

**THE OUTCOMES OF A WILDERNESS EXPERIENCE
PROGRAMME ON THE RESILIENCE AND
PSYCHOLOGICAL ADJUSTMENT OF SOUTH AFRICAN
ADOLESCENTS**

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ABSTRACT

Wilderness therapy is emerging as a promising approach in helping adolescents (Higgins, 1999), even though many questions about this mode of therapy remain unanswered. Although there is a substantial body of research examining wilderness therapy on a range of different participants, very few studies investigate the effects of these programmes on participants from more traditional (i.e. African or Eastern) cultures and contexts. A number of wilderness experience programmes (WEPs) are currently being run throughout South Africa, targeting various groups. This study aims to examine the outcomes of one such programme on a group of young South Africans. A quantitative, quasi-experimental approach was taken in the research design, data collection and analysis. Data was collected from two nonrandomised groups (an experimental and a control group). The experimental group attended a two-night, three-day WEP, while the control group attended an adjusted school programme. Data collection occurred on three occasions. There was an initial pre-test before the WEP and two post-tests subsequent to it. This study supports some positive outcomes to a WEP. Specifically, there was a significant increase in psychological adjustment and resilience initially after the WEP; however this effect was only sustained at the two month follow-up test for the former. No significant differences were observed in the control group. It is evident from the literature review that there is an immense healing potential in wilderness environments, and that there are apparent benefits to wilderness therapy. The difficulties arise when attempting to investigate, identify and understand these effects.

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My family and friends, for their patience, encouragement and quiet understanding, who because of this study heard and saw less of me than ever before.

Declaration

I declare that this thesis is a product of my own work and that all sources that I have used or quoted have been indicated and acknowledged by means of complete references.

This dissertation has not been submitted previously by me for a degree at this or any other university.

25 November 2010

Carla Elizabeth Nunes

Date

Thesis supervisor's approval for submission

As the candidate's supervisor I have approved this thesis/dissertation for submission.



B.J. Killian (PhD)

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CHAPTER ONE

INTRODUCTION

“The ecological, socioeconomic, and political problems facing humanity today are so immense that they require that we re-examine our entire approach to problem solving and learn to work together in new and imaginative ways.”

(Nelson, 1998, p. 37)

In this first decade of the 21st Century, the immense strain on our natural environment and the Earth’s ecosystem as a whole is becoming increasingly more evident. Stories of the effects, often devastating, of global warming and climate change are continuously in the news, in documentaries, and have even become a part of our general discourse. We are stretching our natural environment and resources to the limit. What is even more frightening is our continued abuse of our planet in spite of this knowledge.

As a result of this, our wilderness havens are rapidly being destroyed on all fronts. In light of the issues discussed in this study, and in many other similar ones, it could be argued that not only are we damaging entities that help sustain us physically, but that these entities could also play a major role in personal and community development and healing.

Globally, it seems that the use of wilderness for personal growth, therapy, education, and leadership development is becoming a widespread activity in both the private and public sectors (Moore & Russell, 2002). In South Africa, due to the preservation and protection of our wildlife, flora and fauna, we have a rich natural heritage hosting a variety of wilderness settings, i.e. beaches, deserts, mountains, forest and bushveld. Wilderness therapy programmes use these natural environments, allowing people contact with them in a

controlled and responsible way. Through this, they educate participants about these wilderness environments and hopefully protect them for future enjoyment.

1.1. Wilderness

“Wilderness is a state of mind influenced by personal and cultural views (Nash, 1982).

Therefore, whether a particular experience constitutes a wilderness experience is a highly subjective judgement.”

(Patterson, Watson, Williams, & Roggenbuck, 1998, p. 424)

1.1.1. Defining wilderness (physical space)

The term wilderness is a socially constructed term that has different meanings in different contexts (i.e. urban or rural) and cultures (Western or African). In defining wilderness, a distinction needs to be made between the natural and the artificial which in itself will be influenced by one’s context and culture. Therefore, to echo Taylor (2001), in attempting a definition of wilderness, a boundary that does not exist anywhere but in the mind, is created.

However, some definition of wilderness is necessary in order to better understand wilderness therapy and the experiences involved. Unfortunately ‘pure’ wilderness environments are rare, and those that do exist are permanently at risk of being endangered. For this reason, a broad definition of wilderness that makes space for the inclusion of human influences has been selected. Most Western cultures or societies are likely to agree on the following merged definition of wilderness taken from the Oxford (Tulloch, 1993, p. 1797) and Collins (Hanes, 1991, p. 207) dictionaries; and Wohill (1983, p. 10, as cited in Taylor, 2001): A wild, uninhabited, uncultivated, natural region

that may have experienced substantial intrusions through building, roads, and artefacts of various kinds – as long as the natural aspects remain predominant over the built ones.

The connotations of ‘wilderness’ have many faces. Generally, Western or more industrial and developed cultures regard it as savage, dirty and uncontrollable, consisting of too many unknowns. This may be due to a general unfamiliarity with the wilderness thus encompassing countless mysteries. A lot of what is valued and learnt in our urban lives is of little use and is irrelevant in the natural world, resulting in feelings of vulnerability. A sense of fear for what we are not prepared for and what is so foreign to us emerges. It is understandable then that a separation has been created dividing the wilderness and ourselves.

Conversely, wilderness environments are held as sacred and invaluable by many, particularly by traditional cultures. For example, indigenous people of North America believe untamed habitats are places of great security and peace (Cumes, 1998), a source of great learning and wisdom. And closer to home, the San have survived for centuries in a wasteless desert most other people have avoided because of their connection or “oneness with the Kalahari’s fauna and flora” (Cumes, 1998, p. 6).

1.1.2. Exploring wilderness experiences (psychological experience)

Conventionally, wilderness experiences are perceived as merely recreational, and the outdoors as a place where people participate in leisure activities. Slowly gaining more support is the realisation that nature can be used in a planful way as a means of promoting an individual’s physical, social and emotional health (Mason, 1987). In a 10-year study in the early 1970s, Kaplan and Kaplan (n.d., as cited in Gorrell, 2001) studied 27 groups taking

part in nine- to fourteen-day wilderness programmes in which the participants recounted experiencing a sense of peace, wholeness and the ability to think more clearly.

It is important to note that not all wilderness experiences are good ones, and although some individuals have major life-altering experiences during wilderness camps or courses, others have negative experiences. Taylor (2001) suggests that this may be due to upbringing, or other cultural factors that might impact a person's perception and overall experience. In addition, the weather and not being adequately prepared are factors that are likely to impact one's overall wilderness encounter. Without negating those negative encounters, many accounts of individual wilderness experiences are positive and include an array of benefits which appear to be as individualistic and personal as the person's experience itself. These positive experiences in natural environments can be highly satisfying and the perceived benefits extremely valued. Taylor (2001) argues that it is the wilderness environment itself which is the primary basis of these satisfactions. Similarly, Ramsey (1989, p. 1) affirms that a wilderness experience is "a sense of wholeness and spiritual or psychological healing through one's contact with nature."

At the South African 1989 Wilderness Conference, Ramsay (1989, p. 2) raised an interesting question in her presentation, asking "What is it about our society that generates a need for wilderness?" i.e. why is there an ever-increasing demand for contact with natural areas? She suggested this as an alternative perspective to trying to understand and explain how positive wilderness experiences can be produced.

1.2. Rationale and Outline of this Study

Wilderness therapy is emerging as a promising approach in helping adolescents (Higgins, 1999), even though many questions about this mode of therapy remain unanswered.

Numerous research projects have explored these questions. Although there is a substantial body of research examining wilderness therapy on a range of different participants (ie. at-risk youth (Bandoroff & Scherer, 1994; Clark, Marmol, Cooley, & Gathercoal, 2004; Harper, Russell, Cooley, & Cupples, 2007; Larson, 2007; Weston et al., 1999); psychiatric patients (Eikenæs, Gude, & Hoffart, 2006); families (Harper, 2008); and, abused women (McBride & Korell, 2005), there is still a gap in the literature. Very few studies investigate the effects of these programmes on participants from more traditional (i.e. African or Eastern) cultures and contexts. The majority of available studies have been set in Western countries (e.g. the USA, Canada, Israel and the UK). While these results are important to explore, they do not reflect South African society, and so cannot be generalised to our multicultural population.

Furthermore, in order for wilderness therapy to be featured and respected in the psychological community as a possible modality for intervention, it has to be shown to be more, or at the very least as effective as traditional treatment options. If through rigorous research this could be achieved, then WEPs could become recognised by schools, government, and medical aid and insurance companies as a viable tool to empower our youth. Funding would more likely be made available in order to make wilderness therapy more accessible for adolescents of families with limited or no incomes.

This introduction has aimed at broadly introducing the reader to the area of interest, establishing the context, and presenting a rationale for the current study. In the next chapter, wilderness therapy will be explored and further defined, and relevant theoretical and

empirical literature will be described. A chapter on methods will give a clear account of the aims and hypotheses of this quantitative study, including information on the design, sampling strategy, data collection instruments and procedures, and ethical considerations. A thorough description of participants, instruments and the procedure will be dealt with in this chapter; ethical considerations will also be included. The results chapter will report the results of this quantitative study. Finally in the penultimate chapter (chapter 5), the results will be discussed in further detail, relating and comparing them to the existing body of research. Limitations of the current study will also be outlined, and recommendations and suggestions for further research will be suggested, before the conclusions are drawn in the final chapter.

CHAPTER TWO

LITERATURE REVIEW

2.1. Ecopsychology

“We need a new discipline that sees the needs of the planet and the person as a continuum and that can help us reconnect with the truth that lies in our communion with the rest of creation”

(Roszak, n.d., as cited in Roszak, 1993, p. 48)

Ecopsychology is grounded in the notion that people experience an innate need to interact with the living world (biophilia) of which we are a part (Gorrell, 2001). Mainstream Western psychology has generally ignored traditional societies' view that “reciprocity between the human and the non-human to be the essence of sanity” (Roszak, 1993, p. e1). Instead, it follows the Western philosophical characterisation of the human being as primarily distinct from nature (Keepin, 1991). This outlook of mainstream psychology corresponds with many Western cultures that have lost their sense of connectedness with all things in their physical world (Blow, 1990). Unlike the Eastern, African and other traditional cultures, Western ones have become split from nature. Individuals are perceived as solitary islands, failing to notice the latent effects the welfare of the natural world may have on an individual's wellbeing. For example, in the American Psychological Association's Diagnostic and Statistical Manual IV-TR (1994) (in which all recognised mental illnesses are listed and defined), there is only one reference to the natural world. It is found in the description of seasonal affective disorder (Roszak, 1995). The contemporary field of ecopsychology is a framework for healing the separation between people and the natural environment (Greenway, 2002; Roszak, 1993), by

exploring and better understanding both aspects of the human-nature relationship (Scull, 2002).

However, in reality, humankind is becoming progressively more reliant upon modern technology and even less in touch with the natural environment creating a “disconnection from our roots [which] instils feelings of restlessness and alienation and may undermine emotional health” (Gorrell, 2001, p. 62). A central assumption is that the inner (including intimate personal feelings and experiences) and outer (including the environment, culture and political processes) worlds reflect and support each other, implying that a healthy psyche is inseparable to a healthy ecosystem (Gomes, 1998, as cited in Taylor, 2001).

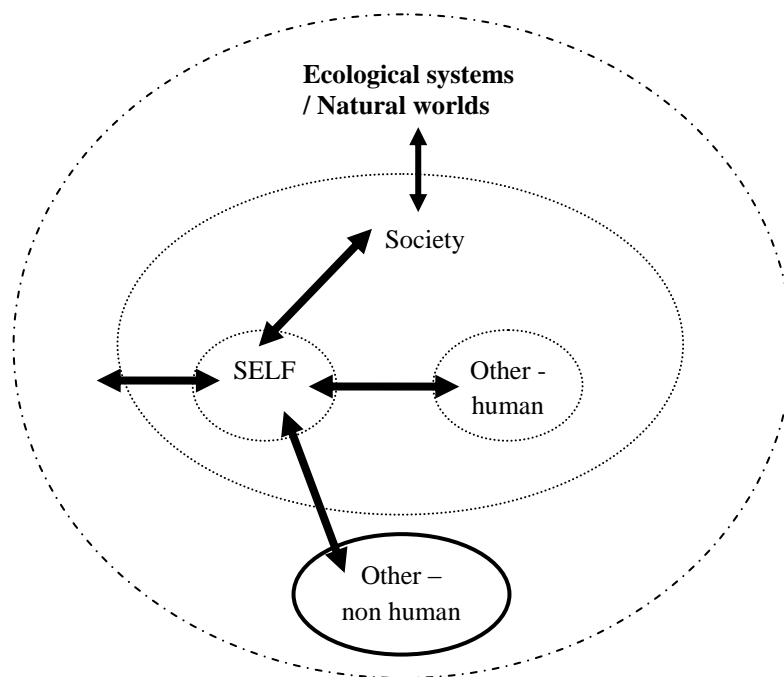


Figure 2.1. Figure illustrating our connection to nature (adapted from Armstrong, n.d.).

Figure 2.1. is a simplified illustration of the boundaries between self and non-self (i.e. the other, society and the natural world) and our direct and indirect connectedness to all entities,

including ecological systems. In summary, ecopsychology is interested in the boundary between self and non-self, examining the “psychological processes that bond us to the natural world or that alienate us from it” (Gomes, 1998, as cited in Taylor, 2001, p. 1), and sees the needs of individuals and that of the planet on a continuum (Roszak, 1993).

It seems from this argument that our connection to nature may be more complex than we realise, even going as far as having an effect on our psychological health. In Conn’s (n.d., as cited in Gorrell, 2001, p. 64) words “we don’t live on the earth: We live in it....I look not just at what’s going on in individual’s lives, but at the ways they’re affected by cultural stress and what connections they have with the natural world.” Thus, many factors including the individual’s connectedness, or lack thereof, with the natural world would contribute to a person’s development.

The core belief of ecopsychology is that ecology needs psychology, and psychology needs ecology. This belief developed from the assumption that we are “sympathetically bonded to the Earth that mothered us into existence” (Roszak, 1995, p. 5). Many studies in the field of ecopsychology have focussed on the psychological benefits of being in and near nature.

Interestingly, benefits do not necessarily only occur in pure wilderness settings but seem to be influenced by any aspects of nature or the natural world.

For example, Kaplan and Kaplan (1993, as cited in Gorrell, 2001) surveyed 1 200 employees, and found that office workers with a window view of nature (i.e. trees, bushes, or even a large lawn) felt significantly less frustrated and more enthusiastic about their jobs than those without windows. Similarly, Davis-Berman and Berman (1994, as cited in Rosol, 2000) give an example of the therapeutic benefits of having hospital patients spend time in the outdoors.

Early ‘tent therapy’ began when hospitals, at the beginning of the 20th Century, had to separate sick patients with tuberculosis from healthier ones, and out of necessity, placed them in tents set up outside on hospital grounds. They stated that both physical and psychological health improvements were detected immediately. Due to such positive results, the same was tried with other patients. “The therapeutic benefits of having patients spend time in the outdoors was noted, and today, is the basis of wilderness therapy programs” (Davis-Berman & Berman, 1994, as cited in Rosol, 2000, p. 42). In another published study on recovering surgical patients, the effects of having a window view of trees in full foliage verses a brick wall was investigated (Ulrich, n.d., as cited by Gorrell, 2001). Results revealed that patients with a view of nature (a tree in this case) had shorter hospital stays, fewer complications, and required less pain medication.

It is unknown what exactly the above-mentioned positive effects were due to, whether it was the view, or the sunlight entering through the window, or the fresh air. Nonetheless, they are all characteristics of natural and wilderness environments. Unfortunately, only short descriptions of these studies were given, with no mention of the methodology, including reliability or validity, of the studies.

As previously implied, ecopsychologically, a nature-friendly community is more likely to be collectively and individually healthier. Understandably, this is why ecopsychologists agree that the protection of our wilderness diversity is vital to the well being of us all. Wilderness environments provide everyone (from all cultures) with the opportunity to reconnect with nature, which is an invaluable resource that provides relief from the damage produced by our fragmented and alienated societies (Ramsay, 1989).

2.2. Wilderness therapy: Definitional issues

One of wilderness therapy's greatest limitations is its lack of a common and accepted definition (Gillis, 1992; Russell, 2001; Russell et al., 2000; Russell & Phillips-Miller, 2002). The array of definitions and terminology in the literature (Russell & Phillips-Miller, 2002) makes for very confusing and frustrating reading. Additionally, this makes it difficult to compare, contrast and replicate research studies on wilderness therapy programmes, processes and outcomes from one programme or setting to the next (Russell, 2001). An established and agreed upon definition of wilderness therapy is necessary for progress in the field and for future research. As Russell (2001) states, not only researchers, but potential participants too, would benefit from a clear, concise, universal definition.

