was a catalyst for self-actualisation and consequently the link was made to mental well-being. In other words, the creativity intervention triggered, as reported by most participants in the qualitative study, their unique need for self-development in some area of their life. This appeared to led to participants deliberately changing their behaviour and, in turn, increased their mental well-being within their own particular environmental contexts. The qualitative results indicated that participants used creative thinking for everyday problem solving and for personal growth, and they reported a link with the mental well-being concepts of confidence and competence. The creativity intervention seemed to enable some participants to resolve issues/concerns about the
ageing process. This, therefore, has drawn attention to the advantages of active creative mental ability in later life. The quantitative results at Time 2 indicated that the creativity program had been effective. The quantitative results at Time 3 indicated that perhaps the creativity program had not been effective.

The creativity program methodology used in the present study was more complex than is customary in research conducted by arts-based practitioners and creative arts therapists who usually focus only on creative expressive arts and craft activities. The characteristic feature of the creativity intervention was that it was designed to combine two components of creativity, creative problem solving and creative arts activities, within a single integrated structure. Overall, the qualitative study results, and supplementary data from the evaluation of the creativity enhancement questionnaire indicated that the creative problem solving component was the most influential component in the creativity intervention. No parallels to this can be found in the relevant literature, nor has any health research evidence been retrieved that described any such combination. Accordingly, the results from both studies cannot adequately be compared with results from other research. Therefore it is recommended that future research be designed to investigate the individual components of a creativity intervention and the effects of those components on mental well-being. In addition, a survey, or an embedded qualitative study could be designed in future MM research that included specific questions about each component of the creativity intervention.

6.3 Conclusions

The effectiveness of a creativity enhancement intervention program through the complementary perspective of two different studies has authenticated improvement in participants’ creativity immediately after the end of the intervention. This MM research exposed the possible value in a creativity enhancement intervention for older adults and a closer examination of the results from the qualitative study. The qualitative revealed there was a strong connection between creativity and self-actualisation/self-development and mental well-being. It was worth considering this connection further and a review of the literature was carried out. The connection of creativity and self-actualisation has been made in the humanistic and creativity research literature, and the concept of self-actualisation has been linked to mental well-being by various researchers from the fields of social sciences, gerontology, and mental health (see
Chapter 2). However there is little evidence of researchers connecting creativity, self-actualisation and mental well-being to older adults in the general population, who do not exhibit high levels of creative skill and motivation. Further, there is no instrument in the literature that links these three concepts to each other. In summary, it is recommended that researchers consider designing an instrument, a quantitative questionnaire that could be used to measure the effect of a creative intervention on self-actualisation and mental well-being in a broader contextualised way not in such a diffuse way as the TCT-DP or in a limiting way as by the WEMWBS. Moreover, the timing of administering such an instrument in future research must be considered because the results from the qualitative study in this present research were evident only after eight months after the end of the creativity enhancement intervention. Nevertheless, this conclusion is not a condemnation of quantitative research or quantitative instruments. The ones used within this research were the best available. However, this present MM approach enabled the emergence of different kinds of subtle information and hence there is a need to develop an instrument to know more about those contextualised circumstances.

An enquiry to develop a test that connects the concepts of self-actualisation/self-development and mental well-being especially for older adults is recommended. For example, a test could be designed so that older adults can identify their need for self-actualisation/self-development regarding their own unique personal issues/needs and concerns, and that is one that includes relevant contextual/environmental items as identified by older adults. A design for such a quantitative instrument could use the data from the present qualitative study by transforming the content units into questions, according to Napper and Cropley (1982). Table 6.1 is a brief illustration of how content units of this present qualitative study might be transformed in such a way.
Table 6.1

*Transformation of Content Units Into Possible Questions*

<table>
<thead>
<tr>
<th>Content units</th>
<th>Possible questions</th>
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</thead>
<tbody>
<tr>
<td>I’m capable of dealing with things…I’m not old and silly …satisfied.</td>
<td>How capable do you feel about working things out? How confident do you feel about solving issues in your life that are difficult?</td>
</tr>
<tr>
<td>Gave me more confidence not to keep thinking ‘how stupid I was because I couldn’t express myself’ and that really did perk me up with a lot more confidence.</td>
<td></td>
</tr>
<tr>
<td>Look at problems slightly different way, different angles.</td>
<td>Do you feel that you need to work out anything in your life and if so what area would that be in? Your family relations, or work, or hobbies?</td>
</tr>
<tr>
<td>It gave me other ways to think.</td>
<td></td>
</tr>
<tr>
<td>It reinforced me…the way I’m going about things in the right fashion, which may help me later on when I’m older.</td>
<td></td>
</tr>
<tr>
<td>I could understand my own problems, helped me to have a better understanding, it gave me more self-esteem.</td>
<td>Do you feel confident to tackle a new, an old/outstanding problem?</td>
</tr>
<tr>
<td>Definitely given me the courage to go in and fight for myself…I’ve taken charge of my life a bit better…I feel stronger…it’s OK to be me again …I was pleased for that reawakening.</td>
<td>Do you feel that you are able to stand up for yourself? (expand: with family, with shopping, with ...)</td>
</tr>
</tbody>
</table>

In summary, interviews could be conducted with older adults from the general public individually to obtain their views of the basic issues involved. Second, focus groups could be held with older adults where ideas could be expressed freely and reacted to by others in the group, and identified as pertinent, or widely believed, or idiosyncratic, or irrelevant. After refinement of the questions, a pilot study involving a series of interviews could be conducted, with about 50 older members of the general public. Content analysis would be used on the responses. The themes that emerged could be incorporated into a questionnaire in the language actually used by earlier respondents. The questionnaire would then have high content validity since it covered only those views held by older members of the general public, and was presented as statements in the real language of the participants. The last stage of the pilot study would be where the questionnaire was administered as a measure before and after a creativity enhancement intervention program.

Another line of future enquiry, for a similar mixed method study, might be to consider whether the behavioural changes reported by the participants in the qualitative study might have happened to those in the control group of the quantitative study.
Providing data from the control group members might be useful to assess the effectiveness of the creativity enhancement program, and might support the data from either of the studies. A recommendation is that for further similar research the control group be also interviewed and asked about whether they experienced any creativity or mental well-being changes or effects in their everyday activities since their involvement in this research.

Sustaining skills in creativity is warranted. Again the MM approach uncovered the importance of this through revealing the discrepancies in the quantitative and qualitative and data sets. A possible future direction is for researchers to include additional booster/maintenance creativity intervention sessions before a follow-up measurement, as recommended by Glasgow et al. (2004). Some participants from the creativity enhancement intervention of the quantitative study did enquire about this for themselves and their friends. Their comments were repeated in the supplementary analysis of the evaluation of the creativity enhancement program questionnaire.

Apart from the research by Engelman (1981), Flood and Scharer (2006), Greaves and Farbus (2006), and Cohen et al (2006), there are very few mixed method studies in which researchers have investigated this topic. As a consequence the results of this research cannot be appropriately compared with results from other research, and is therefore a type of limitation. The findings from the literature review revealed that there was a gap in the methodologies used in this topic, and this lack provided a strong clear direction for pursuing this topic and research. Subsequently the outcomes of this research did fulfil the research questions and objectives, and the methodological design of the two studies within the mixed method approach was appropriate. This research showed novelty and promise in contributing to new knowledge in the field. This knowledge should be of interest to health researchers who have developed cognition training for older adults. This study supports the notions by various neuroscientists that it is important for older adults to deliberately stimulate the mind (Claxton, 1997; Diamond, 2007; Dietrich, 2004, 2007; Dietrich & Kanson, 2010; Doidge, 2007). Therefore a recommendation for health practitioners and researchers is to incorporate deliberate creative thinking and problem-solving sessions within cognitive training programs for older adults. From an arts health perspective this research would be of interest to researchers and practitioners because it has advanced knowledge in the field.
with regard to the importance of incorporating creative thinking practice and training for older adults in a creativity intervention. Therefore a recommendation for arts health practitioners and researchers is to provide deliberate creative thinking and problem solving sessions as part of a creative arts-based intervention for older adults.