In the literature, wilderness therapy is also referred to as adventure-based counselling, outdoor-adventure pursuits, therapeutic wilderness camping, adventure therapy, wilderness adventure therapy, wilderness treatment programmes, and wilderness experience programmes (Gillis, 1992; Moore & Russell, 2002; Russell & Phillips-Miller, 2002). However, in some cases they are defined autonomously. For example, Crisp (1998, as cited in Rosol, 2000) distinguishes between adventure therapy, wilderness-adventure therapy and wilderness therapy. According to Crisp (1998, as cited in Rosol, 2000), adventure therapy is done indoors, wilderness therapy takes place completely outdoors requiring overnight trips, and wilderness-adventure therapy utilises aspects of the natural environment (caving, rock climbing, and other outdoor activities) but does not run overnight. Although Crisp (1998) has defined the above in terms of context, he has neglected to differentiate, or even mention, their content.

Despite these conceptual setbacks and the lack of consensus on the definition (and title, in fact) in the literature, several elements are universal (Weston et al., 1999) in all varieties of wilderness therapy. These consistent and central features shared by programmes include:

- (a) Immersion in an unfamiliar wilderness or backcountry environment;
- (b) Group living and cooperation with peers;
- (c) Individual and group therapy sessions (usually a form of eclectic therapy, i.e. family systems based, cognitive behavioural, and experiential);
- (d) Educational curricula - assignment of a variety of mentally and/or physically challenging objectives (including river rafting, hiking and mastery of skills, such as fire-making, survival, orienteering, etc.);
- (e) Frequent and intense interactions that usually involve group problem solving and decision making;
- (f) Stress and perceived risk;
- (g) A nonintrusive, trained leader or facilitator; and,
- (h) Alone time (solo periods of introspective time for participants to reflect on their lives and to receive insight and inspiration; similar to rites of passage experience practised by cultures throughout the world).

(Fischer & Attah, 2001; Hattie, Marsh, Niell, & Richards, 1997; Russell et al., 2000; Weston et al., 1999)

At this point, it is essential to provide a clear understanding of the term wilderness therapy as it applies to this study. Wilderness therapy is essentially the running of therapeutic techniques within outdoor settings (Conner, 2000). It generally focuses on outdoor adventure pursuits and other activities to develop personal and interpersonal growth (Kimball & Bacon, 1993, as cited in Russell, 2001). Perhaps wilderness therapy is best understood when

conceptualised on a continuum, as illustrated in Figure 2.2. On one end the more clinical wilderness therapy programmes (WTP) are situated. These programmes encompass all of the elements listed above and the clinical procedures put forward by Russell (2001), according to whom, a treatment plan for each participant should be created outlining individual goals and objectives which are determined by a full clinical assessment of their specific needs.

Following the WTP, he further suggests that a comprehensive evaluation of service outcomes be conducted.

On the other extreme of the continuum are wilderness experiences in natural settings with no intentional therapeutic outcomes beyond the therapeutics provided by being in a natural setting.

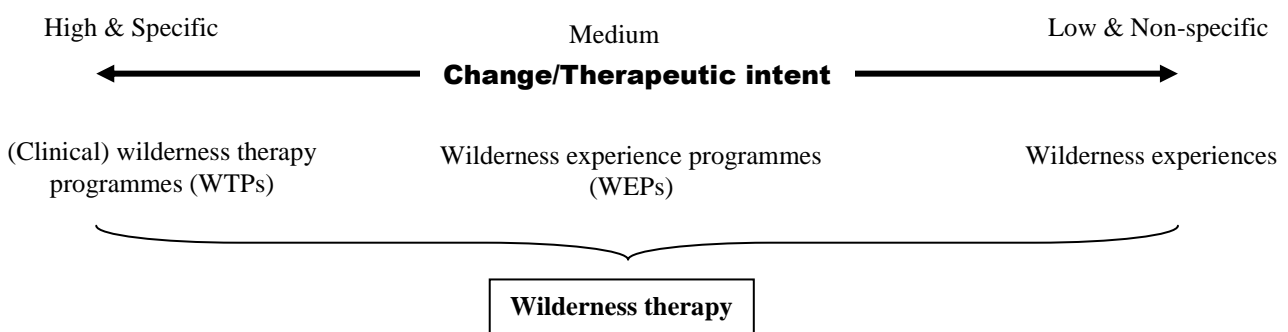


Figure 2.2. The wilderness therapy spectrum

Somewhere between the more clinical WTPs and the non-specific wilderness experiences, there is an array of other wilderness, adventure and experiential programmes that work mainly with low-risk youth. These wilderness experience programmes (WEPs) share many similarities with the WTPs without being clinically orientated. Essentially, they share the same criteria as listed above, with the exclusion of individual and group therapy sessions;

however, WEPs do retain the group and individual reflection distinguishing them from basic wilderness experiences.

Another difference between the more clinical WTPs and WEPs is the qualifications of the staff. As argued by Itin (2001), the distinction between WTPs and WEPs is based on the degree held by the practitioner. From this position, in order to run WTPs, a person must be a qualified psychologist or hold a master's degree (or higher) in a human service related field (social work, public health etc.). Conversely for WEPs, staff members need not have such qualifications; in fact no qualifications are stipulated. Ideally, for both WTPs and WEPs, prepared practitioners should be skilled in adventure pursuits and safety, and have some wilderness experience.

WEPs generally focus on applying the healing, inspirational elements and 'challenge' opportunities of wilderness experiences using general therapeutic modes, with the aim of facilitating human potential through personal growth, education, team building, leadership and/or organisational development (Friese, Hendee, & Kinziger, 1998; Russell, 2001; Russell et al., 2000). The intent for therapeutic change is therefore not as high or specific as with WTPs.

In order to deal with the discrepancies and confusion around definitions and titles in this field, two terms will be used in this study – wilderness therapy programme (WTP) and wilderness experience programme (WEP). The former will be applied when referring to the literature and/or where all the above mentioned criteria are satisfied. And, the latter, to describe less clinically structured wilderness experience programmes like the one used in this

research. The term wilderness therapy will be used as an umbrella term representing the spectrum of programmes available.

2.3. Benefits of Wilderness Therapy (including WEPs)

“The wilderness environment, characterized by naturalness and solitude, can be seen as a therapeutic environment in and of itself”

(Russell et al., 2000, p. 213)

Both qualitative (e.g. Norton, 2007; Sklar, Anderson, & Autry, 2007; Taylor, 2001) and quantitative (e.g. Bandoroff & Scherer, 1994; Fischer & Attah, 2001; Hattie et al., 1998; Kelley, Coursey, & Selby, 1997; Norton, 2007; Romi & Kohan, 2004) studies show beneficial outcomes after WTPs and WEPs. One of the main advantages of wilderness therapies is that they provide an opportunity for the integration of individuals into natural environments where both benefit: The individual gets a potential life-changing or life-enhancing experience, and the environment becomes a haven that is protected for its magnificence and for its future use.

WEPs are often short-term group interventions which are likely to be well suited to our context. South Africa’s historical legacy, compounded by growing poverty, unemployment, HIV infection rates, violent crime and xenophobia, is expanding the need for effective, culturally-appropriate (for example, interventions or programmes designed, standardised and evaluated for all South Africans) and affordable interventions. Many, especially ecotherapists, would agree that the development and marketing of this form of therapy is long overdue.

WTPs and WEPs are of particular interest because of their potential for multiple benefits. Additionally, limited research has been done in this area in South Africa. Benefits include Rozak's (1993, p. e1) "healing ourselves; healing the Earth" notion which relates to the 'win-win' situation described. Economic empowerment could be another advantage where rural communities near, or in, wilderness areas where programmes are conducted stand to financially benefit. These programmes bring with them job possibilities and other potential informal income (for example, supplying a market for fresh produce, rural or traditional crafts, and souvenirs).

Various other benefits have been associated with wilderness experiences. The majority of them report evidence of improved self-concept, self-esteem or self-confidence, locus of control and social attitude following the wilderness intervention (Bandoroff & Scherer, 1994). In Moore and Russell's (2002) meta-analysis of 247 research studies, the evaluated studies focussed on two main effects on participants: (a) The development of various aspects of self-concept, and (b) the development of appropriate and adaptive social skills. Several of the studies also examined recidivism in criminal behaviour, while a few studies were found on the specific effects of wilderness programmes on substance abuse and dependence.

Another meta-analysis by Hattie et al. (1997) combined the results of 96 individual studies and found positive effects in six areas: Independence, confidence, self-efficacy, self-understanding, assertiveness, internal locus of control and decision-making. The 'Taxonomy of Wilderness Benefits', one of the most thorough indices of wilderness benefits, created by Driver and his colleagues (n.d., as cited in Taylor, 2001) divided the benefits into two categories, social and personal. Included in this were some of the benefit categories of interest to ecopsychologists, for example developmental, therapeutic/healing, physical health, spiritual, and self-sufficiency.

Even though there is a large body of research supporting the beneficial effects of wilderness therapy, little is known about why or how wilderness therapy works, who it works for, under which conditions it works, and for how long it works (Weston et al., 1999). In fact, these issues are often disputed. For example, some experts claim the natural setting to be the most important therapeutic element, while others argue that it is the activities themselves and how they are experienced (Weston et al., 1999).

Russell (2001) argues that it is the real and concrete sense of accomplishment on completing a WTP or WEP combined with physical health and well-being, which may lead to participants feeling better about themselves, resulting in increases in self-esteem and the initial steps towards personal growth. Participants carry the experience with them, which can be used to draw strength from it in the future. In other words, participants believe that because they managed to complete a WTP or WEP, they are also able to complete other daunting tasks (Russell, 2001). They start to realise that many of their perceived limitations are self-imposed (Luckner, 1989, as cited in Herbert, 1998).

Therapeutic intervention through WTPs and WEPs allow for the opportunity for participants to rewrite their life's narrative, to replace old patterns of behaviour with new ones (Romi & Kohn, 2004). The new patterns are based on more empowered feelings of being significant ("I'm an important part of the team"), having power ("I was able to help a teammate who was having a rough time"), and being competent ("There was a flood, and I managed to forge a secure passage over the water, just like I'd learned") (Romi & Kohan, 2004, p. 131). Peel and Richards (2005) suggest that outdoor therapeutic work allows for the participants (clients and staff) to make use of the readily available metaphors and isomorphs. One's journey through

or experience during a wilderness therapy experience (both WTPs and WEPs) may metaphorically represent their journey and struggle through life. “Clients frequently see for themselves the metaphorical links between elements of the outdoors or aspects of an activity and issues that they are working on themselves” (Peel & Richards, 2005, p. 6).

Nadler and Luckner (1992, p. 59, as cited in Herbert, 1998) argue that wilderness programmes encourage people "to do things they might not ordinarily do; to leave their safe, familiar, comfortable, and predictable world and enter into uncomfortable new territory.". The therapeutic approach of wilderness therapy does not force change; instead it allows for the environment to influence participant’s response through natural consequences (Russell, 2001), which provides the impetus for a potentially transformational experience.

Reflection is also regarded as a central component contributing to the benefits of wilderness therapy (Herbert, 1998). Through reflecting on their wilderness experiences, participants are able to assess its meaning for other life areas. Through the individual (scheduled and private) and group reflection sessions, participants are able to process their feelings and thoughts around their experiences. This process may lead to an altered version of their life narrative. In his 2001 paper, Russell states that it is the development of an overall appreciation for the environment and awareness of nature that encourages personal reflection and the growth of a connection with ecology and natural processes, echoing basic ecopsychological views.

2.3.1. A theoretical understanding of the benefits of wilderness therapy: A Jungian approach

A theoretical foundation and understanding of the benefits of wilderness therapy can be drawn from a Jungian perspective. Jung was conceivably the only major figure in the history

of psychology to take a genuine interest in the relationship between humans and nature (i.e. the wilderness) (Sabini 2002, as cited in Schroeder, 2007). He foreshadowed the beginning of ecopsychology by numerous decades when he said: ‘Our psyche is part of nature, and its enigma is as limitless.’ And elsewhere: ‘Matter in the wrong place is dirt. People got dirty through too much civilisation. Whenever we touch nature we get clean.’ (Sabini, 1995, as cited in Taylor, 1998, p. e5).

Jung’s theories of the unconscious and related concepts have theoretical value in accounting for the therapeutic effects of wilderness (Blow, 2000). Three psychological concepts need to be understood as a prerequisite to understanding how the wilderness impacts on the individual psyche – the unconscious, archetypes and projection.

2.3.1.1. The unconscious

The first concept is the unconscious. It is difficult for most people to understand and appreciate the concept of the unconscious, yet its influence is everywhere around us. According to Jung, within the unconscious mind, a personal and a collective unconscious exist. The personal unconscious contains unique individual experiences. In other words, it is a mental reservoir for a single individual’s own forgotten experiences, feelings, and memories (Hook, Watts, & Cockcroft, 2002). This ‘stored’ (i.e. repressed or forgotten) information in the personal unconscious may be retrieved (Engler, 1995) (although not necessarily readily accessible) and is open to change. Alternatively, the collective unconscious is shared across humanity (Engler, 1995). It contains the universal, impersonal and collective history and memories of mankind. Unlike the personal unconscious, the collective is resistant to change because of its evolution over generations and the fact that it is universally common (Hook et al., 2002).

2.3.1.2. Archetypes

The archetypes (the second concept) lie within this collective unconscious. Jung described these archetypes as “a universal thought form or predisposition to respond to the world in certain ways” (1936, as cited in Engler, 1995, p. 80). They are psychological patterns that appear throughout human experience, running through age-old myths, fables, fairy tales, sagas, legends and stories, found in every culture throughout human history (Aizenstat, 1995; Cumes, 1998). They are the symbolic forms of the unconscious (Aizenstat, 1995; Ramsay, 1989).

Blow (1990, p. 157) argues that “entering into wilderness may potentially be perceived as a return to a habitat symbolic of our archetypal origins”. Thus wilderness areas can be experienced as an archetypal realm (Blow, 1990; Cumes, 1998; Ramsay, 1989). Jung’s concept of the archetypes bears some similarity to naturalist E. O. Wilson’s (1984, as cited in Schroeder, 2007) notion of “biophilia” (briefly mentioned in the ecopsychology section above). Wilson believes that, through evolution, the human mind has become genetically predisposed toward a fascination with other living organisms and natural environments (especially those that were important to survival), and that “this tendency underlies the symbolic imagery that appears in dreams and cultural traditions” (Schroeder, 2007, p. 17). It seems reasonable to presume that, because humans evolved in the natural world, human perception and awareness would in some way be instinctively adjusted to natural phenomena (Schroeder, 2007).

There are a variety of archetypes relevant to the wilderness, but of particular importance are the hero, the Earth Mother, the persona, the essential self, the shadow and the sacred space

archetypes (Cumes, 1998). As an example of the functioning and dynamics of the archetypes, the Earth Mother archetype is going to be discussed here¹. The feminine portion of each person is inseparably bound to the Earth Mother archetype (Blow, 1990). The great Earth Mother is the “protecting, nurturing, good mother who provides nourishment, but is also the destroying bad mother who allows her child to starve and thirst when she withdraws from living things” (Blow, 1990, p. 166). According to Jung (1959, p. 7, as cited in Ramsay, 1989) the existence of an Earth Mother “reflects a deep human need for a second powerful mother to compensate for the deficiencies of our own personal mothers”. Onto the Earth Mother we are able to project all repressed fantasies and wishes of childhood. For each individual the role of the Earth Mother would depend on their personal needs (Ramsay, 1989).

Similarly it may be suggested that the archetypes that are awoken in an individual depends on what deficiencies (perceived or real) an individual possesses. Unlike Ramsay (1989) and Blow (1990), Cumes (1998) focuses on the hero archetype as an attempt to explain our need for wilderness experiences. Jung’s archetypes are also used to explore possible explanations as to why individuals have such positive experiences.

2.3.1.3. Projection

The last Jungian concept that has contributed to the understanding of the human-wilderness interaction is the mechanism of projection. The phenomenon of projection is a substantial part of the machinery of the unconscious (Jacobi, 1962), and has already been touched on in the above paragraph. Unknown internal images, thoughts, feelings, etc. have to be projected onto the external world if the unconscious is to have any impact (Ramsay, 1989). Since the unconscious is not readily accessible, unconscious content is projected onto the external

¹ For more information on wilderness and archetypes consult Cumes (1998), Ramsay (1989) and Blow (1990).

world (i.e. other people and/or objects in the environment) to be communicated to the conscious mind as a way of dealing with unresolved thoughts and feelings (Ramsay, 1989).

With regards to wilderness, Jungian psychology viewed wilderness as a symbol of the unconscious mind itself, and considered the relationship between modern civilisation and nature as a projection of the relationship between the conscious ego and the unconscious psyche (Meier 1985; Schroeder 1992a, as cited in Schroeder, 2007; van der Post, 1985). The wilderness therefore provides a place for the conscious and the unconscious to communicate through the use of archetypes and projections.

To Jung (1956, as cited in Ramsay, 1989) nature was particularly special because of its ability to reflect all the contents of the unconscious. He viewed it as a permanent and important aspect of our collective unconscious and saw it as an archetypal experience, which is now being re-discovered at a crucial turning point in our evolution (Taylor, 2001).

Schroeder (2007, p. 16) writes that:

In premodern times, according to Jung, the emergent symbolism of natural phenomena helped to maintain a balanced relationship between the conscious and unconscious sides of the mind. But modern consciousness has come to overvalue rational intellect and has thereby lost its connection with the more archaic, instinctive level of the psyche.

Towards the end of his life, Jung (1978, as cited in Blow 1990) recognised and wrote of humanities' contemporary loss of an unconscious identity with natural phenomenon. He viewed the psychological character of our relationship to nature as compensatory (Jung 1956, as cited in Ramsay, 1989, p. 4).

In other words, as people become increasingly distanced and alienated from nature, there is an attempt to compensate for the loss.The function of this compensatory behaviour would seem to be to heal the damage done to our psyches as a result of enforced separation and alienation from what is

truly our natural environment; but for the actual healing to take place, more seems to be involved than simply exposing people to nature.

Jungian models of theoretically understanding wilderness and the wilderness experience are very useful in providing a possible explanation for the seemingly positive outcomes resulting from such encounters. In addition, there are some similarities with ecopsychological concepts. For example, Jung's collective unconsciousness may be comparable to ecopsychology's notion of connectedness (discussed above in section 2.1.). Drawbacks to his models include that they require a vast amount of interpretation, particularly with regard to projections and the unconscious; and, that since there are no hard scientific rules to follow in interpreting projections they need to be cautiously generalised to all similar projections and experiences.

2.4. Analysis of Existing Studies

Research in this area has been both quantitative and qualitative in design. Subjective reports, such as diary writing, interviews or storytelling, are relied on for the collection of participant's experiences and feelings. Free observations by researchers (Romi & Kohan, 2004) and programme facilitators have also been used to collect data during wilderness therapy programmes (WTP & WEPs). In terms of quantitative research, a range of psychological measures and tests have been used, as independent variables, to assess the effectiveness of WTP and WEPs. Among the scales used are: The Rosenberg Self-Esteem Inventory (Kelley et al., 1997); the Physical Self Presentation Confidence Scale (a subscale of the Physical Self-Efficacy Scale) (Kelley et al., 1997); the Coopersmith Self-Esteem Inventory (Herbert, 1998); the Self Description Questionnaire III (Bandoroff & Scherer, 1994); an adapted version of the Behavioural and Emotional Strengths Scale (Fischer &

Attah, 2001); the Piers-Harris Children's Self-Concept Scale (Larson, 2007; Romi & Kohan, 2004; Wick, Wick, & Peterson, 1997); and the Tennessee Self-Concept Scale (Orren, 2004).

Although the majority of studies focus on at-risk adolescents (Clark et al., 2004; Fischer & Attah, 2001; Hill, 2007; Larson, 2007; Romi & Kohan, 2004; Russell, 2005), other diverse groups of participants have also been studied. For example, sexual assault survivors (Asher, Huffaker, & McNally, 1994; Levine, 1987); troubled families (Bandoroff & Scherer, 1994); psychiatric patients (Eikenæs et al., 2006; Kelley et al., 1997; Pawlowski & Holme, 1993); militarised youth (Schell-Fuacon, 2001); and low-risk individuals (Propst & Koesler, 1998; Sibthorp, 2003) to name but a few.

Length of programmes (1-day up to one year), activities used (for example rock-climbing, hiking, abseiling, river rafting) and wilderness settings (forests, deserts, plains, beaches) also differ from programme to programme, and hence study to study. With regards to physical health, there is some preliminary evidence that implies that those programmes with intense physical components are more effective than less physically intense programmes, as well as having a longer-lasting impact on overall quality of life (Wilson & Lipsey, 2000).

Although many studies appear to report improved scores on psychological measures like self-esteem, self-confidence and self-concept, there still looms a great debate on the effectiveness and benefits of wilderness therapy (Bandoroff & Scherer, 1994). The empirical support for wilderness therapy has been equivocal (Bandoroff & Scherer, 1994), due to the lack of well designed, replicable studies (Herbert, 1998). The many methodological problems are repeatedly noted in the literature. Like this study, a bulk of the studies employ quasi-experimental designs with threats to internal validity, lacking generalisability beyond the

sample studied (Herbert, 1998) and leaving many factors uncontrolled for. Many researchers (Bandoroff & Scherer, 1994; Gillis, 1992; Herbert, 1998; Kelley et al., 1997; Romi & Kohan, 1994; Weston et al., 1999) have stressed the following problematic aspects in empirical investigations of wilderness therapy:

- Sample sizes often too small for adequate sampling standards;
- Inappropriate equivalent control/comparison groups;
- Lack of randomisation used for participant assignment;
- Unproven outcome measures without psychometric support;
- Absence of clearly defined methods systematically describing the intervention, participants and group facilitator characteristics;
- No follow-up tests or studies;
- Reliance on anecdotal evidence, exaggerated claims, and weak statistical techniques; and,
- Inappropriate or inadequate reporting and statistical treatment of data.

The very nature of WTPs and WEPs (the physical limitations, safety requirements and costs involved), as well as independent variables that cannot be controlled for, such as the weather, are some of the issues that may prevent researchers from conducting more sound research.

There is a desperate need for more rigorous wilderness therapy research (Weston et al., 1999). Improvements in research methodologies and practices will allow the field to gain more recognition and respect, and contribute to the advancement of the field (Gillis, 1992).

2.5. Wilderness Experience Programmes in the South African Context

There are a number of wilderness therapy-type programmes (i.e. wilderness experience programmes, WEPs) operating throughout the country, mainly targeting corporate leadership

or team-building, and schools. WEPs are becoming an increasingly popular option for school groups of all ages, from grade 1 through to grade 12, where it is used as a tool for positive change. Exposure to such programmes has been integrated into many schools' extra-curricular programmes, fuelling the demand and growth of wilderness therapy centres throughout the country. This study aims to examine the outcomes of one such programme on a group of young South Africans.

Through both physical and mental challenges, wilderness therapy provides the opportunity for participants (even 'enemies') to work together and co-operate with each other. The overall objectives of WEPs offered to school groups are team and relationship building, leadership development, and personal growth. With regards to this study, the camp designed by the selected bush school for the respective grade 8 learners aims to improve self-confidence, demonstrate the significance of good friendships, and to introduce the importance of setting goals and working together (D. Drennen, personal communication, December 5, 2008). To achieve these objectives, the programme content focuses on learners' goals at school (including potential difficulties and solutions involved); self discipline and self respect; decision making skills (emphasising values and responsibilities); and the role of adults in their development (D. Drennen, personal communication, December 5, 2008; A. Theron, personal communication, December 13, 2008).

Although there are a variety of wilderness therapy camps/programmes (representing the whole continuum) throughout South Africa, it is difficult to identify precisely what is available. There is no register of these kinds of programmes or the organisations that run them, they are not listed in the Yellow Pages and an internet search is not exhaustive (possibly because many of the camps do not have websites or because of the number of terms

and definitions used in this field). It seems the best way to learn about the various camps is through the hit and miss of word of mouth, and informal networks that develop in different geographical areas.

As already indicated, research investigating the effects of wilderness therapy and WEPs largely supports positive outcomes such as improved physical health, improved social skills and decreased antisocial behaviour, and increased interpersonal adjustment (e.g. social skills, self control, self-esteem and school adjustments) (Russell, 2001; Werhan & Groff, 2005; Wilson & Lipsey, 2000). This seems to make it a promising treatment approach, particularly for adolescents.

2.6. Defining Adolescence

Adolescence is a transitional period – a time of change from one phase of life to another. “Except for infancy, more changes occur during adolescence than during any other time of life” (Rathus, 2008, p. 446). As it is generally used today, adolescence refers to the period of life between childhood and adulthood, roughly corresponding to the teenage years. However, the meaning of adolescence, and the ages at which it begins and ends, vary from one part of the world to another and are influenced by cultural differences (Gouws, Kruger & Burger, 2000).

One of the most significant theories on adolescent development is that of Erik Erikson’s (1902-1994) development of identity and the self-concept (Gouws et al., 2000). According to Erikson, each life stage (of which there are 8) is characterised by a crisis that the developing self has to work through and resolve (Gouws et al., 2000). Identity versus role confusion is

Erikson's psychosocial stage that corresponds with adolescence. The main task in this stage is for adolescents to develop a sense of who they are and what they stand for (Rathus, 2008).

As adolescents are searching for a sense of identity and contemplating the possible directions their future lives may take, they face a multitude of psychosocial risks (Rosol, 2000; Weston, Tinsley, & O'Dell, 1999). Weston et al. (1999, p. 30) suggest that:

Typical developmental challenges, which every youngster must face, include identity formation, physiological changes, and school transitions. And while statistics reveal that violent crime, drug use, and a host of other adolescent problem behaviours are on the rise, academic performance, community health, home stability, and employment opportunities are plummeting.

Children are increasingly more at-risk as the years go by, due to the "influence of profound cultural change, including unstructured home environments in which both parents are working, increase in the number of single-parent families, and media culture that bombards adolescents with images of sex, violence and excitement" (Russell, Hendee, & Phillips-Miller, 2000, p. 207). Furthermore, self-confidence, self-discipline, judgment, and responsibility, which are necessary basic life skills needed to prosocially manipulate the world around them, are often absent (Kimball & Bacon, 1993, as cited in Rosol, 2000). South African adolescents have further burdens of poverty, racial tension, HIV/AIDS and a long political history of violence, oppression and hatred.

There is a great need and social responsibility for schools in particular, and adults in general, to promote, not only an academic agenda, but also to aid in the emotional and social development of their learners. WEPs are currently one of the means employed by some schools to achieve better psychosocial adjustment and a generally enhanced level of resilience in their learner group. At times more specific outcomes are set as objectives, such

as improved self esteem or better inter-group relationships, but nearly all such programmes hope to enhance resilience and the general adjustment in their learners.

2.7. Defining Resilience and Psychological Adjustment

Resilience and psychological adjustment, the psychological measures chosen for this study, both involve some form of improved psychosocial adaptation. They are an integral part of the process of development, and play a role in whether a child becomes a productive, well functioning individual or not. Each concept will be defined in order to outline their importance and value to positive development, particularly in childhood and adolescences.

2.7.1. Resilience

“One consequence of increasingly difficult lives is the strident call for youth enablement and assistance towards resilience.”

(Amy Biehl Foundation, 2007, & Reddy et al., 2003; as cited in Theron & Theron, 2010)

Of all published articles on resilience, 80% (4 out of 5) of them were produced in the last decade (Grafton, Gillespie, & Henderson, 2010; Schaap, van Galen, de Ruijter, & Smeets, 2006), therefore making it a relatively novel concept (Theron & Theron, 2010). The word resilience originates from the Latin ‘salire’ (to spring, spring up) and ‘resilire’ (spring back) (Schaap et al., 2006). Thus, resilience can be considered the capacity to recover or bounce back. In more detail, it may “be defined as the process of, or capacity for, successful adaptation despite challenging or threatening circumstances” (Masten, Best, & Garmezy, 1990, as cited in Killian, 2004). It is a way of assessing one’s ability to cope with stress (Conner, 2006, as cited in Schaap et al., 2006). In the literature, it is considered both a

process and an outcome, making it a decidedly intricate construct (Olsson, Bond, Burns, Vella-Brodrick, & Sawyer, 2003; Theron & Theron, 2010).

Resilience in children refers to normal or good development despite having experienced numerous difficulties (Killian, 2004; Olsson et al., 2003; Schaap et al., 2006). Therefore, resilient children do well in life (Killian, 2004). Killian (2004) describes four models of resilience. Firstly, the ‘resilience is the opposite of risk’ model, adopted by the early studies in resiliency, alleged that when the opposite of risk factors were present, the child was thought to be resilient. Secondly, the ‘steeling or immunisation’ model which states that through previous exposure to difficult situations children gradually learn about their own inner strength and so become better able to cope with adversity. This model runs in contradiction to children’s rights approaches and enjoys very little acclaim or acceptance. The ‘strengths-based’ model refers to resilience as an innate capacity present in all children and people that enables a person, group or community to react adaptively to adversity. A concept referred to by Masten (2000) as an ‘ordinary magic’. However, variations in the degree of resilience in different children, indicates that the universal strengths-based models lack some empirical validity. Lastly, the ‘presence of protective processes’ model sees resilience as involving the occurrence of protective factors within the child, family or at community-level, and is suggested to be particularly useful when working with children who live in difficult circumstances. In this model, protective mechanisms (i.e. inner strengths) comprise either of individual assets or effective tools for obtaining external support from individuals, families, or the broader social environment.

Initially, protective factors were thought to relate only to the respective individual (i.e. their personality traits, disposition and biological make-up) (Theron & Theron, 2010). However,

support has shifted from focusing primarily on personal attributes to recognising a triad of protective factors (Theron & Theron, 2010) that operate at different levels (Killian, 2004). These protective resources are inter-related and interdependent domains that are classified as internal psychological characteristics or personal strengths, social interpersonal skills (i.e. support from family and friends) and external support systems (including resources within the family and the broader community context) (Killian, 2004; Schaap et al., 2006). It is these protective factors, within the individual, the family and the environment, that promote resilience, despite unfavourable circumstances (Theron & Theron, 2010)

The protective processes model is the most useful in the development of intervention programmes (Killian, 2004), “in that protective processes can inform the development of targeted intervention” (Olsson et al., 2003, p. 9). A resilience-based approach to intervention highlights the promotion of skills and capacities that assist in the successful negotiation of adverse environments (Olsson et al., 2003). These interventions may also include opportunities for children to experience success in order to increase feelings of self-assurance and self-efficacy (Schaap et al., 2006). Families, schools and communities should be responsible in creating and providing such opportunities (Schaap et al., 2006). In fact, the South African *Children’s Act* (No. 38 of 2005) emphasises the responsibility of adults in promoting resilience (Theron & Theron, 2010). However it is important to note, as Theron and Theron (2010, p. 1) explain, that:

... if youth are to be assisted towards sustaining resilience, professionals from a variety of youth-focused disciplines (e.g. teachers, psychologists, social workers, clergy and sports coaches) and communities need to develop insight into, and commitment towards, promoting the phenomenon of resilience...

Therefore enhancing resilience appears to be integral to the adaptive development of youth. WTPs and WEPs provide a potential platform for the promotion of resilience in children and adolescents.

2.7.2. Psychological adjustment

Yoo, Matsumoto and Le Roux (2006) define adjustment as the psychological outcomes associated with adaptation. Adaptation is the process of changing one's behaviour or cognitions to suit a different condition or environment, allowing for better interaction with the environment to attain desired goals (Yoo et al., 2006). Adjustment is a continuous process, as we are constantly being subjected to stress and conflict in our external and internal environments, thus we are constantly adapting. For children, family, school, peers, and their surroundings (including nature) contribute to their external stressors, whilst feelings of anger, anxiety, sadness, and loneliness constitute internal ones (Arnold, 1990).

Common problems faced by adolescents, relating to both internal and external stressors, are divorce, crime and violence, illness and death, abuse, and accidents. Another prominent challenge faced by adolescents going into puberty (i.e. 12 or 13 years old), is changing schools and starting at a new high school. High school, for most, means moving into a foreign environment, full of many new academic and social challenges (Isakson & Jarvis, 1999). The participants in this study (with the exception of those that are repeating grade 8) are new to their current school, having only started high school a couple of months prior to their participation in the study. This specific life transition could represent a stressful life event in which many developmental challenges are negotiated (Isakson & Jarvis, 1999). Problems and challenges like those already mentioned can produce intense reactions and have the potential to result in maladaptive responses (Arnold, 1990).

Each child adapts to problems and stressor with “varying degrees of success and resolution” (Arnold, 1990, p. 52) either resulting in positive adjustment (e.g. growth) or negative adjustment (e.g. posttraumatic stress symptoms and general symptomatology) (Borja, Callahan, & Long, 2006). Adjustment difficulties that result from negative adjustment may lead to potentially significant mental health problems and to many psychiatric disorders (Arnold, 1990; Reynolds, 2001).

Having a WEP for the learners at the beginning of the academic year was an attempt by the school to facilitate the learners build relationships and to provide learners with the opportunity to develop skills that may assist in promoting positive adjustment.

2.8. The Selected WEP: An example

The bush school, used in this study, is described here as an example of a WEP in South Africa. It is situated within a wildlife sanctuary located in a scenic valley in KwaZulu-Natal Province. A river runs through the nature reserve allowing it about 10km of river frontage. The wildlife sanctuary adjoins a large state forest which comprises a smaller but spectacular mist belt forest. Due to its picturesque beauty and many rare and endangered plant and animal species, the sanctuary has Natural Heritage Status. The landscape includes cliffs and mountain tops, waterfalls and rocky riverbeds, and steep forest clad gulleys.

Participants stay in bungalows, comprising of two rooms which can accommodate up to 16 people per room (i.e. there was a maximum of 8 bunk beds in each room) with shared bathroom facilities. Electricity and hot water are available. Girls and boys are separated in different bungalows.