This mixed method approach represented an attempt to answer a call from a range of arts- and health-based professionals and researchers to provide experimental studies for evidence-based creativity and health research and practice. It was anticipated that this research might offer new directions for interdisciplinary research through the synthesis of literature and results. The outcomes of this mixed method merger of creativity, mental well-being and healthy ageing concepts led to the recommendation that further experimental studies be conducted within a mixed method study to examine the effects of a creativity intervention on mental well-being. It might be that creativity may have other sorts of mental health outcomes that have not been detected through this mixed method research. However, more research is needed to defend what appears to be a tenuous link in current research. Consequently, future interdisciplinary collaborations are recommended for researchers in the disciplines of health science, psychoneuroimmunology, neuroscience, neuropsychology, creative arts therapy, and arts health to examine creative activities, including creative problem solving, in order to advance the theories of self-actualisation and mental well-being in older adults.

While an effect of a creativity intervention on mental well-being quantitatively was not demonstrated through using an MM research approach insights from the results of the qualitative study regarding the connection between creativity, mental well-being and self-actualisation/self-development has led to new possibilities for research.

The method of treating the qualitative data as complementary instead of confirmatory has led to a position that highlighted the strengths of each study and how the use of MM can lead to different and sometimes conflicting accounts. However, on the positive side, the use of MM has highlighted the complexity inherent in creativity interventions, which might not be found when interpreting the findings of a single study. The MM process of analysis reinforced the difficulties of attempting to measure mental well-being quantitatively. Nevertheless, comparing the data sets meant that the data could be reported together and this permitted an interpretation, the first of its kind
on this topic, of a complex intervention within an experimental trial. This MM research captured especially through the results of the qualitative study, the complex psychological and social phenomena of creativity, mental well-being, and healthy ageing. The inclusion of both quantitative and qualitative methods in this MM research thus increased the possibility of completing a more thoroughly researched topic and a better understood set of results, and this was useful in making recommendations for future study designs. The more widespread use of MM in complex interventions trials is likely to enhance the overall quality of the evidence base.

Although the use of creative activities is often encouraged in various health care settings, the needs of older adults for personal growth / self-actualisation, problem solving, and well-being are neglected. This research forwards knowledge about the benefits of creative problem solving, everyday creativity and practical creativity for older adults. If health professionals recognised the importance of the older adults’ needs for self-actualisation and problem solving and did so through engaging clients’ creativity, then, as Tse (2013) suggested, this may lead to a healthier life for the clients and ultimately for the carers. Therefore, it is recommended that the concepts about creative thinking and problem solving for older adults be embedded into the tertiary education of all health and arts health professionals. As Tsai (2013) argued, policies and supporting environments should be built to provide a framework to promote creativity in older adults. Given an appropriate theoretical base creativity enhancement and its consequences holds promise for further mental health promotion enquiry. Evidence-based development of a creativity enhancement program using a mixed methods approach would be of value in facilitating healthy ageing through widening of interests and activities and a consequent enhancement of mental well-being.
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REFERENCES


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Appendix A

Information Sheet and Consent Forms
for Prospective Participants

This appendix contains the information sheet and the consent forms for this research. There are two consent forms. The first was for all potential participants in the research and the second was for participants who self-selected to be interviewed in the qualitative study. See Chapter 4, Section 4.2.3 Recruitment, settings, and location.

Ethics approval was granted by the Charles Sturt University Human Research Ethics Committee, protocol number 2010/132. See Chapter 3, Section 3.5, Ethics approval and considerations.
Title of Project: Examining the effects of social and resourceful activities on well-being of those 65 years and over, and active.

What the research is about.

It is about the effect of a range of social and intellectual activities on well-being. This is a large research study that has never been conducted before. Only people aged over 65 years are invited to participate.

This is a formal research project that will run for six months. Participants will be involved in one of three large groups. This means that you may be in group with lots of activities or you may be in one which will not have any activities apart from involvement in some testing by questionnaires (the control group). You will be told which group you have been allocated to. The activities part of the research will run for 12 weeks.

What does participation involve?

Participation in this research will involve a significant amount of your time, commencing in March through to the end of June 2011. The main part of your time will be taken up with coming along once a week regularly, to the same timeslot for 12 weeks. The same amount of time that would be involved if you were a member of a Probus group or the University of the Third Age group or if you were enrolled in a regular adult educational course. Your involvement in this research would also involve coming along in February/March for a 30 minute individual timeslot do some tests, and
then come along for another 30 minutes for testing in June. Below are the details of this time commitment.

Participation in this project involves two components: completion of three lots of testing by questionnaires in the six months of the project, and participation in activities of one of the three large groups for 12 weeks. Details are as follows:

1. **Testing:** Attend three 30 minute appointments over a six month time period. These appointments are for gathering information about you and the activities you are involved in.
   a. The first appointment will be to gather general details about you and your interests (10 minutes), fill in a questionnaire that you can fill in yourself (10 minutes), and do a test that looks at resourcefulness (15 minutes).
   b. The second appointment will be at the end of 12 weeks, and involve filling in a questionnaire (10 minutes), and completing a particular activity test (15 minutes).
   c. The third appointment will involve similar tasks as b.

2. **Group participation:** Come along and participate in activities of one group in a 12 week program of interesting activities.

You will be asked to commit to attending the same small group at a set time, weekly for 12 weeks. For the activities to work well, all participants will be required to come along to the same day and time for those 12 weeks. See over page for details.

A small group will be involved in extra interviews in mid-November.

**Points of interest**

This is new research and there will be opportunities for many participants to try out different activities than may help you enjoy the rest of your life. You may be interested in assisting research about the importance of a range of activities for well-being for those over 65 years. There is little research done in this area. It would help health practitioners and local community organisations understand the issues, needs and concerns of this particular age group, especially those living in a regional area. It would provide evidence for funding bodies to channel support for appropriate activities.

**What will happen in the research?**

This depends on which group you have been allocated to. Two groups will be actively participating in a range of social and intellectual activities and one group will not be doing any activities apart from the testing on three occasions. Overall the research is about doing a range of social and intellectual activities, and examining the effect these have on your sense of well-being.

**Joining with a friend or a partner**

This is possible. It will be best to have only one or two friends together, and you will be allocated together into a group.
Where will it take place?

The venue for all of the research will be based in the rooms at the Albury-Wodonga Aged Concern Association in Townsend Street Albury.

When will it take place?

The research will commence Monday 7th February 2011, with individual appointments being made throughout February/March. The 12 week activity groups will commence on Monday 14th March and go through until Friday 17th June. There will be individual appointments during the two weeks, 20/6/2011 – 1/7/2011. In mid-November there will be two weeks of individual appointments.

What days and times will the research be held?

Monday pm  
Tuesday am  
Tuesday pm  
Thursday pm

Withdrawal from the project

Your participation in the research is purely voluntary. Participants can withdraw from the project at any time and non-participation or withdrawal will not result in any penalty or discriminatory treatment. There may be times when you will not be able to attend for a week or two. In that situation you may need extra time to catch up with what you have missed. The researcher will be able to help people catch up on what they have missed, however if people miss anymore than four sessions then it will be too difficult to continue.

Risks and Benefits

There will be no psychological or physical stress associated with being involved in the 12 week program or with completing the tests. None of the activities will be focused on heavy physical activities. They will be mostly thinking, meaningful, purposeful, practical and social activities. The activities and questionnaires will not delve into your personal or private life.

Confidentiality

It is the aim of the main researcher to protect your confidentiality. However, as part of the research will involve participation in a large group of about 12 participants there may be a risk to the privacy and confidentiality of your personal identity and any discussions that you are have. Other participants may know you. The main researcher will address this low risk by discussing participant rights to confidentiality throughout the research. Your identity will be protected in any report of the findings. Research reports and findings will be submitted for publication in professional journals and other forums; however, individual participants will not be identified.
Storage of data
During the project data will be stored securely in a locked filing cabinet at the School of Community Health at the Charles Sturt University, and will be accessible only to the research team. Data will also be saved on a password protected computer and be accessible only to the researchers. Following completion of the study, all hard copies of data will be de-identified and securely shredded. All electronic data sets will be fully de-identified and securely stored on a password-protected CSU server, in a folder that is also password-protected and only accessible to members of the research team and the administrators of the relevant CSU electronic archives. Confidential records will be stored in electronic format for at least five years and the records will be securely destroyed after this time by the researchers or by the CSU archive administrators. However, at no other time will anyone other than the research team have access to the records.

Results
The results of this study will be made available through the final report to the Charles Sturt University, and over-time the findings will be published in a health science journal. Aged Concern in Albury-Wodonga will receive a summary report of the findings, and this will be available to participants who have participated in the project.

Ethical clearance
Charles Sturt University’s Human Research Ethics Committee has approved this project. If you have any complaints or reservations about the ethical conduct of this project, you may contact the Committee through the Executive Officer:

Executive Officer
Human Research Ethics Committee
Office of Academic Governance
Charles Sturt University
Panorama Avenue
Bathurst NSW 2795

Phone: (02) 6338 4628
Fax: (02) 6338 4194

Any issues you raise will be treated in confidence and investigated fully and you will be informed of the outcome.

What do I have to do to sign up?
Take a Consent Form today, and if interested in the research sign the Consent Form and return it now, or place it in a sealed box at Aged Concern, or mail this back to the researcher in a pre-paid envelope. If you have any further questions please contact the researcher, Thérèse Schmid.

Are you interested in participating in this research?

See attached Consent Form
CONSENT FORM

Title of Project: Examining the effects of social and resourceful activities on well-being for those 65 years and over, and active

Main Investigator
Thérèse Schmid
MHlthSc(OT), ANZATR, DipOTNSW
CSU PhD Candidate
Lecturer
Occupational Therapy
School of Community Health
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AUSTRALIA
Phone +61 (0) 2 60519244
tschmid@csu.edu.au

Principal Supervisor
Assoc/Prof Rod Pope
Director of Centre for Inland Health
School of Community Health
Faculty of Science

Co-supervisors
Emeritus Professor Arthur Cropley
Department of Psychology, University of Hamburg, Germany
CSU Adjunct fellow

Dr Robert Trevethan
CSU Adjunct fellow
School of Community Health
Charles Sturt University

I agree to take part in the Charles Sturt University project specified above. I understand that agreeing to take part means that:

The purpose of the research has been explained to me, including the (potential) risks/discomforts associated with the research. I have read and understood the written explanation given to me.

and

I understand that my participation is voluntary and I can choose to not participate in the project. I understand that I am free to withdraw my participation in the research at any time, and that if I do so, I will not be subjected to any penalty or discriminatory treatment.

and

I understand that any information or personal details gathered in the course of this research about me are confidential, and that neither my name nor any other identifying information will be used or published without my written permission.

and
I understand that data will be kept in secure storage only accessible to the research team. I also understand that the data will be destroyed after a 5 year period. And I understand that Charles Sturt University’s Human Research Ethics Committee has approved this study.

I understand that if I have any complaints or concerns about this research I can contact:

Executive Officer
Human Research Ethics Committee
Office of Academic Governance
Charles Sturt University
Panorama Avenue
Bathurst NSW 2795

Phone: (02) 6338 4628
Fax: (02) 6338 4194

Participant’s name

Signature

Date

Please provide contact details below

Ph:

Email

Please return this consent form in the envelope provided to:

Thérèse Schmid
School of Community Health
Charles Sturt University
P.O. Box 789
ALBURY NSW 2640
If you have agreed to take part in the study,

please indicate below with a YES, times that will be convenient for you to attend group activities. The shaded times are not available.

A number of options would be very helpful.

You will be advised of the time slot selected for you from your options.

Each selection would indicate your ability to attend a session at the same time each week for twelve consecutive weeks, starting Monday 7\textsuperscript{th} March 2011, but excluding the weeks either side of Easter. The date schedule is at the bottom of the page.

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Below are some example entries.

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This would mean that you could only attend regularly on a Tuesday morning.

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This would mean that you could attend regularly on a Monday pm, or Thursday pm.

*  *  *  *  *  *  *  *

**Weeks scheduled for group activities are:**

- 14-19 March
- 21-26 March
- 28 Mar. – 2 Apr.
- 4-9 April
- 11-16 April
- 2-7 May
- 9-14 May
- 16-21 May
- 23-28 May
- 30 May-4 June
- 6-11 June
- 13-17 June

**Times of day are:**

- Mornings 9.30-12 noon.
- Afternoons 1.30-4.00 pm.
- Evenings 6.30-9.00 pm.
If you wish to attend with a friend, please include the friend’s name and coordinate your attendance times. Ask your friend to include your name and the same times on their form.

Friend’s name ............................................................................................................
CONSENT FORM

Title of Project: Examining the effects of social and resourceful activities on well-being for those 65 years and over, and active

Main Investigator
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Co-supervisors
Emeritus Professor Arthur Cropley
Department of Psychology, University of Hamburg, Germany
CSU Adjunct fellow
Dr Robert Trevethan
CSU Adjunct fellow
School of Community Health
Charles Sturt University

I and my spouse/partner/significant other agree to take part in the Charles Sturt University research project specified above.

The purpose of the research has been explained to us, including the (potential) risks/discomforts associated with the research. We have read and understood the written explanation given to us. We understand that this will involve being interviewed by the researcher and

I agree that my spouse/partner/significant other can be interviewed by the researcher and can discuss any changes that he/she have noticed in my well-being and can discuss the perceived values and benefits or otherwise of the research project whilst I have been participating in the research project and since the project. I understand that all information that will be discussed will be confidential and that me or my partner’s name will not be recorded on any reports arising from this study and

...
We understand that our participation is voluntary and we can choose not to participate in the project.

and

We understand that we are free to withdraw our participation in the research at any time, and that if I do so we will not be subjected to any penalty or discriminatory treatment.

and

We understand that any information or personal details gathered in the course of this research about us are confidential, and that neither our names nor any other identifying information will be used or published without our written permission.

and

We understand that data from the interview will be kept in secure storage only accessible to the research team. I also understand that the data will be destroyed after a 5 year period.

and

We understand that the interviews will be conducted individually and audio taped, but that our names will not be recorded on any verbal or written reports arising from this study. We understand that all audiotapes will be stored securely and will be destroyed once the project is complete.

and

We understand that Charles Sturt University’s Human Research Ethics Committee has approved this study.

We understand that if I have any complaints or concerns about this research I can contact:

Executive Officer
Human Research Ethics Committee
Office of Academic Governance
Charles Sturt University
Panorama Avenue
Bathurst NSW 2795

Phone: (02) 6338 4628
Fax: (02) 6338 4194

Participant’s name

Signature

Date
Partner/spouse/significant other’s name________________________________________________________

Signature____________________________________________________________________________

Date__________________________________________________________________________________

Please provide contact details below

Ph:___________________________________________________________________________________

Email_________________________________________________________________________________

Please return this consent form in the envelope provided to:
Thérèse Schmid
School of Community Health
Charles Sturt University
P.O. Box 789
ALBURY NSW 2640
Appendix B

Promotional Materials and Recruitment Strategies

This appendix contains the following:

- A researcher profile; this was made available whenever it seemed appropriate.
- A copy of the advertisement that was distributed in a variety of ways, as indicated in the recruitment strategies at the end of this appendix.
- A copy of the press release that was distributed via CSU’s automated press release mechanism.
- A list of recruitment strategies.
Researcher Profile

Thérèse Schmid

Position Lecturer, Bachelor of Health Science (Occupational Therapy)
CSU Campus Albury-Wodonga
Phone (02) 6051 9244 (with voice mail)
Email: tschmid@csu.edu.au

Therese Schmid is a lecturer in occupational therapy within the Occupational Therapy Course at Charles Sturt University, School of Community Health, Albury, NSW, Australia. She has had extensive experience working in the field of mental health, in a therapeutic community, in community development programmes and in various occupational therapy positions. She is a professional member of the Australian New Zealand Art Therapy Association. Therese has published articles on experiential teaching and creativity, and has recently published a book, Schmid, T. (2005) Promoting health through creativity. For professionals in health, arts and education. London: Whurr.
RESEARCH VOLUNTEERS NEEDED

A significant research project is being planned by Thérèse Schmid of Charles Sturt University, Albury.