Balanced meals, with dessert and/or fruit, are provided for breakfast, lunch and dinner prepared by dedicated kitchen staff. Activities during the camps included hiking and climbing, river activities, and mentally and physically challenging games. For example, the obstacle course, courage jump (i.e. in this somewhat acrobatic exercise, the person, harnessed using abseiling equipment and ropes, has to jump forward off a high platform into the air with the aim of taking hold of a parallel bar that is a few feet in front of them), and team tree climb (an activity where the whole team has to work together to help everyone climb into the tree and then once they are all in the tree they have to help each other off again). Individual and group debriefing, and reflection times (including ‘solo time’) are also included. These sessions are either spent as a quiet time to think about and reflect on an activity or the day’s events; or they were spent discussing experiences, feelings and lessons learned after an activity or day. The last activity before the participants packed up and leave is usually the ‘solo time’. This is where participants are sent out in the surrounding bush to sit on their own, out of sight of any other participants and the camp, for an hour (or as time permits). They are only allowed to take with them a pen/pencil and a piece of paper.

The facilitators and staff running the WEP are all very experienced with this type of work, well trained in the various activities offered and in participant care and safety. They range in age, race and gender.

2.9. Summary

Global Warming, and the general deterioration of our planet, have in recent years highlighted the need for greater awareness, and connection, to our natural world. Ecopsychologists argue that becoming more nature-friendly will not only benefit our planet, but is essential for our individual and collective well being. Like Jung, they are interested in the relationship

between humans and nature. A Jungian approach offers a useful theoretical foundation and understanding of the benefits of wilderness therapy that complements the broader subject of ecopsychology. Even though many questions remain unanswered, wilderness therapy is emerging as a promising tool in helping adolescents. Many studies in the field focus on the psychological benefits of being in and near nature, and largely support positive outcomes of WTPs and WEPs. While the majority of adolescent studies in WEP have tended to focus on self-esteem and self insight related variables, the variables selected for this study (namely resilience and psychological adjustment) are particularly relevant within the South African context. Despite the limitations discussed in this chapter, WEPs allow for a practicable way of realising these benefits and reconnecting adolescents with nature. This study hopes to contribute to the gap in the literature by investigating the effects of a WEP on a group of South African adolescents, yielding results that are more likely to reflect outcomes for South African youths in general.

CHAPTER THREE

METHODOLOGY

3.1. Introduction

The purpose of this study was to assess the effects of a wilderness experience programme (WEP) on the resilience and psychological adjustment of a group of young South Africans. This chapter describes the research methodology and design of the current study, including an outline of the hypotheses, sampling strategies, data collection instruments and procedures, and ethical considerations.

3.2. Aims and Hypotheses

The overall objective was to evaluate the outcomes of a WEP on a group of South African grade 8 learners, in terms of its ability to enhance resilience (Strengths and Difficulties Questionnaire, SDQ; Goodman, 1997) and general psychological adjustment (Reynolds Adolescent Adjustment Screening Inventory, RAASI; Reynolds, 2001). In other words, it aims to investigate the benefits of the WEP, by using psychological tests to measure change in the individuals in the experimental and control groups.

The following hypotheses, based on the outcomes of studies completed overseas (Bandoroff & Scherer, 1994; Eikenæs et al., 2006; Fischer & Attah, 2001; Harper et al., 2007; Hattie et al., 1997; Herbert, 1998; Kelley et al., 1997; Larson 2007; Orren, 2004; Romi & Kohn, 2004; Sibthorpe, 2003), were formulated to address the research aims outlined above:

Hypothesis 1: There will be a significant increase in psychological adjustment and

resilience of the participants in the experimental group after participating in a three-day WEP (i.e. $H1_1: \mu_{pre} > \mu_{post 1}$ and $H0_1: \mu_{pre} = \mu_{post 1}$).

1a: The psychological adjustment of participants in the experimental group will be significantly better after the WEP. In other words, there should be a statistically significant decrease in the RAASI (Reynolds, 2001) scores of participants from pre-test to post-test 1. (Note the higher the RAASI score, the more disturbance is indicated).

1b: The resilience of participants in the experimental group will be significantly better after the WEP. In other words, there should be a statistically significant decrease in the SDQ (Goodman, 1997) scores of participants from pre-test to post-test 1. (Note the higher the SDQ score, the more disturbance is indicated except for the 'Prosocial scale').

Hypothesis 2: The benefits of the WEP will be sustained over time (i.e. $H0_2: \mu_{pre} = \mu_{post 2}$ and $H1_2: \mu_{pre} > \mu_{post 2}$). Thus, the pre-test means should be significantly higher than the post-test 2 means.

2a: The significant decrease in the RAASI (Reynolds, 2001) score is expected to be maintained between the pre-test and second post-test in the experimental group.

2b: The significant decrease in the SDQ (Goodman, 1997) score is expected to be maintained between the pre-test and second post-test in the experimental group.

Hypothesis 3: There will be no significant differences in psychological adjustment and

resilience across all three testing periods for the participants in the control group (i.e. $H_{03}: \mu_{pre} = \mu_{post 1} = \mu_{post 2}$ and $H_{13}: \mu_{pre} \neq \mu_{post 1} \neq \mu_{post 2}$).

- 3a:** There will be no significant difference in the RAASI (Reynolds, 2001) scores across the pre-test, post-test 1 and post-test 2 for the control group.
- 3b:** There will be no significant difference in the SDQ (Goodman, 1997) scores across the pre-test, post-test 1 and post-test 2 for the control group.

3.3. Research Design

“Social research is a collection of methods people use systematically to produce knowledge” (Neuman, 1997, p. 2). These methods, the research design, are “a strategic framework for action that serves as a bridge between research questions and the execution or implementation of the research” (Durrheim, 2008, p. 34).

A quantitative method was chosen to test the hypotheses, with the aim of producing knowledge that may be useful in the field of WEPs involving South African adolescents. Thus, the approach utilised in this study was a positivist, deductive approach. Due to practical and logistical reasons, it was not possible for the researcher to play a role in the identification of the experimental and control groups, and was therefore unable to obtain random selection. In other words, the participants were not randomly assigned to the WEP and so this study is categorised as having a quasi-experimental design. The time constraints on this study at the time of the data collection also dictated the use of a quasi-experimental design. A pre-test-post-test control group design was chosen to examine the effects of a WEP on the resilience and psychological adjustment of the participants. Using design notation Table 3.1 illustrates the quasi-experimental pre-test-post-test control group design used in this study.

Table 3.1

The quasi-experimental pre-test-post-test control group design illustrated using design notation

Groups	Pre-test	WEP Participation	Post-test 1 (a week after camp)	Post-test 2 (2 month follow up)
Experimental group (Camp 1, camp 2 & camp 3)	N O ₁₁	X	O ₁₂	O ₁₃
Control group (Activities & life orientation at school)	N O ₂₁	NIL	O ₂₂	O ₂₃

Where N = non-equivalent groups; O = measure; X indicates the presence of a programme; and, the subscripts indicate group (1# & 2#) and time (#1, #2 & #3) respectively.

Experimental groups attended a 3-day WEP. All groups (experimental and control) were administered the same questionnaires three times, once before the camps and twice afterwards. Each of the tests was administered to all participants on the same respective date and at the same time and venue.

A pre-test-post-test control group design neatly controls for main effects, such as history, maturation, testing, and instrumentation, resulting in an internally valid research design (Campbell, 1957). Since randomisation of the groups (experimental and control) was not possible, manual ways of matching (as suggested by Tredoux & Smith, 2008) the groups on critical attributes (like gender, race, age, first language, grade, etc.) were used to equate the groups. This would alleviate some of the selection bias and improve the external validity of the study, making it more generalisable (Tredoux & Smith, 2008).

3.4. Sample

3.4.1. Sampling

In social science, conducting research where participants have been randomly assigned to different groups is often not achievable. This is particularly evident in WTP and WEP research (e.g. Bandoroff & Scherer, 1994; Fischer & Attah, 2001; Kelley et al., 1997; Orren, 2004; Romi & Kohan, 2004). Although probability sampling is the preferred method, in practice, probability samples are expensive and difficult to accomplish (Durrheim & Painter, 2008). Thus, non-probability sampling is employed by the vast majority of studies in the social sciences and virtually all student work (Durrheim & Painter, 2008). A non-random convenience sample (i.e. volunteers) was used for this research project. A major problem associated with this form of sampling is that because there is no randomisation, the groups (the experimental and control) cannot be assumed equivalent (Tredoux & Smith, 2008). It was anticipated that these two groups would differ in several ways, such as possible disparities in age, race or gender representation across the groups, as well as differences in socio-economic statuses (due to there being a fee for the camp) and personality traits (due to potential differences between those who choose to go on a WEP and those that do not).

The initial selection criteria for the sample groups included choice and consent. Learners who chose to participate in the WEP and/or whose parents gave consent for them to attend the camp made up the experimental group, and those who chose not to attend the WEP and/or whose parents did not give consent for them to attend made up the control group. Later the groups were refined by excluding those participants who did not assent at any of the follow-up times, despite their parents' consent. Incomplete sets of tests (i.e. where a participant did not complete all three test questionnaires) were also left out of the final data groups. This

reduced the number of overall participants. A total of 49 participants were excluded from the study, 27 in the experimental group, 18 in the control group and 4 who did not specify.

As shown in Table 3.2 below, the sample population, which was made up of a total of 167 grade 8 learners from a local high school, consisted of an experimental ($N = 136$) and control group ($N = 31$). The experimental group was comprised of participants from three camps (camp one, camp two and camp three).

Table 3.2

Number of participants in each sample group.

CONTROL GROUP	EXPERIMENTAL GROUP				OVERALL TOTAL
	Camp 1	Camp 2	Camp 3	Total	
31	44	43	48	136	167

A grade 8 high school sample was chosen as a number of studies in this area have used similar sample groups (Harper et al., 2007; Larson, 2007; Russell & Phillips, 2002). This sample included learners from five race² groups, namely white (1.8%, $n = 3$), black (90.4%, $n = 151$), Indian (4.2%, $n = 7$), coloured and other (other Asian race groups excluding Indian) (.6%, $n = 1$), although not with equal representation (see Table 4.2. and Figure 4.2. in the results section).

3.4.2. Participants

All of the participants were grade 8 learners from a local co-educational, English medium, “ex-Model C” high school. As already indicated, the participants belonged to one of two

² South Africa remains a racialized society recovering from the effects of decades of apartheid and segregation, where divisions remain between racial groups and the remnants of a ‘privileged/non-privileged dynamic’ are still evident. Thus race was considered an important criteria to consider in this research

sample groups. The experimental group was chosen as they were scheduled to attend the WEP camps at the time of data collection. The control group was selected from the remaining grade 8 learners. All the learners, including those in the control group, will have future opportunities to attend a similar WEP later on in their school careers.

The experimental group attended a three-day, two-night facilitated WEP at a local bush school. Each camp was attended by learners from two different grade 8 classes. The three camps ran consecutively, excluding the weekend. Camp one was from Monday to Wednesday, camp two Wednesday to Friday, and the last camp (camp three) from the subsequent Monday to Wednesday. The WEP for each camp making up the experimental group was undertaken in the same environment, by the same facilitators, using the same programme content (where possible), but at different, successive time periods.

While the WEPs were being conducted, most of the participants in the control group continued to attend school, and were put into small groups. They completed various tasks, games, and activities reviewing class work involving Life Orientation themes. These activities were facilitated by various staff members and were intended to be a deviation from normal school routine and work. Although school attendance was mandatory, some of the learners in the control group elected to stay at home during this period, either for the whole time or just on selected days. The learners in the experimental group were included in the adapted school programme on the school days that fell before and after their respective WEPs.

3.5. Instruments

The assessment of the two participant groups was determined using two scales: The Reynolds Adolescent Adjustment Screening Inventory (RAASI; Reynolds, 2001) and The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). Both questionnaires (see Appendix A) are of the self-report variety, and are scored in a pathological direction such that higher values are indicative of greater dysfunction. A basic demographic questionnaire was included to provide information on participants' backgrounds (i.e. age, race, mother-tongue, hometown, and parents' occupations). As an oversight and an error on the part of the researcher, gender was omitted from the demographic section of the questionnaire.

It must be noted that neither the RAASI nor the SDQ are South African standardised measurement instruments and therefore, may not be culturally appropriate. This may influence the interpretability of the results, however both tests have been used in previous South African research (Mkhize, 2009; Cluver & Gardner, 2006; Cluver, Gardner, & Operario, 2007) and the SDQ has a licensed service provider in South Africa.

They are also both brief questionnaires with respectable reliability and validity in different cultural settings, making them appropriate for use with adolescents and in South Africa. Lastly, the RAASI and SDQ are commonly used by psychologist, social workers, psychiatrists and other mental health professionals.

3.5.1. The Reynolds Adolescent Adjustment Screening Inventory (RAASI)

The RAASI, developed by Reynolds in 2001, is a brief screening measure of adolescent psychological adjustment. It has a likert-type response format with choices ranging from 1 (never or almost never) to 3 (nearly all the time). The RAASI is a user-friendly, self-

administered test which consists of 32 items. These items measure psychological adjustment within the following four distinct scales: Antisocial Behaviour (8 items), Anger Control Problems (8 items), Emotional Distress (10 items), and Positive Self (6 items) (Reynolds, 2001). The four scales are described by Reynolds (2001) as follows:

1. *Antisocial Behaviour (AB)* - This scale evaluates a wide collection of problem behaviours, including drug and alcohol use, engaging in illegal behaviour, disregarding home and school rules, troublesome behaviour at school or at work, and being absent from home without permission or knowledge.
2. *Anger Control (AC)* - The eight items in this scale assess loss of temper, arguing with adults, anger, oppositional behaviour, disregard for school and home rules, and pessimistic mannerisms (or negativistic behaviour).
3. *Emotional Distress (ED)* - This scale includes evaluating for feelings of excessive anxiety and worry, dysphoric mood, crying behaviour, general distress, difficulty concentrating and insomnia.
4. *Positive Self (PS)* - This scale is used to assess aspects of self-esteem and sociability, like negative sociability, sense of dissatisfaction with life and inadequate social reinforcement. Items in this scale are worded in the positive but are reversed scored, so that in keeping with the pathological scoring trend, high scores on this scale are indicative of low sense of self esteem and limited social involvement.

In addition, the sum (ranging from 0 to 64) of all RAASI item scores provides the Adjustment Total score which provides a global evaluation of psychological adjustment across the four adjustment problem domains that make up the RAASI scales. The higher the score, the greater the adjustment problems. Therefore, we would expect a decrease in the RAASI score if the WEP is successful in improving general adjustment.

The RAASI was developed to “provide a reliable and valid self-report screening measure” (Reynolds, 2001, p. 61). According to Reynolds (2001), the internal consistency of the RAASI has moderate to high values ranging from .71 to .92. In addition, the test-retest reliability of the scales is high with coefficients ranging from .83 to .89 over a two-week interval. Reynolds further states that a number of studies have been conducted and provide evidence for criterion-related validity (predictive and concurrent), construct validity, convergent validity, discriminant validity, and contrast-group validity of the RAASI. The RAASI has been used by several researchers with adolescents from different cultures and reported adequate correlations (Mkhize, 2010). These include, Hellenthal’s (2001) study of separate and combined effects of mother, father and peer attachment on young adolescents’ social, behavioural and emotional adjustment and, a study by Zaeema (2003, as cited in Mkhize, 2009) of family functioning and psychological problems as risk factors common in juvenile delinquents.

3.5.2. The Strengths and Difficulties Questionnaire (SDQ)

The SDQ was developed by Robert Goodman in 1997 from the original Rutter Questionnaires (Goodman, 1999; Koskelainen, 2008; Mortimore, 2007). It is a brief behavioural screening questionnaire that asks about children and teenagers' psychological attributes, some positive (kind and helpful to others), and some negative (steals from home or elsewhere) (Goodman, 1999; Mortimore, 2007). The SDQ exists in several versions to meet the needs of researchers, clinicians and educators (Goodman, n.d.). There are similar versions for different informants: Parents, teachers and 11-16-year-old children and adolescents. The self-report version of the SDQ for adolescents was used in this study.

The Strengths and Difficulties Questionnaire (SDQ) has become the most frequently used instrument in child mental health research (Goodman & Goodman, 2009; Panos, 2006; Rothenberger, 2004, as cited in Becker, 2007). It is freely accessible online, quick to administer and easy for individuals to complete (it takes about 5 minutes). This is expected to have positive effects on participation and test-taking attributes by adolescents (i.e. this means that it is less likely that there will be missing items or question skipping) (Becker, 2007; Cury & Golfeto, 2003; Koskelainen, 2008). In addition, because of its use of both positive and negative attribute items, it does not only focus on children's difficulties, making it more user-friendly. The SDQ also allows comparisons to be made between different populations and is sensitive to change (Cury & Golfeto, 2003; Koskelainen, 2008; Panos, 2006). It is valuable as a general measuring instrument for children and adolescents because of the common signs and symptoms it assess: Hyperactivity, conduct problems and emotional problems (Fleitlich, Cortázar, & Goodman, 2000, as cited in Cury & Golfeto, 2003).