The study will examine the relationship between activities and well-being in those active 65 years and over age group.

It will not be at all physically demanding, but it will require a commitment to a two hour session each week for about twelve weeks 7th March – 11th June, 2011, plus three half hour interviews. **All totally confidential**

Contact

Thérèse Schmid
Phone 02 6051 9244 or 02 6023 3971
Email: tschmid@csu.edu.au
Press Release

The following was distributed via the automatic CSU press release mechanism:

Solve problems, be well

The link between older people taking part in social and problem-solving activities around Albury-Wodonga and their personal well-being will be the subject for a Charles Sturt University (CSU) researcher in coming months. Occupational therapy lecturer with the School of Community Health [http://www.csu.edu.au/faculty/science/cmhealth/](http://www.csu.edu.au/faculty/science/cmhealth/), Ms Thérèse Schmid, will commence the research in February with participants aged 65 to 74 years*. “I will be documenting how participants use problem solving in social activities, and how this affects their sense of well-being,” said Ms Schmid, who is looking for volunteers to take part in the research for two hours a week for 12 weeks, and they may be accompanied by a friend. The research will be based at Aged Concern in Townsend Street, Albury. People wanting to participate in the research should contact Ms Schmid on telephone 6023 3971.

* The age group was later changed to those who were 65 years and older following a successful request to change the nature of the sample made to the CSU Ethics in Human Research Committee.
Recruitment Strategies

Telephone contacts and visits

Numerous phone calls were made in order to recruit participants from relevant community groups. For example, the Albury and Wodonga local government community council officers were consulted for contacts to relevant community organisations and local groups. In addition, the Albury and Wodonga Community Directories was used in order to gain information about other groups and organisations in which older adults are most likely to be involved, and Victims Assistance Programme, Ratepayers Association of Wodonga, SS&A Club, Commercial Club, Albury Citizens, Albury-Wodonga Multicultural Resource Centre, various lawn bowling clubs, and senior living communities in both local government areas.

Visits were made to various aged care facilities, including retirement villages, The Wodonga Men’s Shed,

Interviews to media

I was interviewed on Prime News television and three radio stations (ABC Goulburn Murray, 2AY, and the local Albury community radio), and by a local newspaper, the Albury-Wodonga Midweek Express.

Letter drop and email to members

The advertisement concerning the study was posted or emailed to over 600 individuals by various local community organisations to their members. The organisation included for example the Albury-Wodonga Age Concern Association, University of the Third Age, and the National Seniors Albury-Wodonga Evening Branch.

Information sessions presentations to community organisations

Eighteen formal presentations about the research were conducted throughout the period Dec 2010 to March 2011 with the aim of being able to recruit people at numerous organisations. These were the Jindera Country Women’s Association, North Albury Probus Club, University of the Third Age—Albury-Wodonga, Albury Historical
Society, Keenagers Albury-Wodonga Social Table Tennis Club, Wondonga Show Ladies Auxiliary Committee, Albury Independent Retirees, Albury Older Men—Mature Ideas, Albury Murray Probus Club, Albury Evening View Club, Wodonga Men’s Shed, Albury-Wodonga Vietnam Veterans AGM meeting, Manual Activity Centre Lavington, Albury National Seniors Group, Gateway Community Health Services, and members of the regional group of LifeBall.
Appendix C

Creativity Program Evaluation Questionnaire

This questionnaire was used by the participants who were in the creativity enhancement program (the intervention group of the quantitative study) to evaluate the impact of the program from their perspective. The questionnaire was distributed to the participants at the end of the 12 week intervention. See Chapter 4, *The quantitative study*, Section 4.2.4.4. For the results of this evaluation see Chapter 5, Section 5.6, *Supplementary analysis*. 
A. Looking back over the last 10 weeks write down a list of any changes you have noticed in yourself as a result of participating in this program.

B. What feature(s) of the program did you find most helpful?

C. What feature(s) did you find least helpful?

D. What are your best suggestions for the improvement of this program?
   1.
   
   2.
   
   3.
Appendix D

The Demographic and Activities Questionnaire

This questionnaire was designed to obtain data about the participants’ everyday activities as well as basic demographic information, at baseline. See Chapter 4, Section 4.2.5.1 for a description, Section 4.2.9.1 for information regarding data preparation prior to data entry, and Section 4.3.1 for the baseline characteristics.
Your opinions about participation, satisfaction, and importance of social and resourceful activities.

As a background to your involvement in this research, I would appreciate some details about the kinds of activities in which your normally participate, how satisfying they are, and the importance of these activities to you. There are also some demographic questions.

Thank you!

Research project: Examining the effects of social and resourceful activities on well-being.

Thérèse Schmid
School of Community Health
Faculty of Science
Charles Sturt University 2011
### SECTION 1  Participation, satisfaction, and importance of activities

How often do you participate in any of the following activities?

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Less than once a month</th>
<th>About once a month</th>
<th>About once a week</th>
<th>More than once a week</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Craft making</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>Dancing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Drama</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Writing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Playing a musical instrument</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Art activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7</td>
<td>Woodwork / metalwork</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>Other hobbies. Name type of:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>Attending public events/activities such as cinema, theatre, festivals</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10</td>
<td>Club or community group membership, e.g., Rotary, church groups, Probus</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>Attending sports activities</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12</td>
<td>Visiting parks, gardens, enjoying the natural environment such as bird watching</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13</td>
<td>Socialising (including writing letters, telephone, emails, dinner parties, playing with grandchildren, going on a group outing, etc.)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14</td>
<td>Physical activities for exercise (individual or team). Type:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>Gardening</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16</td>
<td>Attending an educational course</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17</td>
<td>Other activities:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
The following questions ask how satisfied you feel doing the activities that you participate in. Please circle a number for only the activities that you identified in the last table as ones that you participate in.

On a scale from 1 to 5, 1 means you feel completely dissatisfied, 5 means you feel completely satisfied, 3 means you feel neutral, neither satisfied nor dissatisfied.

<table>
<thead>
<tr>
<th></th>
<th>Completely Dissatisfied</th>
<th>Neutral</th>
<th>Completely Satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Craft making</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Dancing</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Drama</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Writing</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Playing a musical instrument</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Art activities</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Woodwork / metalwork</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Other hobbies. Name type of:</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Attending public events/activities such as cinema, theatre, festivals</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Club or community group membership, e.g., Rotary, church groups, Probus</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Attending sports activities</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Visiting parks, gardens, enjoying the natural environment such as bird watching</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Socialising (including writing letters, telephone, emails, dinner parties, playing with grandchildren, going on a group outing, etc.)</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Physical activities for exercise (individual or team). Type:</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Gardening</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Attending an educational course</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Other activities:</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
</tbody>
</table>
In the following questions we would like you to think about how important certain reasons are for participating in your activities.

Please indicate the importance of the following for you when you engage in the activities you identified on the previous pages.

Feel free to add to the list if you have other reasons.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Not at all Important</th>
<th>Neutral</th>
<th>Very Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>To increase fitness</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>36</td>
<td>To increase socialisation</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>37</td>
<td>To increase self-esteem</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>38</td>
<td>As a distraction from grief</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>39</td>
<td>It provides relaxation</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>40</td>
<td>It allows for spontaneity</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>41</td>
<td>As a way of occupying your time</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>42</td>
<td>Because it makes you feel joyful and increases your good humour</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>43</td>
<td>It offers you a sense of contribution</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>44</td>
<td>To improve or maintain mental alertness</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>45</td>
<td>It allows for the expression of feelings</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>46</td>
<td>To develop decision making capabilities</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>47</td>
<td>Because it promotes your creativity</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>48</td>
<td>It develops problem solving skills</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>49</td>
<td>It offers you a distraction</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>50</td>
<td>To increase opportunities</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>51</td>
<td>Other (please specify):</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
SECTION 2: Demographic Information

Please answer or place an X or a tick in the appropriate box.

52 Age: __________ years

53 Gender: □ Male □ Female

54 Highest level of education (tick one only)
   □ Primary school or less
   □ Some secondary school
   □ High school sixth form (completion
   □ TAFE / technical school
   □ Diploma
   □ Bachelor degree
   □ Postgraduate degree
   □ Higher postgraduate degree

55 Where were you born? __________________________

56 Present occupation or life stage (occupation or retiree?)
   __________________________________________

57 What has been your most recent full time occupation?
   __________________________________________

Thank you for completing this questionnaire.

All information that you have supplied will be kept confidential.
APPENDIX E

The Test of Creative Thinking – Drawing Production

This appendix contains a copy of The Test of Creative Thinking-Drawing Production (TCT-DP) and the scoring sheet. See Chapter 4, Section 4.2.5.2 *Test of Creative Thinking-Drawing Production (TCT-DP)* for a description of the test, including the development and theoretical background, application and norms, reliability, and validity.

The English version of the TCT–DP is available through the Pearson PsychCorp and includes the user manual and packs of 25 tests and scoring sheets.
## A

### TSD-Z

### TCT-DP

| 1. Continuation | Cn | ☐ | 9. Humor/Affectivity/ Emotionality/Expressivity | Hu | ☐ |
| 2. Completion | Cm | ☐ | 10. Unconventionality A | Uca | ☐ |
| 3. New Elements | Ne | ☐ | 11. Unconventionality B | Ucb | ☐ |
| 4. Connection by line | Cl | ☐ | 12. Unconventionality C | Ucc | ☐ |
| 5. Connection by theme | Cth | ☐ | 13. Unconventionality D | Ucd | ☐ |
| 7. Boundary-breaking, fragment-independent | Bfi | ☐ | | | |
| 8. Perspective | Pe | ☐ | TCT-DP-Total | | ☐ |

### Screening classification by age:

<table>
<thead>
<tr>
<th>Group</th>
<th>4-6</th>
<th>7</th>
<th>8</th>
<th>9-10</th>
<th>11-16 years</th>
<th>Stud./Ed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>T: T-score:</td>
<td>&lt;37</td>
<td>37-43</td>
<td>44-56</td>
<td>57-63</td>
<td>64-70</td>
<td>&gt;70</td>
</tr>
<tr>
<td>PERCENTILES:</td>
<td>0-10</td>
<td>11-25</td>
<td>26-75</td>
<td>76-90</td>
<td>91-97,5</td>
<td>&gt;97,5</td>
</tr>
</tbody>
</table>

### Screening classification by grade:

<table>
<thead>
<tr>
<th>Group</th>
<th>1</th>
<th>2</th>
<th>3-4</th>
<th>5-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>T: T-score:</td>
<td>&lt;37</td>
<td>37-43</td>
<td>44-56</td>
<td>57-63</td>
</tr>
<tr>
<td>PERCENTILES:</td>
<td>0-10</td>
<td>11-25</td>
<td>26-75</td>
<td>76-90</td>
</tr>
</tbody>
</table>

### Screening classification for German sub-samples:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>T: T-score:</td>
<td>&lt;37</td>
<td>37-43</td>
<td>44-56</td>
<td>57-63</td>
</tr>
<tr>
<td>PERCENTILES:</td>
<td>0-10</td>
<td>11-25</td>
<td>26-75</td>
<td>76-90</td>
</tr>
</tbody>
</table>
This page has intentionally been left blank.
APPENDIX F

The Warwick-Edinburgh Mental Well-Being Scale

The Warwick-Edinburgh Mental Well-Being Scale is reproduced on the following page.

Permission to use this instrument was sought in 2007 (personal communication, Jane Parkinson, 24 May 2007), and feedback on the test’s performance was provided to Dr Frances Taggart at the University of Warwick on 9 October 2013. That feedback is reproduced within this appendix.

In accordance with a requirement made on page 22 of the instrument’s manual (Stewart-Brown & Janmohamed, 2008), the following statement is included here:

The Warwick-Edinburgh Mental Well-being Scale was funded by the Scottish Government National Programme for Improving Mental Health and Well-being, commissioned by NHS Health Scotland, developed by the University of Warwick and the University of Edinburgh, and is jointly owned by NHS Health Scotland, the University of Warwick and the University of Edinburgh.
The Warwick-Edinburgh Mental Well-being Scale (WEMWBS)

Below are some statements about feelings and thoughts.

Please tick the box that best describes your experience of each over the last 2 weeks.

<table>
<thead>
<tr>
<th>STATEMENTS</th>
<th>None of the time</th>
<th>Rarely</th>
<th>Some of the time</th>
<th>Often</th>
<th>All of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>I've been feeling optimistic about the future</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been feeling useful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been feeling relaxed</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been feeling interested in other people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I have had energy to spare</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been dealing with problems well</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been thinking clearly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been feeling good about myself</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been feeling close to other people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been feeling confident</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been able to make up my own mind about things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been feeling loved</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been interested in new things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I've been feeling cheerful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

"Warwick-Edinburgh Mental Well-being Scale (WEMWBS)
© NHS Health Scotland, University of Warwick and University of Edinburgh, 2006, all rights reserved."
Results on the WEMWBS from an Australian study

October 2013

Contact people: robertrevethan@gmail.com; tschmid@csu.edu.au

1. Description of sample

This sample comprised 99 adults aged 65 and over who had volunteered to take part in a series of workshops that was being offered in a regional Australian city. These workshops were advertised as encouraging resourceful and social activities. The volunteers were divided into an intervention group who were exposed to a creativity enhancement program spanning three months, and a control group. (It was anticipated that increased creativity might produce an increase in mental well-being—an expectation that was not confirmed, probably for a complex of reasons.) Assessments of mental well-being using the WEMWBS, and creativity using the TCT-DP (Urban, 2004; Urban & Jellen, 2010), were made for both groups at baseline, at the conclusion of the intervention program, and six months after that. The information provided in Section 2 and Section 3 below pertains to data collected on the WEMWBS from all 99 participants at baseline.

2. Initial features of the data

Initial inspection of the data revealed that there were two outliers. Both were scores of 23 that lay more than 3 SDs below the mean. Refer to the following figure.
After Winsorising the two outlying scores from 23 to 36, the distribution approximated normality, as can be seen in the following figure. From this figure it is obvious that there is no, or minimal, ceiling effect.

![Histogram of WEMWBS scores](image)

The following results were obtained for the 99 participants at baseline (after Winsorising the two outliers):

- **Mean**: 54.37
- **95% CI**: 52.87 – 55.88
- **Median**: 54
- **Minimum**: 36
- **Maximum**: 70
- **Range**: 34
- **Std dev**: 7.56
- **IQR**: 10
- **Skew**: -.11
- **Kurtosis**: .011

3. **WEMWBS scores for specific demographic groups**

Table 1 contains WEMWBS scores for specific demographic groups.

In response to a question about their most recent occupation, six participants responded with “housewife” or “domestic duties”, and four participants did not respond at all. None of those 10 participants is included under the heading “Most recent occupation” in Table 1. All other results there are based on 99 participants.
Table 1