The SDQ can be used by various mental health professionals and for different purposes, e.g. screening, epidemiological research, clinical assessment and evaluating intervention outcome (Koskelainen, 2008). It has become well accepted even in non-clinical populations (Becker, 2007), and, as reported by Goodman and Goodman (2009), there is recent interest in using the SDQ as a measure of child wellbeing in community settings such as schools.

The questionnaire consists of 25 items which are divided between five different domains with five items in each. It assesses conduct problems (e.g. "I get very angry and often lose my temper" and "I fight a lot. I can make other people do what I want"); hyperactivity/inattention (e.g. "I am restless, I cannot stay still for long" and "I think before I do things"); emotional symptoms (e.g. "I worry a lot" and "I am often unhappy, down-hearted or tearful"); peer

relationship problems (e.g. “Other people my age generally like me” and “I am usually on my own. I generally play alone or keep to myself”); and, prosocial behaviour (e.g. “I am kind to younger children” and “I am helpful if someone is hurt, upset or feeling ill”) (Goodman, n.d.).

All except the Prosocial Behaviour scale are summed to generate a ‘Total Difficulties score’ from 0 to 40. The three response categories are 0 = ‘not true’, 1 = ‘somewhat true’ and 2 = ‘certainly true’. The higher the score the greater the difficulties, except for the Prosocial Behaviour scale, in which high scores are desirable (Bourdon, Goodman, Rae, Simpson, & Koretz, 2005).

An ‘impact supplement’ is frequently added to the symptom rating, asking about any perceived problem, and if so, enquiring further about chronicity, distress to the child, burden to others, and social impairment (i.e. interference with home life, friendships, classroom learning and leisure activities) (Becker, 2007; Goodman, n.d.). This provides useful supplementary information for clinicians and researchers (Goodman, 1999, as cited in Goodman, n.d.). The follow-up version of the self-report SDQ includes the 25 basic items and the impact questions, as well as two additional follow-up questions for use after an intervention (Goodman, n.d.). This follow-up version also omits the question about the chronicity of problems (Goodman, n.d.).

As indicated above, the SDQ Questionnaire, scoring instructions, an additionally computerised algorithms for predicting psychiatric disorder and scoring software are freely available for non-profit use online (<http://www.sdqinfo.com/>) in 62 languages, including

Afrikaans and IsiXhosa. Making it acceptable and accessible for use in a South African context.

Since its inception in 1997, the reliability and validity of the SDQ have been investigated in the United Kingdom by Goodman and colleagues (Koskelainen, 2008). Despite its brevity, the English-language versions of the SDQ have been shown to be of acceptable reliability and validity, performing at least as well as the Rutter Questionnaires and the Child Behaviour Checklist in determining general well being (Goodman, 1997; Goodman, 2001; Goodman and Scott, 1999, as cited in Samad, Hollis, Prince, & Goodman, 2005; Goodman, Renfrew, & Mullick, 2000b, as cited in Cluver, Gardner & Operario, 2007; Koskelainen, 2008).

In a prospective/non-interventional study by Becker (2006, cited in Becker 2007), in which 1459 children with the diagnosis of ADHD from 10 European countries participated, evidence of good internal consistency of the SDQ was found. The Cronbach's alpha coefficients were quite high in the evaluated sample across all the respective countries. "Results on the internal consistency demonstrate the homogeneous scale structure, with reliabilities for the parent total difficulties score ranging between .82 (Goodman, 1998) and .71 (Koskelainen, 2000) and .76 (Muris, Meesters, Eijkelenboom, & Vincken, 2004) for the self version in several studies of different societies" (Becker, 2007, p. 20). Goodman (n.d.) states that the internal consistency and test-retest stability of the SDQ are satisfactory with the range of internal consistency from .61 to .82.

In a study by Goodman and Scott (1999, as cited in Becker, 2007) good all round test reliability was observed (correlations for the SDQ subscales were between .74 and .83). Other studies cited by Becker portray comparable results (Muris, 2003; Smedje, 1999). Evidence

has also been obtained for the validity of the SDQ (Muris et al., 2004). Criterion validity was assessed and found to be acceptable (Goodman, n.d.), although no further details are given.

In their 2008 paper, Woerner et al. (2008) presented an overview summary of some of the non-European experiences with the SDQ. They concluded that across a vast mixture of cultures and languages, European evidence of good psychometric properties and clinical utility of this questionnaire has been supported by experience gained of SDQ use in other continents.

3.6. Procedure

Permission was first obtained from the owner of the selected WEP and a suitable (i.e. taking into account participant numbers and age, type of school and camp dates) camp was chosen, before the school was approached. Once permission was granted by the principal of the participating school (see Appendix B), the researcher met with him in person to discuss the study, answer any questions and to schedule dates for data collection. A letter was sent to the parents/guardians of all potential participants (see Appendix C) explaining the study and requesting consent for their child to participate.

At the pre-test, the informed assent of each participant was sought at the start of the pre-test assessment (see Appendix D). Participants were allocated numbers (on post-it notes that they could take away with them) to be used again at both post-tests. Demographic information was also included in each questionnaire and was used to match tests if the participants did not include or forgot their allocated numbers.

Participants completed the pre-camp test (approximately one week prior to departure) and initial post-camp test (within one week after the respective WEP). A second post-test was completed two months later (see Appendix A). At the end of each questionnaire, the participants were provided with blank lines in which they could express any further comments or concerns they had. The test sessions were administered at the participants' school in their hall or in their team teaching room. The idea had been to allocate participants enough space in order to ensure some privacy when completing the questionnaires. Clear instructions were given to the administrator for each test session (see Appendix E). The administrator and the researcher were available at all testing sessions to answer any questions that arose.

The data from the three testing sessions were entered into SPSS 15.0 (Statistical Programme for the Social Sciences, 2006). Data was stored in a password protected electronic file.

3.7. Ethical Considerations

Research ethics are vital in protecting the welfare of participants in a study (Wassenaar, 2008). Ethical approval was provided by the Social Sciences Ethics Review Board (HSS/0328/09M) at the University of KwaZulu-Natal on the basis of the following ethical considerations:

3.7.1. Informed consent

Informed consent is a major ethical principle in research (Ezikiel, Wendler, Killen, & Grady, 2004; Wassenaar, 2008). Permission from the school, consent from the parents and assent from the participants was obtained. The lack of parental consent and/or learner assent was thus the main exclusion criteria. The research was clearly explained with a description of

what was required from the participants. Exact details of the psychological measures were withheld in order to protect the validity and reliability of the study. On completion of the second post-test session, the exact nature of the psychological measures was explained.

Furthermore, participants were informed of the relevant ethical issues verbally by their teachers and the administrator, and were also made aware that their participation was voluntary and that they could drop out or withdraw their data at any stage. It was also made clear that their (or their parents') decision to participate or not participate would in no way affect their evaluations at school.

3.7.2. Confidentiality and anonymity

Confidentiality was maintained throughout the study by protecting the anonymity of the research participants during the research process (i.e. data collection, data input, data analysis and the research write-up). Participants' identities were not disclosed once the data was collected. Random reference numbers were assigned to all questionnaires, so that participants' names were not recorded, thereby ensuring anonymity. All data (questionnaires) was kept confidential and was only available to the author and her supervisor. None of the school's staff had access to the questionnaires or electronic data. In addition, all results released are presented in group form. Any individual information that has been released is not traceable back to the specific study participants.

Data will be stored in the supervisor's office for the required five year period after which it will be destroyed. All electronic data has been password protected.

3.7.3. Beneficence and nonmaleficence

Ethical research is also guided by nonmaleficence and beneficence. These principles require the researcher to be sensitive to potential harm and relative effect risks, and to ensure that no harm befalls the research participants as a direct or indirect consequence of the research (Wassenaar, 2008).

There were no foreseeable direct or indirect risks to participating in the study. However, the services of the Child and Family Centre at the University of KwaZulu-Natal, were offered and advertised to all participants in case of any a negative psychological reaction to the WEP, or the data collection process. This study was not designed to produce any direct benefits for the participants beyond the potential benefits they may experience during their scheduled WEP. Participants in the control group will be given the opportunity later in their schooling career to attend a similar WEP. In grade 11, they will have the chance to go to the same WEP site, although the programme may be different focussing more on leadership. An indirect and significant benefit of this study would be that of increasing the South African database in this field which would be useful to all parties involved in WEPs in South Africa.

Although facilitators and staff running the WEP are not formally educated in psychology, they are all very experienced with this type of work, well trained in the various activities offered, and in participant care and safety.

At the end of data collection (after post-test 2), the school and respective participants were offered an information session with the author of this study so that a detailed description of the study (including results) could be given and any questions answered. Copies of the

completed research project will be made available to both the participating school and to staff at the wilderness experience bush school.

3.8. Data Analysis

All statistical procedures were performed in the statistical analysis programme Statistical Processing for the Social Sciences (SPSS 15.0, 2006). Significance was tested at the .05 alpha levels for all tests.

Descriptive statistics of the sample were calculated for the age, race, first language, parents' employment and hometown of participants.

The structures of the two scales were considered and a reliability analysis was run. Although there are a number of different reliability indices used by social scientists (Finchilescu, 2002), one of the most widely used measure of reliability is the Cronbach's alpha. An alpha value of .7 or higher indicates very good reliability that can lead to the assumption that similar results would be achieved if this study was carried out on a larger sample of respondents. This however needs to be interpreted cautiously as the study sample was not randomly selected from the overall population. The Cronbach's alpha were calculated for the RAASI 'Total Adjustment' scale, the SDQ 'Total Difficulties' scale and for all items across both scales.

Descriptive statistics of the scale means for each testing period were considered in order to get a general overview and understanding of the data, and to support the analysis of the hypotheses.

To test the first two hypotheses, independent sample *t*-tests were utilised to establish the significance of the difference between the means of two unrelated samples of scores in the

experimental group (Corston & Colman, 2000), under the assumption of equal and unequal variances. The variances of the samples were tested using Levene's test of equality of variances. The assumptions include that the data comes from normal populations and are at least measured at the interval level, and that there is homogeneity (equality) of variances and that the two samples are independent (Nunez, 2002). Levene's test was also run to assess the heterogeneity of variance between the mean scores for the experimental and control groups with respect to the RAASI and SDQ variables at the pre-test.

A one-way analysis of variance (ANOVA) for repeated measures was used to determine if any significant differences existed between the means of the pre-test, post-test 1 and post-test 2 for the control group (Howell, 1997). The assumptions associated with the ANOVA are that the data should come from a normal distribution; that there should be homogeneity of variances across each of the groups; that the size of the groups should be roughly equal (if the groups are of unequal size, corrections to the homogeneity of variance can be made); and, that the groups must be independent of each other (Howell, 1997).

An analysis of the Impact Supplementary Questions followed and *t*-tests were run to assess the differences between the experimental and control groups for each question. This was done for every supplementary question at all three testing periods.

Lastly, any additional comments made by participants at the end of the questionnaires were categorised into themed groups and frequencies of each comment made were recorded next to each category.

CHAPTER FOUR

RESULTS

4.1. Introduction

In this section, a concise summary of the results of the statistical analysis will be presented. The chapter begins by analysing the demographics of the sample, then consideration is given to the structures of the scales used in this evaluation, and finally the results of the statistical analysis are considered in relation to the hypotheses. A consideration of other variables was also included for interest. Data was analysed only for those individuals from whom consent and assent were obtained, and who completed all three questionnaires. Thus the final sample comprised 77.3 % ($N = 167$) of the potential pool of subjects ($N = 216$) (84.4 % ($n = 27$) and 63.3 % ($n = 18$) for the experimental and control group respectively.

4.2. Demographic Details

As already specified in section 3.4.1., and presented in Table 3.2, the final sample comprised 167 learners from six different grade 8 classes, with 136 in the experimental group and 31 in the control group. The large difference in the two sample sizes, an unintended outcome, is a limitation of the current study.

The participants' ages ranged from 12 to 16 years old. The mean age, seen in Table 4.1, for the whole sample was 13.43, with a standard deviation of .66. Similarly, the mean ages for the experimental and control samples were 13.42 (SD = .69) and 13.45 (SD = .56) respectively. In other words, 90.4%, ($n = 150$) of the overall number of participants ($N = 167$), were 13 or 14 years old, with the remaining minority of the sample falling outside these

ages. Figure 4.1. graphically demonstrates the similar trend followed by both the experimental and control groups.

Table 4.1

Means and standard deviations of age by group

Groups	Mean	N/n	SD
Control	13.45	31	.56
Experimental	13.42	136	.69
Overall total	13.43	167	.67

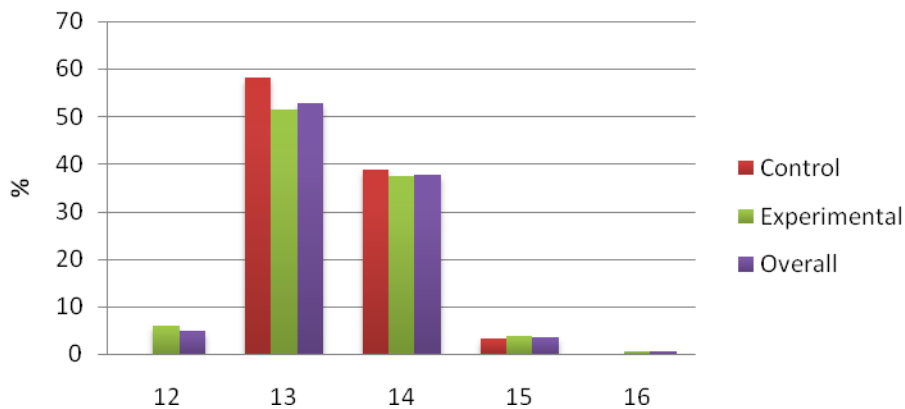


Figure 4.1. Bar graph showing the percentage age distribution of the participants for each group of participants

151 of all participants were black, making up 90.4% of the overall total sample, as seen in Table 4.2 and Figure 4.2. The rest of the participants were Indian (4.2%, $n = 7$), coloured (3%, $n = 5$), white (1.8%, $n = 3$) and ‘other’ (all other Asian race groups excluding Indian) (.6%, $n = 1$). This is proportionately similar to the current race distribution in KwaZulu-Natal, which is 86% black, 8.1% Indian, 4.4% white and 1.4% coloured (Statistics South Africa, 2007).

Table 4.2

Race distribution for each of the sample groups

Groups	<i>N</i>	Black	Indian	White	Coloured	Other
Control	31	26 (83.9%)	3 (9.7%)	1 (3.2%)	1 (3.2%)	0 (0%)
Experimental	136	125 (91.9%)	4 (2.9%)	2 (1.5%)	4 (2.9%)	1 (.7%)
Overall total	167	151 (90.4%)	7 (4.2%)	3 (1.8%)	5 (3%)	1 (.6%)

Percentages indicate frequency within each sample group.

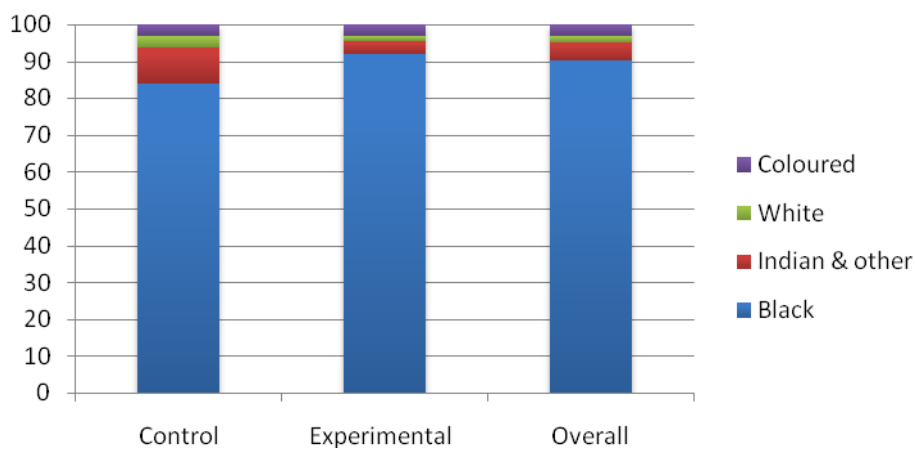


Figure 4.2. Bar graph showing the percentage race distribution of the participants for each group of participants

Within the South African context, race has become a highly politicised variable. In this context, one of the initial aims of the study was to investigate the effectiveness of the WEP for adolescents of various race and ethnic backgrounds. For this reason, participants were specifically asked to indicate their race group and home language. Table 4.3 and Figure 4.3. show that the majority of participants were first language isiZulu speakers, which was a general trend across all sample groups. English (8.8%, $n = 12$) was the second largest first

language selected in the experimental group, but the fourth (6.5%, $n = 2$) behind isiXhosa (16.1%, $n = 5$) and ‘being bilingual with English’ (9.7%, $n = 3$) in the control group.