Scores of Participants on the WEMWBS at Baseline (n = 99)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>N</th>
<th>Mean (SD)</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65-74</td>
<td>76</td>
<td>54.41 (7.70)</td>
<td>36</td>
<td>70</td>
<td>34</td>
</tr>
<tr>
<td>75 +</td>
<td>23</td>
<td>54.26 (7.26)</td>
<td>36</td>
<td>68</td>
<td>32</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>28</td>
<td>56.64 (6.02)</td>
<td>41</td>
<td>68</td>
<td>27</td>
</tr>
<tr>
<td>Women</td>
<td>71</td>
<td>53.48 (7.96)</td>
<td>36</td>
<td>70</td>
<td>34</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not completed high school</td>
<td>34</td>
<td>53.71 (8.38)</td>
<td>36</td>
<td>70</td>
<td>34</td>
</tr>
<tr>
<td>Completed high school</td>
<td>12</td>
<td>54.33 (5.68)</td>
<td>44</td>
<td>68</td>
<td>24</td>
</tr>
<tr>
<td>Technical school/college</td>
<td>16</td>
<td>51.76 (6.18)</td>
<td>36</td>
<td>64</td>
<td>28</td>
</tr>
<tr>
<td>Diploma</td>
<td>19</td>
<td>55.63 (8.45)</td>
<td>41</td>
<td>69</td>
<td>28</td>
</tr>
<tr>
<td>Bachelor degree or higher</td>
<td>18</td>
<td>56.67 (6.98)</td>
<td>46</td>
<td>70</td>
<td>24</td>
</tr>
<tr>
<td><strong>Current occupational status</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working</td>
<td>7</td>
<td>59.29 (5.56)</td>
<td>51</td>
<td>69</td>
<td>18</td>
</tr>
<tr>
<td>Retired</td>
<td>92</td>
<td>54.00 (7.59)</td>
<td>36</td>
<td>70</td>
<td>34</td>
</tr>
<tr>
<td><strong>Most recent full-time occupation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Labourers &amp; related workers; elementary clerical, sales, &amp; service workers</td>
<td></td>
<td>53.00 (7.18)</td>
<td>41</td>
<td>61</td>
<td>20</td>
</tr>
<tr>
<td>Intermediate production and transport workers; intermediate clerical, sales, &amp; service workers</td>
<td>17</td>
<td>54.18 (5.91)</td>
<td>44</td>
<td>64</td>
<td>20</td>
</tr>
<tr>
<td>Advanced clerical &amp; service workers; tradespersons &amp; related workers</td>
<td>26</td>
<td>53.73 (8.32)</td>
<td>36</td>
<td>70</td>
<td>34</td>
</tr>
<tr>
<td>Associate professionals Professionals; managers, &amp; administrators</td>
<td>25</td>
<td>55.56 (8.31)</td>
<td>37</td>
<td>70</td>
<td>33</td>
</tr>
<tr>
<td>Professionals; managers, &amp; administrators</td>
<td>11</td>
<td>57.55 (6.41)</td>
<td>46</td>
<td>67</td>
<td>21</td>
</tr>
</tbody>
</table>
4. Subsequent analyses concerning reliability

After data had been collected at baseline, a participant’s record was not retained for most analyses if either of the following conditions applied:

a.) the participant was in the intervention group and had attended fewer than seven of the 12 creativity enhancement sessions, or

b.) the participant was in either the intervention or control group and had not provided data at all three time points.

As a result, the intervention group provided data from 41 participants, and the control group from 44 participants. Unless stated otherwise, all analyses in this section (Section 4) are based on the data from these 85 participants.

Table 2 contains the WEMWBS scores at the three data collection points.

Table 2

<table>
<thead>
<tr>
<th>Time point</th>
<th>Intervention group Mean (SD) (n = 41)</th>
<th>Control group Mean (SD) (n = 44)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>52.5 (8.1)</td>
<td>56.3 (6.7)</td>
</tr>
<tr>
<td>3 months</td>
<td>52.2 (6.8)</td>
<td>56.7 (7.3)</td>
</tr>
<tr>
<td>9 months</td>
<td>51.9 (8.5)</td>
<td>56.3 (7.1)</td>
</tr>
</tbody>
</table>

4.1 Temporal stability

Temporal stability was explored by analysing scores across the first two time points (i.e., over a three-month period) for people in the control group only (n = 44). All analyses were restricted to this group because it was anticipated that the creativity program given to the intervention group might enhance mental well-being, and, if it did, WEMWBS scores would be contaminated for test-retest purposes (i.e., they would not be suitable for testing whether WEMWBS scores remained relatively stable across a time period over which no, or minimal, change was expected for most participants).
4.1.1 Test-retest reliability indices: ICC and Pearson’s $r$

The ICC across the three-month time span for the control group was .87. Portney and Watkins (2009, p. 595) have suggested that ICC “values above .75 are indicative of good reliability”. In light of this, test-retest reliability of the WEMWBS appears to be more than satisfactory.

Although ICCs are the preferable index for test-retest reliability because correlation coefficients do not indicate whether or not scores move systematically up or down over a time period, a Pearson’s $r$ value was also calculated because it is the only index of consistency over time provided by some researchers. In this case, Pearson’s $r = .77$ over the three-month period. This is relatively low for test-retest purposes, but the unsatisfactory nature of correlations in this context must be acknowledged.

4.1.2 Further analyses of temporal stability based on individuals’ difference scores

As can be seen in Table 2, and again referring only to the control group, the group scores for mental well-being moved from a mean of 56.3 to 56.7 (i.e., only 0.4 points) across the three month period from baseline to immediately post-intervention. This could be taken to indicate that very little change in scores occurred and that, consequently, the WEMWBS produces extremely stable responses over time — i.e., has extremely high test-retest reliability, or, perhaps, that it is resistant to valid change.

Those conclusions could be misleading, however, because downward changes in scores counteract upward changes when calculating group means. For example, if half of the scores within a group decreased to a small extent over time, and the remaining scores rose to an equally small extent, there would be a net change of zero, but exactly the same outcome would be produced if half of the scores decreased to a large extent over time, and the other half increased to an equally large extent. Therefore it is not possible to gain an indication of the extent of movement in scores by simply inspecting group means, and different kinds of analyses must be applied to obtain an accurate picture of the way in which scores change from one point in time to another.

One way of analysing the test-retest differences that provides more insights is to identify the extent of change in individual participants’ difference scores rather than
group-based change. In the initial stage of pursuing this strategy, the two outliers were restored in the data to reflect actual change in scores more accurately, and then difference scores were calculated by subtracting each participant’s score at baseline from his/her score at the three-month time point. (Again, only control group participants’ data were analysed.) Descriptive statistics for these difference scores are presented in Table 3.

Table 3

*Extent of Change in Scores for the Control Group from Baseline to Time 2 (n = 44)*

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Change in raw scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group mean</td>
<td>0.6</td>
</tr>
<tr>
<td>Maximum downward change</td>
<td>-10</td>
</tr>
<tr>
<td>Maximum upward change</td>
<td>11</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>5.1</td>
</tr>
</tbody>
</table>

Because the outliers had been restored, the average difference score for the participants, as a group, is not the same as it had been before: It increased minimally from 0.4 (see Table 2) to 0.6 (see Table 3) — but that still suggests extremely high stability of scores. However, inspection of the other cell entries in Table 3 indicates greater movement in scores than is suggested by either of those group means. For example, at least one person scored 10 points lower at the three month point relative to baseline, and at least one person scored 11 points higher. Despite this, there is obviously considerable stability in scores across the three-month period given that the standard deviation is only 5.1. On a psychometric inventory such as the WEMWBS, much of that variation can be probably attributed to measurement error, but some change in scores might also reflect genuine changes in mental well-being for a small number of respondents who, despite being in the control group and therefore not expected to exhibit change, actually did.
A different, and probably more useful, perspective concerning the nature of change in scores can be obtained by converting the downward (i.e., negative) difference scores to positive values via a simple absolute number transformation. Doing so provides an indication of extent of change, regardless of whether the change was upward or downward, and has value if amount of change, rather than direction of change, is of interest. The mean, minimum and maximum values, and the standard deviation obtained from these scores will reflect most meaningfully the volatility of scores across two time periods.

The results obtained using absolute change scores are shown in Table 4, where the entries indicate again that there was greater movement (this time, regardless of whether that movement was up or down) on the WEMWBS scores than is indicated by the group mean change of 0.6. According to this analysis, participants’ scores moved an average of 3 points across the three-month time period and, as should be expected from the data in Table 3, at least one person’s score changed by 11 points. This is a noticeable difference. However, the standard deviation of only 3.6 indicates that the extent of change for most participants was quite small.

Table 4

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Absolute change in scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.0</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>11</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>3.6</td>
</tr>
</tbody>
</table>

Overall, it would seem that scores on the WEMWBS remain quite stable over a three-month period (though not as stable is suggested by differences in the group means) when any systematic change in scores is not anticipated. However, it appears that a small number of people’s scores can change to a moderate extent.
Taken in conjunction with the results in Section 4.1.1, the WEMWBS appears to have high test-retest reliability, and also seems to be capable of reflecting genuine change that could well occur over a time period of three months.