Table 4.3

Ethnic and language distribution for each of the test populations

Groups	<i>N</i>	English	isiXhosa	isiZulu	Bilingual w/ English	Bilingual w/o English
Control	31	2 (6.5%)	5 (16.1%)	21 (67.7%)	3 (9.7%)	0 (.0%)
Experimental	136	12 (8.8%)	5 (3.8%)	113 (83.1%)	4 (2.9%)	2 (1.5%)
Overall total	167	14 (8.4%)	10 (6.0%)	134 (80.2%)	7 (4.2%)	2 (1.2%)

Percentages indicate frequency within each sample group.

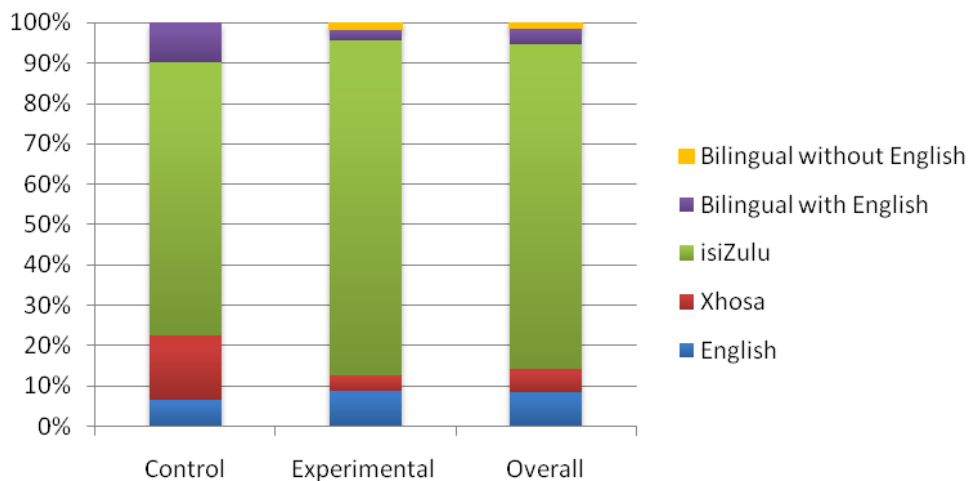


Figure 4.3. A scattered column graph showing the percentage language distribution for each group of participants

The participants were asked to give an estimate of their class average. As seen in Table 4.4 and Figure 4.4. the majority of the sample estimated a class average between 60% and 79%. In the control group, 70-79% was the most frequently selected class average (25.8%, $n = 8$) but only just above the 60-69% range (22.6%, $n = 7$). Similarly, in the experimental group

there was minimal difference between the 70-79% (30.1%, $n = 41$) and 60-69% (30.9%, $n = 42$) ranges, but in the reverse sequence.

Table 4.4

Ethnic and language distribution for each of the test populations

Groups	<i>N</i>	Class Average Estimation				
		40-49%	50-59%	60-69%	70-79%	80-100%
Control	31	3 (9.7%)	5 (16.1%)	7 (22.6%)	8 (25.8%)	5 (16.1%)
Experimental	136	20 (14.7%)	15 (11.0%)	42 (30.9%)	41 (30.1%)	14 (10.3%)
Overall total	167	23 (13.8%)	20 (12.0%)	49 (29.3%)	49 (36.0%)	19 (11.4%)

Percentages indicate frequency within each sample group.

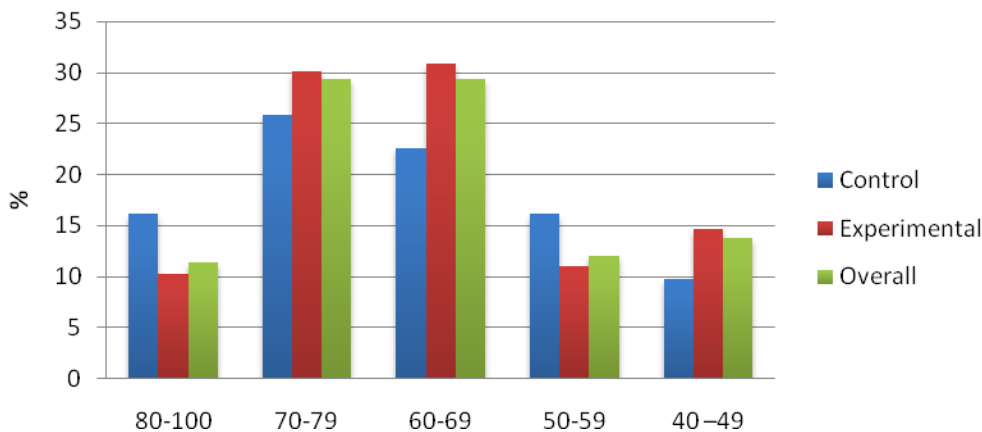


Figure 4.4. Bar graph showing the percentage mark distribution for each group of participants

Although all participants were living in and around Pietermaritzburg at the time of data collection, 86.2% ($n = 144$) of them were originally from Pietermaritzburg, whilst the others originated from other parts of KwaZulu-Natal, Gauteng and the Eastern or Western Cape, as graphically represented in Figure 4.5. This is partly reflected in the home language of the overall sample, with isiZulu being the mostly frequently reported home language, followed

by English and then isiXhosa (a language frequently spoken in neighbouring Gauteng and the Eastern or Western Cape Provinces).

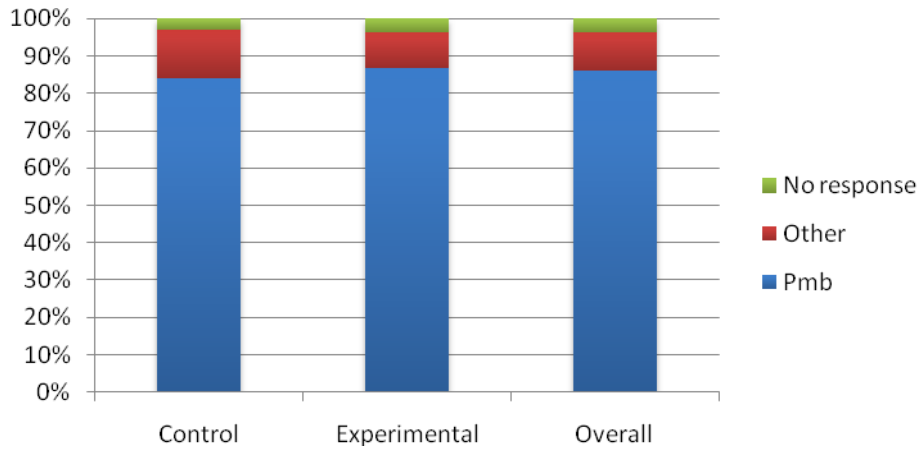


Figure 4.5. Stacked column graph showing the distribution of participants' hometown for each of the test populations

The participants were also asked to report on the employment status of their parents. Figures 4.6. and 4.7. show that the majority of all participants' mothers (68.9%, $n = 115$) and fathers (67.7%, $n = 113$) were employed. The second highest percentage reported for all participants' mothers was 'unemployment' (10.8%, $n = 18$) and for fathers it was 'deceased' (15%, $n = 25$).

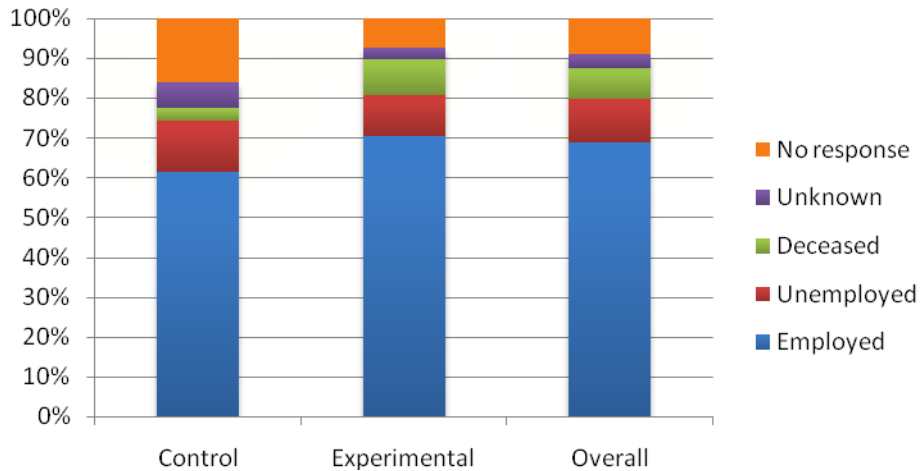


Figure 4.6. Stacked column graph showing the distribution of mothers' employment for each of the test populations

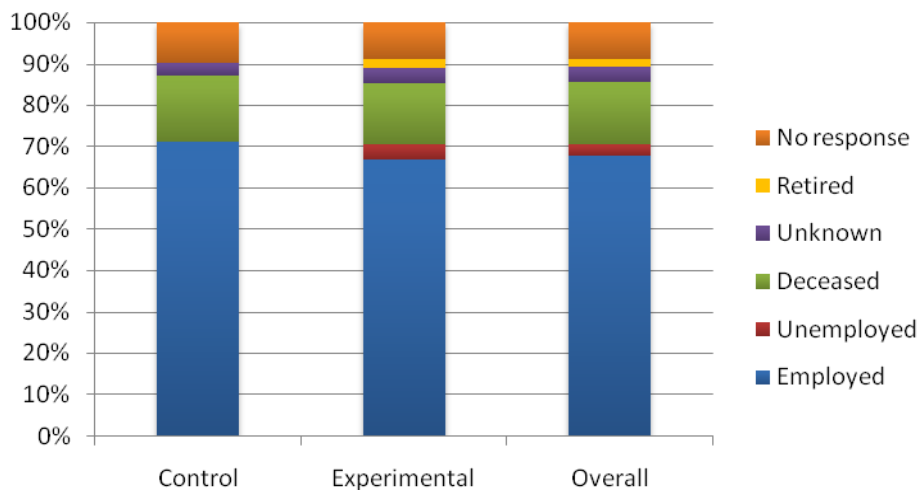


Figure 4.7. Stacked column graph showing the distribution of fathers' employment for each of the test populations

The overall trend described above is relatively consistent for participants' parents across both the control and experimental groups. In both groups, there was quite a high 'no response' rate of 9% ($n = 12$ and $n = 3$ for the experimental and control groups respectively) for the responses about both the mothers' and fathers' employment.

4.3. Structure of the Scales (RAASI and SDQ)

4.3.1. Reliability analysis

Table 4.5 lists the Cronbach's Alphas for the two measures. The RAASI items produced a Cronbach's Alpha (α) of .74, which is a respectable coefficient and indicates that the RAASI is a reliable instrument and that the items are well correlated. The Cronbach's Alpha for the SDQ was lower at $\alpha = .66$, which is less than the desired $\alpha = .70$. However, this can be considered fair given that each scale comprises of only five items, except for the 'Total Difficulties Score'. The alpha values were therefore adequate, indicating sufficient internal consistency of the measure used.

Table 4.5

Reliability coefficients (Cronbach's Alpha, α) for each of the measures

Measure	No. of Items	No. of Scales	α
RAASI	32	5	.74
SDQ	25	6	.66

4.3.2. Homogeneity of the experimental and control groups at the pre-test

In order to assess the homogeneity of the experimental and control groups at the pre-test, it was hypothesised that there would be no significant differences in the mean scores between the experimental and control groups at the pre-test with respect to the RAASI and SDQ variables. At the 5% level, the 'equal variances assumption' will be used if the p -value for Levene's test is greater than .05. Otherwise the 'unequal variances assumption' will be used. Once this has been established, the H_0 will then be rejected for all p -values less than .05 and accepted if the p -value is greater than .05. Here, a rejection of H_0 identifies differences

between the control and experimental group mean scores with respect to a particular variable at the pre-test occasion.

Table 4.6 indicates that for all of the RAASI scales, except for the ‘Positive Self’ scale, the null hypothesis was rejected ($p < .05$), demonstrating that the control and experimental groups differ in their variance for these respective scales (see Appendix F for the full table including both significant and insignificant results). The ‘Antisocial Behaviour’ ($F = 17.95, 0 = .00$), ‘Anger Control’ ($F = 2.35, p = .002$) and the ‘Adjustment Total Score’ ($F = .32, p = .000$) scales all fell well below the significance level. However, the ‘Emotional Distress’ ($F = 4.50, p = .040$) scale fell just within significance.

Table 4.6

Significant results for the Levene's Test for Equality of Variances on the experimental and control groups with respect to the RAASI scales, at the pre-test

Relevant RAASI Scales	F	t	Df	Sig. (2-tailed)
Antisocial Behaviour	17.95	4.03	176.06	.000
Anger Control	2.35	3.11	495	.002
Emotional Distress	4.50	2.05	126.97	.043
Adjustment Total Score	.32	3.29	499	.001

For four of the six SDQ scales, the null hypothesis was rejected ($p < .05$), demonstrating that the control and experimental groups differ in their variance for these respective scales, as illustrated in Table 4.7 below (see Appendix F for the full table including both significant and insignificant results).

Table 4.7

Significant results for the Levene's Test for Equality of Variances on the experimental and control groups with respect to the SDQ scales, at the pre-test

Relevant SDQ Scales	F	T	df	Sig. (2-tailed)
Conduct Problems	.44	2.87	499	.004
Hyperactivity/Inattentive	10.8	4.72	168.16	.000
Peer Relationship Problems	2.37	2.47	499	.014
Total difficulties Score	2.68	4.03	499	.000

From these results it is evident that at the pre-test, the RAASI and SDQ scores were not equivalent for the experimental and control groups. This will be taken into account during the interpretation and discussion of the results.

4.4. Descriptive statistics

As a starting point, the descriptive statistics were considered in order to get a general overview and understanding of the data.

4.4.1. Descriptive statistics of the RAASI scales

The mean scores and standard deviations for the RAASI scales for both sample groups are presented in Tables 4.8 and 4.9. It is important to note here that higher RAASI scores indicate greater disturbance than lower ones. Therefore a decrease in the scores is likely to imply an improvement (i.e. a positive change) in the psychological adjustment of the participants.

Table 4.8

Means and standard deviations (SD) of each of the RAASI scales at the three testing periods for the experimental group

RAASI scales	pre-test		post-test 1		post-test 2	
	Mean	SD	Mean	SD	Mean	SD
Adjustment Total Score	20.26	7.39	17.49	8.59	18.08	9.00
Antisocial Behaviour	3.75	2.84	3.10	2.70	3.05	2.58
Anger Control	5.39	2.26	4.31	2.75	4.30	2.73
Emotional Distress	8.18	3.35	7.09	3.83	7.48	4.48
Positive Self	2.97	2.01	3.05	2.31	4.19	8.79

The means for the RAASI scales, except the ‘Positive Self’ scale, decreased from the pre-test to both post-tests (Table 4.8 and see Appendix G for graphic presentation for all RAASI scales). There were increases for the ‘Adjustment Total score’ and ‘Emotional Distress’ scales, and decreases for the ‘Antisocial Behaviour’ and ‘Anger Control’ scales, from post-test 1 to post-test 2. The ‘Positive Self’ scale, however, presented an increase in means over time, from the pre-test to the second post-test.

Table 4.9

Means and standard deviations (SD) of each of the RAASI scales at the three testing periods for the control group

RAASI scales	pre-test		post-test 1		post-test 2	
	Mean	SD	Mean	SD	Mean	SD
Adjustment Total Score	17.3	6.80	14.0	8.93	15.1	7.90
Antisocial Behaviour	2.26	1.46	2.00	1.88	2.62	2.62
Anger Control	4.42	2.00	3.48	2.39	3.35	2.04
Emotional Distress	7.52	4.07	6.19	4.78	5.97	4.42
Positive Self	3.06	2.08	2.35	2.06	3.16	2.52

Three of the five RAASI scales for the control group adhere to the trend exhibited by most of the scales in the experimental group (i.e. pre-test mean is greater than both post-test means) (as seen in Table 4.9 and Appendix G for graphic presentation for RAASI scales). For the other two scales, the ‘Antisocial Behaviour’ and ‘Positive Self’, the second post-test means were greater than the pre-test mean.

The scale of particular interest is the ‘Adjustment Total scale’, because it is used to test the hypotheses. The mean scores for this scale for the experimental and control groups followed a similar pattern, illustrated graphically in Figure 4.8.

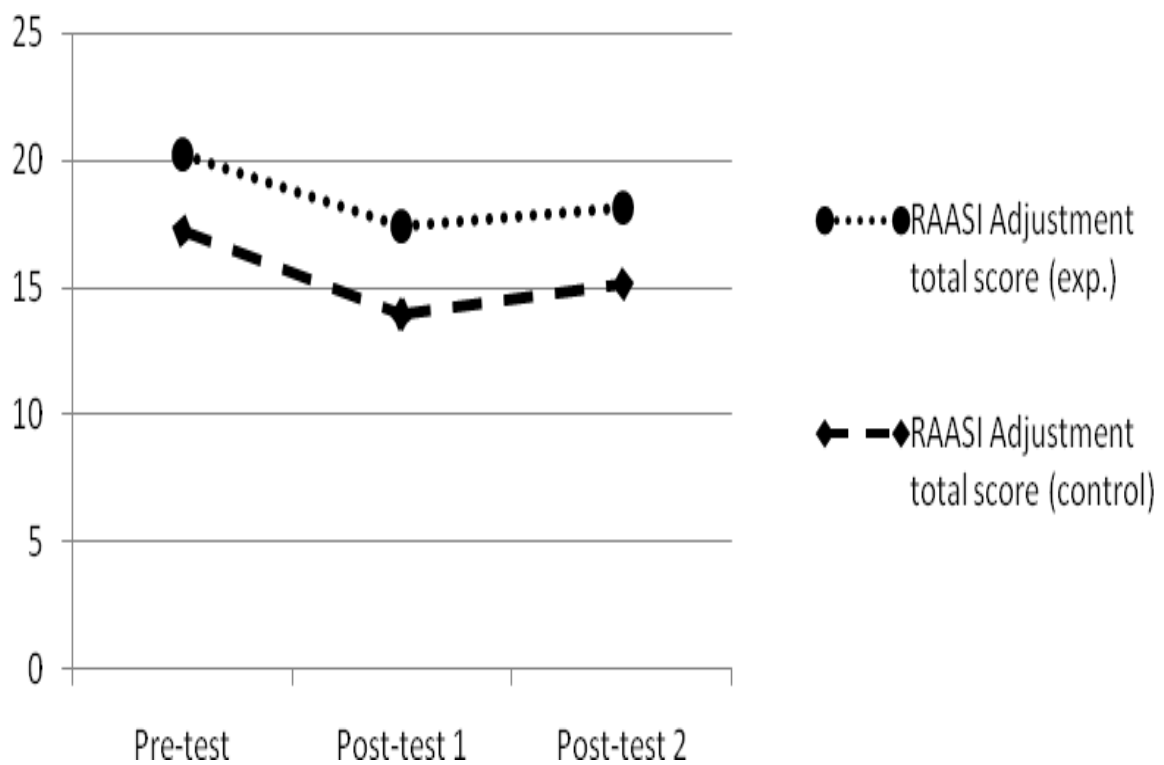


Figure 4.8. Line graph showing the means of the RAASI ‘Adjustment Total score’ scale at the three testing periods

The RAASI 'Adjustment Total score' means for the experimental group were 20.26 (SD = 7.39) at the pre-test, and 17.49 (SD = 8.59) and 18.08 (SD = 9) at the two post-tests respectively (Table 4.8). For the control group, at the pre-test, post-test 1 and post-test 2 the 'Adjustment Total score' mean scores were 17.3 (SD = 6.80), 14 (SD = 8.93) and 15.1 (SD = 7.9) respectively (Table 4.9). The means for both the experimental and control groups appeared to follow a similar trend.

4.4.2. Descriptive statistics of the SDQ scales

The mean scores and standard deviations for the SDQ scales for both sample groups are presented in Tables 4.10 and 4.11. Like the RAASI scales, higher SDQ scores indicate greater disturbance (except for the 'Prosocial scale'). Therefore a decrease in these scores indicates a positive change in the resilience measure of the participants.

In other words, there should be a statistically significant decrease in the SDQ (Goodman, 1997) scores of participants from pre-test to post-test 1. (Note the higher the SDQ score, the more disturbance is indicated)

For all of the SDQ scales in the experimental group (Tables 4.10, and see Appendix G for graphic presentation for all SDQ scales), except 'Prosocial Behaviour' scale, there was a general decrease in mean scores from the pre-test to post-test 1. The 'Prosocial Behaviour' scale deviates from this trend in that there was no difference in the pre-test and post-test 1 means, $M = 7.49$ (with $SD = 2.17$ and $SD = 2.08$ respectively).

Table 4.10

Means and standard deviations (SD) of each of the SDQ scales at the three testing periods for the experimental group

SDQ scales	pre-test		post-test 1		post-test 2	
	Mean	SD	Mean	SD	Mean	SD
Total Difficulties Score	12.33	4.92	11.09	5.37	11.56	5.46
Emotional Symptoms	3.79	2.21	3.15	2.14	3.60	2.32
Conduct Problems	2.49	1.72	2.16	1.75	2.15	1.63
Hyperactivity/Inattention	3.29	2.03	3.13	1.99	3.29	1.89
Peer Relationship Problems	2.76	1.86	2.63	1.69	2.52	1.88
Prosocial Behaviour	7.49	2.17	7.49	2.08	7.44	1.92

From post-test 1 to post-test 2, the means either increased (e.g. as seen in the ‘Total Difficulties Score’, ‘Emotional Symptoms’ and ‘Hyperactivity/Inattention’ scales) or decreased (e.g. as seen in the ‘Conduct Problems’, ‘Peer Relationship Problems’ and ‘Prosocial Behaviour’ scales). The pre-test and post-test 2 means for the ‘Hyperactivity/Inattention’ scale were equal in value ($M = 3.29$; $SD = 2.03$ and $SD = 1.89$ respectively), for all the other scales the pre-test mean was greater than the post-test 2 mean.

Table 4.11

Means and standard deviations (SD) of each of the SDQ scales at the three testing periods for the control group

SDQ scales	pre-test		post-test 1		post-test 2	
	Mean	SD	Mean	SD	Mean	SD
Total Difficulties Score	10.0	4.30	9.19	4.95	8.65	3.81
Emotional Symptoms	3.26	2.00	3.10	2.27	2.90	2.24
Conduct Problems	1.94	1.73	1.65	1.66	1.55	1.57
Hyperactivity/Inattention	2.39	1.31	2.55	1.88	2.13	1.38
Peer Relationship Problems	2.42	1.86	1.90	1.33	2.06	1.69
Prosocial Behaviour	7.97	1.72	7.81	1.78	7.65	2.07

In the control group, the means for four of the six SDQ scales decreased across the three testing periods, from the pre-test to the second post-test (Table 4.11, and see Appendix G for graphic representation). The ‘Hyperactivity/Inattention’ and ‘Relationship Problems’ scales, deviated from this pattern. For the ‘Hyperactivity/Inattention’ scale, there was an initial increase from pre-test ($M = 2.39$; $SD = 1.31$) to post-test 1 ($M = 2.55$; $SD = 1.88$), and then a decrease at post-test 2 ($M = 2.13$; $SD = 1.38$) (Table 4.11). The means of the ‘Relationship Problems’ scales portrays an inverted pattern to the ‘Hyperactivity/Inattention’ scale. There was a decrease in the means from the pre-test ($M = 2.42$; $SD = 1.86$) to post-test 1 ($M = 1.90$; $SD = 1.33$), and then an increase to post-test 2 ($M = 2.06$; $SD = 1.69$).

‘Total Difficulties score’ scale is the SDQ scale of most interest in this study as it is used to test the hypotheses. The mean scores for this scale for the experimental and control groups are presented graphically in Figure 4.9. The means scores for the experimental group were 12.33 ($SD = 4.92$) at the pre-test, and 11.09 ($SD = 5.37$) and 11.56 ($SD = 5.46$) at the two post-tests respectively (Table 4.10), making a ‘v’-shaped pattern. For the control group the pattern is linear, at the pre-test, post-test 1 and post-test 2 the ‘Total Difficulties score’ scales means were 10 ($SD = 4.30$), 9.19 ($SD = 4.95$) and 8.65 ($SD = 3.81$) respectively (Table 4.11).

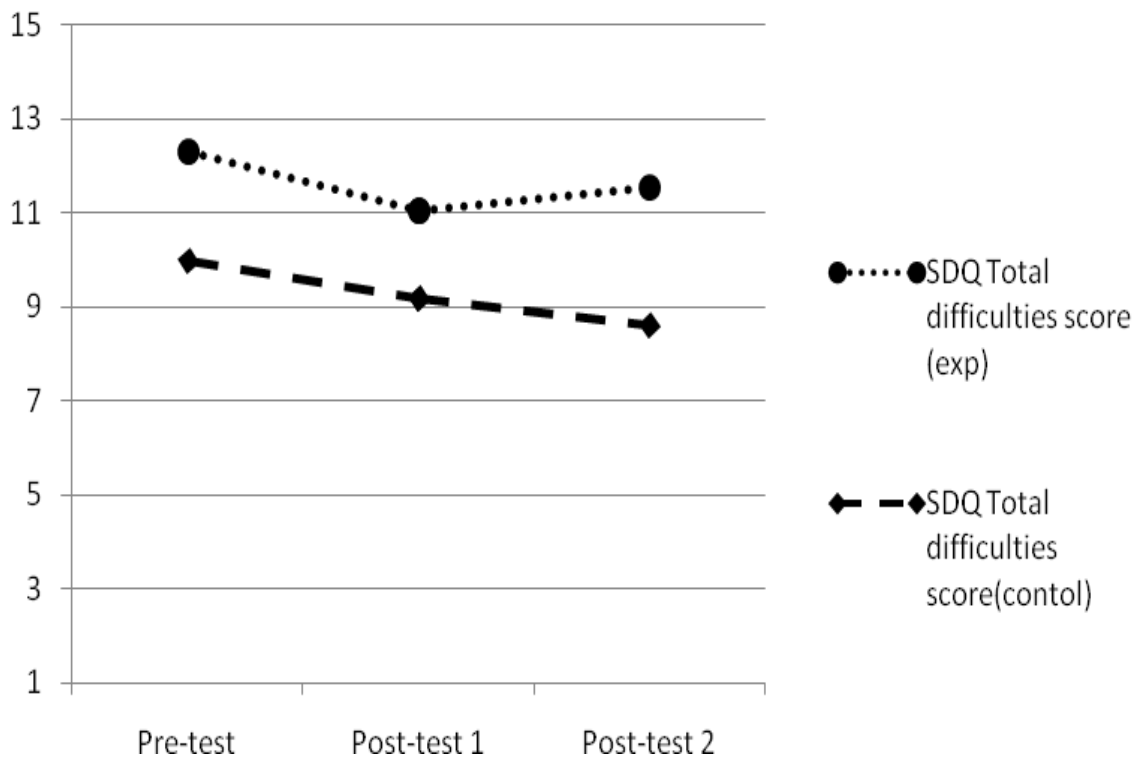


Figure 4.9. Line graph showing the means of the SDQ ‘Total Difference Score’ scale at the three testing periods

4.5. Hypothesis 1: Comparison of psychological adjustment and resilience scores of the experimental group before and after the WEP

An independent samples t-test was run to assess whether the psychological adjustment and resilience of participants in the experimental group was significantly better after the WEP.

The homogeneity of variance assumption was not violated for either the RAASI ($F = 2.36, p = .126$) or the SDQ ($F = 1.31, p = .252$) scales (see Appendix H). Therefore the at the 5% level, the ‘equal variances assumption’ was used. The H_0 ($H_{01}: \mu_{pre} = \mu_{post 1}$) for all p -values less than .05 were rejected and subsequently for those greater than .05, the H_0 was accepted.

4.5.1. Comparison of the RAASI mean scores from the pre-test to post-test 1 for the experimental group

A rejection of H_0 identifies differences between the pre-test and post-test 1 for RAASI 'Adjustment Total Score' within the experimental group. The results of the analysis (see Appendix H) showed that the means of the two respective tests were significantly different ($t(270) = 2.85, p = .005$) and cannot be attributed to chance.

4.5.2. Comparison of the SDQ scores between pre-test and post-test 1 for the experimental group

A rejection of H_0 identifies differences between the pre-test and post-test 1 SDQ 'Total Difficulties score' within the experimental group. The results of this analysis (see Appendix H) also showed that the means of the two respective test times were significantly different ($t(270) = 2.04, p = .043$) and cannot be attributed to chance.

4.5.3. Summary of findings

The above results confirm Hypothesis 1 for the two scales (i.e. Hypotheses 1a and 1b respectively). Significant differences between the pre-test and the first post-test means, as seen in Tables 4.8 and 4.10, and Figure 4.10, were observed for both scales.

The difference in the pre-test and post-test 1 RAASI 'Adjustment Total' mean scores was greater than the difference between the SDQ 'Total Difference' mean scores for the same testing periods.

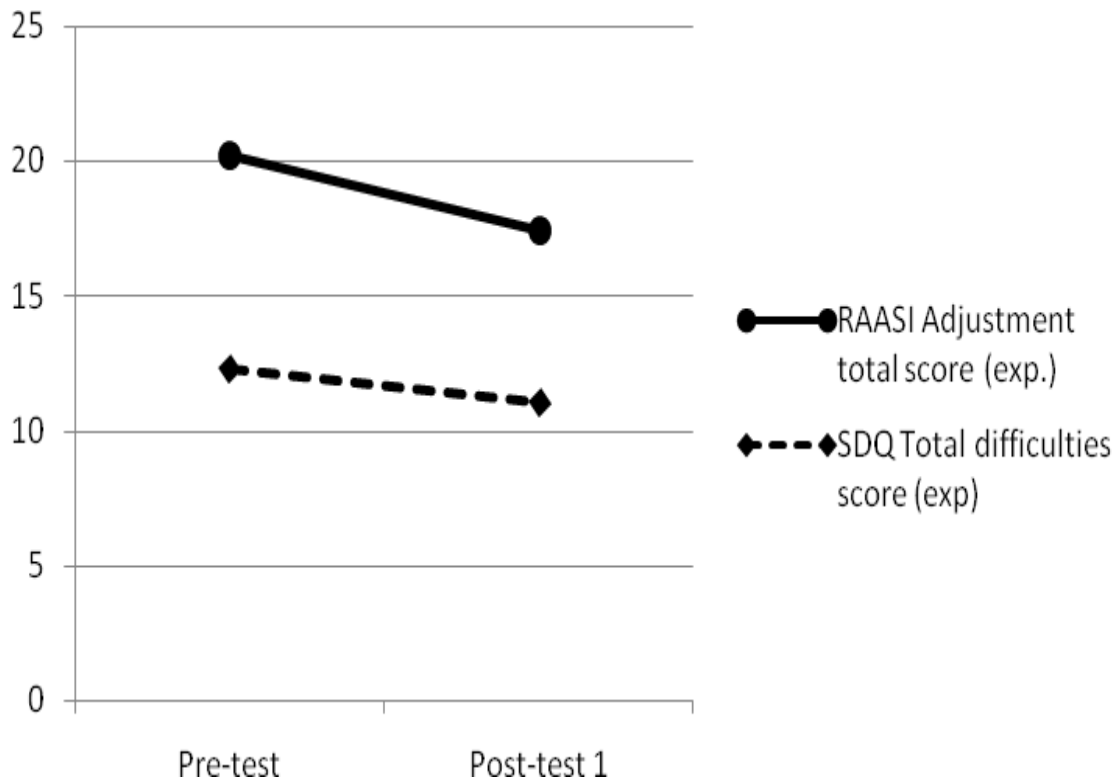


Figure 4.10. Line graph showing the means of the RAASI ‘ Adjustment Total score’ and the SDQ ‘Total Difference Score’ scale at the pre-test and post-test 1

These decreases, in the ‘Adjustment Total score’ and ‘Total Difficulties score’ means, signify that there was an increase (due to them being scored in a pathological direction) in the psychological adjustment and resilience of the participants in the experimental group. In other words, the WEP may have had a positive effect on the experimental group’s psychological adjustment and resilience.

4.6. Hypotheses 2: Comparison of psychological adjustment and resilience scores of the experimental group at the follow-up post-test

An independent samples t-test was run to assess whether the psychological adjustment and resilience of participants in the experimental group remained significantly better after the

WEP at the second post-test. The homogeneity of variance assumption was violated for the selected RAASI scale ($F = 5.95, p = .015$) but not for the SDQ one ($F = .96, p = .328$) (see Appendix I). Therefore, at the 5% level, the ‘unequal variances assumption’ was used for the analysis of the RAASI ‘Adjustment Total score’ and the ‘equal variances assumption’ for the SDQ ‘Total Difficulties score’ analysis. At these levels, the H_0 ($H_{01}: \mu_{pre} = \mu_{post\ 2}$) for p -values less than .05 were rejected and subsequently for those greater than .05, the H_0 was accepted.

4.6.1. Comparison of the RAASI scale mean scores from the pre-test to post-test 2 for the experimental group (Hypothesis 2a)

The means at the pre-test ($M = 20.26, SD = 7.39$) and second post-test ($M = 18.08, SD = 9$), for RAASI ‘Adjustment Total score’, were significantly different from each other, $t(260) = 2.18, p = .030$ (as seen in Table 4.8 and Appendix I).

4.6.2. Comparison of the SDQ scale mean scores from the pre-test to post-test 2 for the experimental group (Hypothesis 2b)

For the SDQ ‘Total Difficulties’ scale, the participants performed no differently at the pre-test than at post-test 2. The means at the pre-test ($M = 12.33, SD = 4.92$) and second post-test ($M = 11.56, SD = 5.46$), were not significantly different from each other, $t(270) = 1.26, p = .221$ (as seen in Table 4.10 and Appendix I).