### 4.2 Internal consistency

When based on the responses of all 99 participants at the start of the investigation, Cronbach’s alpha was .90. It was noticeably different for those in the subsequent intervention ($n = 41$) and control ($n = 44$) groups, with alpha values of .92 and .85 respectively.

Cronbach’s alphas, average inter-item correlations, and corrected item-total correlations were produced from data at the three time points for the intervention and control groups combined ($n = 85$). These are provided in Table 5 and generate a range of results.

First, the Cronbach’s alphas ranged from .87 to .90, suggesting an acceptable degree of inter-item consistency. Cortina (1993) has indicated that an alpha value should be above .86 if the average correlation among the items on a scale is above .30 (which it is for all three time points—see next paragraph).

Second, the average inter-item correlations, ranging from .34 to .40, conform to the range commonly regarded as acceptable. For example, although Clark and Watson (1995) recommend that average inter-item correlations range from .15 to .50, and specifically from .40 to .50 if a construct is narrowly defined, Robinson, Shaver, and Wrightsman (1991) regard average inter-item correlations of .30 or better as exemplary.
Table 5

*Indices of Internal Consistency at the Three Points of Data Collection (n = 85)*

<table>
<thead>
<tr>
<th></th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Cronbach’s alphas:</td>
<td>.90</td>
</tr>
<tr>
<td>Average inter-item correlations:</td>
<td>.40</td>
</tr>
<tr>
<td>Item number</td>
<td>Corrected item-total correlations</td>
</tr>
<tr>
<td>1</td>
<td>.414</td>
</tr>
<tr>
<td>2</td>
<td>.577</td>
</tr>
<tr>
<td>3</td>
<td>.603</td>
</tr>
<tr>
<td>4</td>
<td>.372</td>
</tr>
<tr>
<td>5</td>
<td>.581</td>
</tr>
<tr>
<td>6</td>
<td>.706</td>
</tr>
<tr>
<td>7</td>
<td>.624</td>
</tr>
<tr>
<td>8</td>
<td>.777</td>
</tr>
<tr>
<td>9</td>
<td>.534</td>
</tr>
<tr>
<td>10</td>
<td>.547</td>
</tr>
<tr>
<td>11</td>
<td>.361</td>
</tr>
<tr>
<td>12</td>
<td>.696</td>
</tr>
<tr>
<td>13</td>
<td>.780</td>
</tr>
<tr>
<td>14</td>
<td>.573</td>
</tr>
</tbody>
</table>

Third, for all administrations of the WEMWBS none of the corrected item-total correlations falls below .33, and most are well above that level. Nunnally and Bernstein (1994) recommend .30 as a lower permissible cutoff for corrected item-total correlations, so all of the WEMWBS items appear to be satisfactory in terms of this aspect of internal consistency.

Overall, it would appear that the WEMWBS has quite satisfactory internal consistency.
5. Summary

In this sample, the WEMWBS appears to have satisfactory temporal stability (test-retest reliability) and internal consistency (inter-item reliability). There is also some evidence that it is capable of detecting genuine change in mental well-being.

6. References


Appendix G

Activities of Participants ($n = 85$) Retained for Analysis

This appendix comprises three pages of results from the initial section of the demographic and activities questionnaire. This section sought information about how frequently participants engaged in a range of activities, how much satisfaction they derived from those activities (if they engaged in them), and the importance of specified activities.

The results from the three tables in this appendix are referred to in Section 4.3.1.3 of Chapter 4.
Table G.1

Frequency of Activities for Participants at Baseline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Intervention group (n = 41)</th>
<th>Control group (n = 44)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>Craft making</td>
<td>1.9</td>
<td>1</td>
</tr>
<tr>
<td>Dancing</td>
<td>1.5</td>
<td>1</td>
</tr>
<tr>
<td>Drama</td>
<td>1.1</td>
<td>1</td>
</tr>
<tr>
<td>Writing</td>
<td>2.5</td>
<td>2</td>
</tr>
<tr>
<td>Playing a musical instrument</td>
<td>1.5</td>
<td>1</td>
</tr>
<tr>
<td>Art activities</td>
<td>1.6</td>
<td>1</td>
</tr>
<tr>
<td>Woodwork / metalwork</td>
<td>1.3</td>
<td>1</td>
</tr>
<tr>
<td>Other hobbies</td>
<td>2.6</td>
<td>1</td>
</tr>
<tr>
<td>Attending public events, cinema, theatre, etc.</td>
<td>2.7</td>
<td>3</td>
</tr>
<tr>
<td>Club, church, or community group</td>
<td>3.0</td>
<td>3</td>
</tr>
<tr>
<td>Attending sports activities</td>
<td>2.1</td>
<td>1</td>
</tr>
<tr>
<td>Visiting parks, gardens, etc.</td>
<td>2.7</td>
<td>3</td>
</tr>
<tr>
<td>Socialising, including phoning, emailing, etc.</td>
<td>4.4</td>
<td>5</td>
</tr>
<tr>
<td>Physical activities</td>
<td>4.1</td>
<td>5</td>
</tr>
<tr>
<td>Gardening</td>
<td>3.9</td>
<td>4</td>
</tr>
<tr>
<td>Attending an educational course</td>
<td>2.0</td>
<td>1</td>
</tr>
<tr>
<td>Other activities</td>
<td>2.3</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. Numbers in this table are based on a Likert scale of Never (1), Less than once a month (2), About once a month (3), About once a week (4), and More than once a week (5).
Table G.2

Extent of Satisfaction with Activities for Participants at Baseline

<table>
<thead>
<tr>
<th>Activity (n in intervention group; n in control group)</th>
<th>Intervention group (n = 41)</th>
<th>Control group (n = 44)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Means</td>
<td>Medians</td>
</tr>
<tr>
<td>Craft making (20;25)</td>
<td>3.9</td>
<td>4</td>
</tr>
<tr>
<td>Dancing (16;9)</td>
<td>3.3</td>
<td>3</td>
</tr>
<tr>
<td>Drama (7;5)</td>
<td>2.9</td>
<td>3</td>
</tr>
<tr>
<td>Writing (19;18)</td>
<td>4.2</td>
<td>4</td>
</tr>
<tr>
<td>Playing a musical instrument (12;10)</td>
<td>3.7</td>
<td>4</td>
</tr>
<tr>
<td>Art activities (15;8)</td>
<td>3.5</td>
<td>4</td>
</tr>
<tr>
<td>Woodwork / metalwork (10;12)</td>
<td>3.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Other hobbies (20;18)</td>
<td>4.8</td>
<td>5</td>
</tr>
<tr>
<td>Attending public events, cinema, theatre, etc. (32;39)</td>
<td>4.5</td>
<td>5</td>
</tr>
<tr>
<td>Club, church, or community group (32;38)</td>
<td>4.5</td>
<td>5</td>
</tr>
<tr>
<td>Attending sports activities (22;25)</td>
<td>4.4</td>
<td>5</td>
</tr>
<tr>
<td>Visiting parks, gardens, etc. (29;35)</td>
<td>4.2</td>
<td>5</td>
</tr>
<tr>
<td>Socialising, including phoning, emailing, etc. (39;37)</td>
<td>4.6</td>
<td>5</td>
</tr>
<tr>
<td>Physical activities (34;41)</td>
<td>4.6</td>
<td>5</td>
</tr>
<tr>
<td>Gardening (37;36)</td>
<td>4.2</td>
<td>4</td>
</tr>
<tr>
<td>Attending an educational course (16;17)</td>
<td>4.3</td>
<td>4.5</td>
</tr>
<tr>
<td>Other activities (15;27)</td>
<td>4.5</td>
<td>5</td>
</tr>
</tbody>
</table>

Note. Numbers in this table are based on a Likert scale of Completely dissatisfied (1), Neutral (3), and Completely satisfied (5).
### Table G.3

**Importance of Activities for Participants at Baseline**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Intervention group (n = 41)</th>
<th>Control group (n = 44)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>To increase fitness</td>
<td>4.5</td>
<td>5</td>
</tr>
<tr>
<td>To increase socialisation</td>
<td>4.1</td>
<td>5</td>
</tr>
<tr>
<td>To increase self-esteem</td>
<td>3.7</td>
<td>4</td>
</tr>
<tr>
<td>As a distraction from grief</td>
<td>2.1</td>
<td>1</td>
</tr>
<tr>
<td>It provides relaxation</td>
<td>4.3</td>
<td>5</td>
</tr>
<tr>
<td>It allows for spontaneity</td>
<td>3.6</td>
<td>4</td>
</tr>
<tr>
<td>As a way of occupying your time</td>
<td>3.3</td>
<td>4</td>
</tr>
<tr>
<td>Because it makes you feel joyful and increases your good humour</td>
<td>3.8</td>
<td>4</td>
</tr>
<tr>
<td>It offers you a sense of contribution</td>
<td>3.9</td>
<td>4</td>
</tr>
<tr>
<td>To improve or maintain mental alertness</td>
<td>4.6</td>
<td>5</td>
</tr>
<tr>
<td>It allows for the expression of feelings</td>
<td>3.6</td>
<td>4</td>
</tr>
<tr>
<td>To develop decision making capabilities</td>
<td>3.4</td>
<td>4</td>
</tr>
<tr>
<td>Because it promotes your creativity</td>
<td>3.3</td>
<td>3</td>
</tr>
<tr>
<td>It develops problem solving skills</td>
<td>3.2</td>
<td>4</td>
</tr>
<tr>
<td>It offers you a distraction</td>
<td>2.9</td>
<td>3</td>
</tr>
<tr>
<td>To increase opportunities</td>
<td>3.2</td>
<td>4</td>
</tr>
</tbody>
</table>

*Note.* Numbers in this table are based on a Likert scale of Not at all important (1), Neutral (3), and Very important (5).
APPENDIX H

Interview Schedule for Qualitative Study

This appendix consists of the interview schedule for the qualitative study. See Chapter 5, *The qualitative study*, Section 5.3.2 *Data collection*. The interview schedule was a guide for the interviewer that was used for gathering participants’ explanations of behaviour for later analysis and interpretation.
APPENDIX H  INTERVIEW SCHEDULE FOR QUALITATIVE STUDY

Commencement

- “Looking back over the last 6 months since participating in the creativity program did you notice any effects of participation on anything in your life?”…

With a focus on mental health/wellbeing behavioural changes:

- If there is any difficulty in getting the conversation started the interviewer would say something like, “For example, in the way you felt about yourself?” …or “Any difference in the way you felt about yourself?”… If so, “Did this happen immediately after the program?” If so, “Did the difference continue?” …

With a focus on creativity behavioural changes:

- If there is any difficulty in discussing creativity then the interviewer would say something like, “Over the last six months did you notice any effects in the way you think?” “For example the way you solve problems?” or “For example, in the way you think about problems?”… or “For example in the way you go about doing anything new in your life?”… If so, “Did this happen immediately after the program? If so, “Did the difference continue?” …

With a focus on evaluation of the creativity program

- “What did you understand the 12 weeks research program was about?” “Did you have any expectations of the program? “Did it meet your expectations?” …
- “What parts of the program did you find most enjoyable/uncomfortable? What part/s did you find least helpful?” …
- “What did you think about the creative thinking and problem solving activities, the creative project, the dialogues with others, the games, puzzles and activities about maintaining a healthy brain?”…
- “How did you experience/think/feel about the expressive drawing and writing tasks?”...
- “Did you have any feelings/thoughts/experiences of participating in the creativity program that we have not covered?”...
- “Do you have any suggestions for the improvement of this program? Would you recommend this course to others?”…
- “Is there anything else that I have missed and that you might like to talk about the creativity program”…
Appendix I

Substantive Coding of Interview Transcripts

This appendix is a table that contains the outcome of the substantive coding analysis of the content units and the final five categories/themes reported in Chapter 5, *The qualitative study*. See Section 5.3.5 for a description and outcomes of the substantive coding analysis process.
## Table I1

Substantive Coding: Content units and categories

<table>
<thead>
<tr>
<th>Content units</th>
<th>Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>More comfortable about the way I looked at life</td>
<td>Confident and stronger</td>
</tr>
<tr>
<td>Better coping with life</td>
<td></td>
</tr>
<tr>
<td>Jolted me out of something that could have gone into self-pity</td>
<td>13 participants</td>
</tr>
<tr>
<td>I’m a stronger person</td>
<td></td>
</tr>
<tr>
<td>Opened me up</td>
<td></td>
</tr>
<tr>
<td>I’ve taken charge of my life a bit better</td>
<td></td>
</tr>
<tr>
<td>Being in the group gave me strength</td>
<td></td>
</tr>
<tr>
<td>So it’s given me the confidence</td>
<td></td>
</tr>
<tr>
<td>My whole outlook has become very positive...and how to think outside the</td>
<td></td>
</tr>
<tr>
<td>square...and I have used it</td>
<td></td>
</tr>
<tr>
<td>More confident at being myself</td>
<td></td>
</tr>
<tr>
<td>Better understanding of self</td>
<td></td>
</tr>
<tr>
<td>More motivated, more active and keep my brain working</td>
<td></td>
</tr>
<tr>
<td>More outgoing than I was before</td>
<td>More outgoing</td>
</tr>
<tr>
<td>I’m more conscious of other people’s feelings now than I used to think</td>
<td>changed my thinking about</td>
</tr>
<tr>
<td>Reinforced me to listen to what other people are saying</td>
<td>people</td>
</tr>
<tr>
<td>Camaraderie reinforced positive feelings when you get up every day</td>
<td></td>
</tr>
<tr>
<td>Negotiating with people</td>
<td>8 participants</td>
</tr>
<tr>
<td>Changed my thinking about people</td>
<td></td>
</tr>
<tr>
<td>Feel more of a participant in the community again</td>
<td></td>
</tr>
<tr>
<td>It opened up new people for me</td>
<td></td>
</tr>
<tr>
<td>To get out and involve myself</td>
<td></td>
</tr>
<tr>
<td>More motivated, more active and keep my brain working</td>
<td>Thinking more</td>
</tr>
<tr>
<td>I think more about certain things before I actually do them</td>
<td>in a different way</td>
</tr>
<tr>
<td>I think about things a little bit more</td>
<td></td>
</tr>
<tr>
<td>I think through things more in trying to find out how to solve a problem</td>
<td>9 participants</td>
</tr>
<tr>
<td>I think I can solve problems now</td>
<td></td>
</tr>
<tr>
<td>I have been stimulated to look more into the mind</td>
<td></td>
</tr>
<tr>
<td>I stop and make myself think a bit longer</td>
<td></td>
</tr>
<tr>
<td>I’m capable of dealing with things...satisfaction</td>
<td></td>
</tr>
<tr>
<td>I’ve got a lot more specific</td>
<td></td>
</tr>
<tr>
<td>Sharpened at a lot of the way I think</td>
<td></td>
</tr>
<tr>
<td>Define quite a few things, plans that I wouldn’t have normally done</td>
<td>Planning</td>
</tr>
<tr>
<td>The program ‘reinforced the idea I’ve had about keeping my brain working’</td>
<td>doing things in a different</td>
</tr>
<tr>
<td>I think more quickly [problem solving]</td>
<td>way</td>
</tr>
<tr>
<td>I do use creative problem solving</td>
<td></td>
</tr>
<tr>
<td>Look at problems slightly different way, different angles</td>
<td>9 participants</td>
</tr>
<tr>
<td>Reawaken the expressive writing side of me</td>
<td></td>
</tr>
<tr>
<td>I continue with my cross word puzzles</td>
<td></td>
</tr>
<tr>
<td>I’ve become more practical</td>
<td></td>
</tr>
<tr>
<td>Not working as much</td>
<td></td>
</tr>
<tr>
<td>Sit and do puzzles</td>
<td></td>
</tr>
<tr>
<td>My attitude to life is brighter</td>
<td>Calm, content.</td>
</tr>
<tr>
<td>More content with life</td>
<td>open to life</td>
</tr>
<tr>
<td>It calmed me down</td>
<td></td>
</tr>
<tr>
<td>I learnt to be open to new learning</td>
<td>3 participants</td>
</tr>
</tbody>
</table>