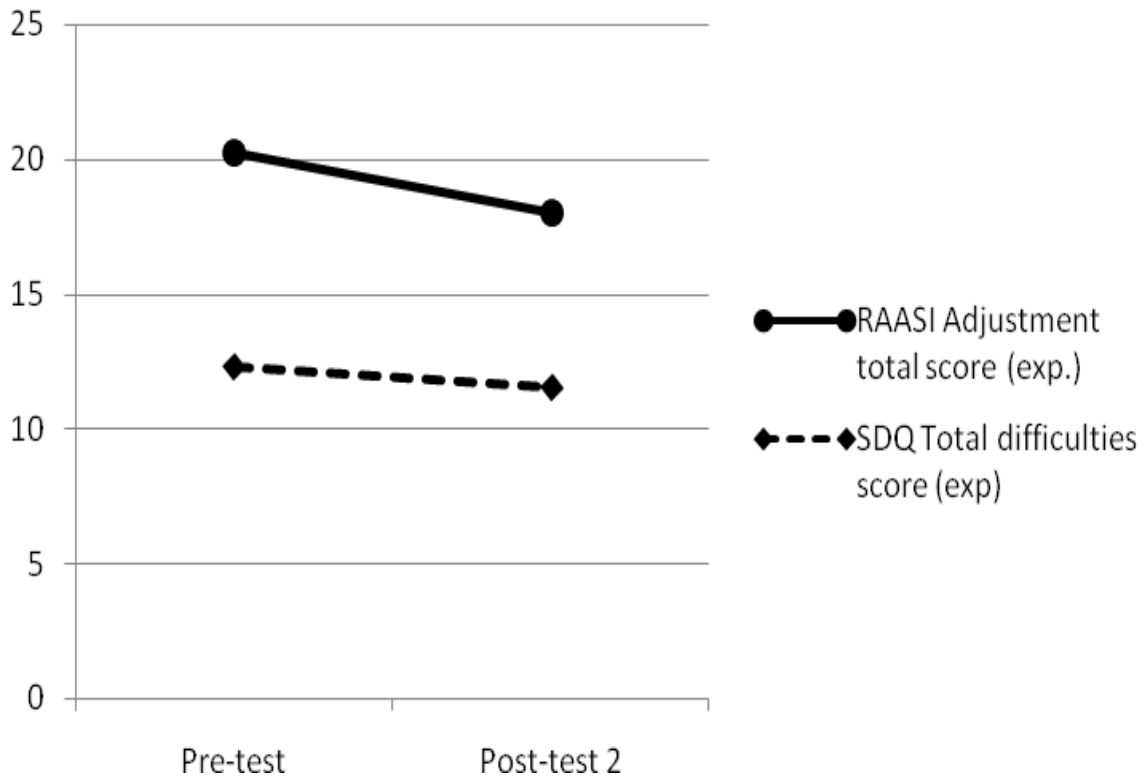


Figure 4.11. Line graph showing the means of the RAASI ‘ Adjustment Total score’ and the SDQ ‘Total Difference Score’ scale at the pre-test and post-test 2 testing periods

4.6.3. Summary of findings

Hypothesis 2a was confirmed by these results, but Hypothesis 2b was not. Tables 4.8 and 4.10, and Figure 4.11 specify that although decreases between the two testing periods were observed for both measures, only the difference in the RAASI ‘Adjustment Total score’ means was significant. It can therefore be suggested that the psychological adjustment of participants in the experimental group was lower at the second post-test than it was before they went on the WEP. The resilience scale means, on the other hand, were not significantly different at the pre-test and post-test 2 testing periods.

4.7. Hypotheses 3: Comparison of psychological adjustment and resilience scores of the control group across all three testing periods

A one-way analysis of variance (ANOVA) was used to assess any differences in resilience and psychological adjustment across all three testing periods for the participants in the control group. The results for the Levene's test of homogeneity of variance were not significant for both the RAASI 'Adjustment Total' ($F = 1.67, p = .194$) and the SDQ 'Total Difficulties' ($F = 1.93, p = .151$) scales. Therefore, at the 5% level, the 'equal variances assumption' was used. For p -values less than .05, the H_0 ($H_{03}: \mu_{pre} = \mu_{post 1} = \mu_{post 2}$) was rejected and for those greater than .05 it was accepted.

4.7.1. The control group's RAASI 'Adjustment Total scale' scores

It is clear from Table 4.9 that the mean for the pre-test ($M = 17.26, SD = 6.8$) was higher than the other two means ($M = 14.03, SD = 8.93$, and $M = 15.1, SD = 7.9$) for post-test 1 and post-test 2. There was also a difference between the means of the two post-tests, with post-test 2 having a higher mean than post-test 1. A graphic illustration of the difference in means has been plotted in Figure 4.12.

Despite the differences in means, the p -value was greater than .05 ($F = 1.36, p = .263$) (see Appendix J), and so the H_0 was accepted. In other words, there were no significant differences in the control group with respect to the RAASI 'Adjustment Total' mean scores at the pre-test, post-test 1 and post-test 2.

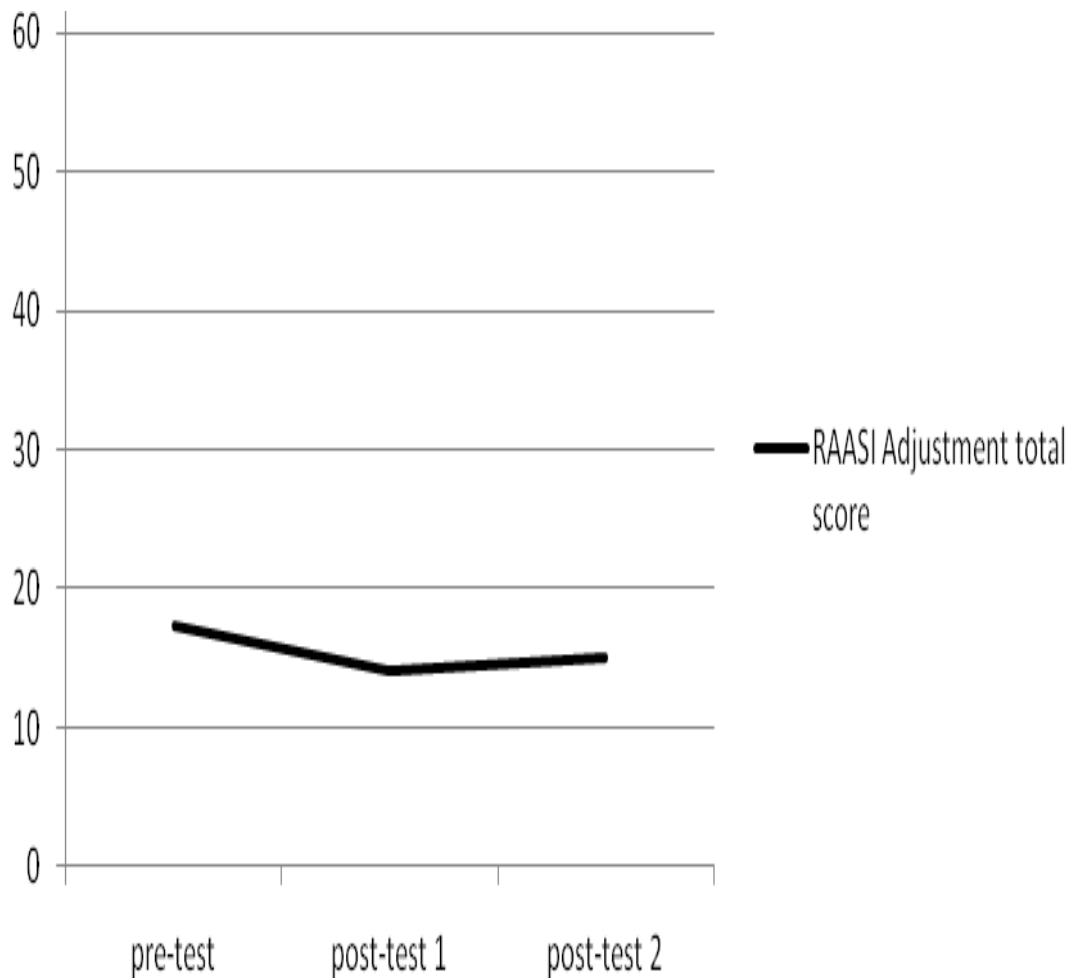


Figure 4.12. Line graph showing the means of the RAASI ‘Adjustment Total score’ at all three testing times.

4.7.2. The control group’s SDQ ‘Total Difficulty scale’ scores

For the SDQ ‘Total Difficulties score’, the pre-test had the highest mean ($M = 10$, $SD = 4.3$), followed by post-test 1 ($M = 9.19$, $SD = 4.95$), and then post-test 2 ($M = 8.65$, $SD = 3.81$) with the lowest mean. This decrease in means across the testing times is illustrated in Figure 4.13.

The ANOVA showed (see Appendix J) that these means were not significantly different ($F =$

.75, $p = .475$), indicating that there were no significant differences in the control group with respect to the SDQ 'Total Difficulties' mean scores across the three test times.

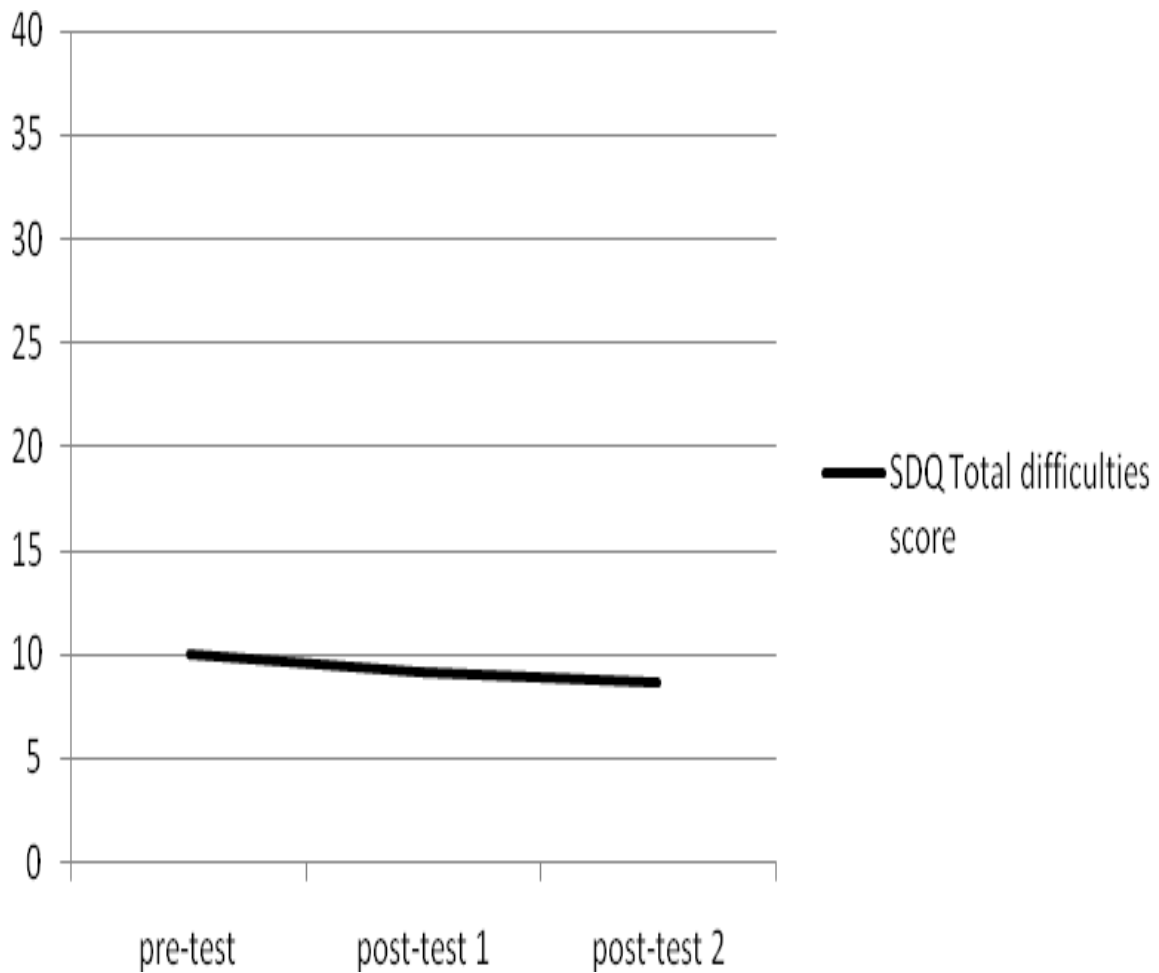


Figure 4.13. Line graph showing the means of the RAASI 'Adjustment Total score' at all three testing times.

4.7.3. Summary of findings

No significant differences were found for the respective mean scores for either of psychological measure for the control group, thus hypothesis 3 is confirmed. Hence, there were no significant differences in psychological adjustment (Hypothesis 3a) and resilience

(Hypothesis 3b) across all three testing periods for the participants in the control group. Since no differences lay within the control group at the three different occasions, for either the RAASI or SDQ, there is no need to test for multiple comparisons using the Bonferroni method.

4.8. Consideration of Other Variables

4.8.1. Analysis of the Impact Supplementary Questions

As described in the methodology chapter, an impact supplement is frequently added to the symptom rating for the SDQ (see Appendix A). As these questions were somewhat altered from the pre-test to the post-test, the comparisons cannot accurately gauge whether or not the experimental and control conditions played a role in different answers amongst these questions. However, the questions can be compared across the two (the experimental and control) groups and conclusions can be made about whether being on the WEP (i.e. camper vs. non-camper) influenced the way an individual answered a question. Table 4.12 summarises the *t*-test done on the differences for each question (only significant differences have been reported here, for the rest of the data see Appendix K).

Table 4.12 shows that for the pre-test, no questions were found to be significantly different across the two sample groups, thus there was no significant difference in the way the participants in the experimental group and those in the control group answered the questions. However, for both the post-WEP tests differences were evident.

As long as the *p*-value is less than .05, it was concluded that there was a significant difference between the way the experimental group and control group answered the questions. This applied for the following questions in post-test 1: Question 27, 28, 28a, 28b, 28e and 28f; and

in post-test 2: Questions 27, 28 and 28c. For the rest of the questions, it was concluded that there was no difference between the responses of those that went on the camp (experimental group) and those that did not (control group) because the *p*-values were greater than .05.

Table 4.12

Significant results of independent samples t-test on remaining SDQ questions

Test	Ques	Experimental group mean	Control group mean	Homogeneity (sig value)	Sig value (2 tailed)
Post-test 1	27	3.5	.516	.094	.000*
	28	1.765	.968	.001	.000*
	28a	1.147	.677	.433	.021*
	28b	1.199	.742	.288	.037*
	28e	1.066	.645	.465	.029*
	28f	1.096	.645	.337	.018*
Post-test 2	27	3.154	.484	.54	.000*
	28	1.625	1.032	.007	.001*
	28c	1.081	.613	.075	.027*

* The mean difference is significant at the .05 level

For the questions where significant differences were found, the trend across the response options were compared between the control and experimental groups using line graphs (figures in Appendix K). Except for question 27 in both the post-tests, all the other questions showed similar response trends across the response options for the experimental and control groups.

The responses to question 27 (i.e. ‘If you went on a ____ camp, has it been helpful?’) in both post-tests suggest most participants found the WEP beneficial. A large majority of the participants, in the experimental group, responded positively about the WEP and found it

helpful. 64% of the post-test 1 and 49% of the post-test 2 participants responded with the ‘a great deal’ option; and, 26% and 29% respectively responded with the ‘quite a lot’ option.

4.8.2. Participants’ Comments

Participants were given the opportunity at each test administration to make any additional comments at the end of their questionnaires. Table 4.13 displays the frequency of these comments in respective categories. Of the 167 questionnaires, which were administered on the three testing occasions, a total of 41 comments were made, and of these remarks 17 (41.5%) were positive comments about the WEP and their experiences on the camp.

Table 4.13

A display of the type of comments, and their frequency, made by participants.

Comments	Frequency
Positive comments about the camp	17
Bullying/gossiping at school	7
Crime (i.e. muggings, police involvement in crime and fear of gangsters)	3
Helpful questionnaire (self realisation)	3
Family difficulties/problems	2
Parent death	2
Information about studying psychology	2
Career concerns	1
Caregiver difficulties	1
Fear of own death	1
Parent addiction (alcoholism)	1
HIV/AIDS	1
Total number of comments	41

The following were examples of the positive comments made about WEP:

Well the ____ trip has helped me very much. Besides learning to work with other people as a team and learning team-work. I enjoyed. I listened, had fun and got on with people a lot. I am now a new person and I’ve discovered myself.

_____ camp helped me a lot because now I can learn that if you work as a group your personalities get even more better. You start doing the right things for all. I now can concentrate with my work. My behaviour at home is much better than the other time. I feel trustworthy among other people, I'm not the odd one out.

Other comments about the WEP included remarks about wanting to return to the bush camp and how much fun they had during the camp. Participants that made comments on the questionnaire seemed to find it a helpful method to learn more about themselves.

The implications of all the above results will be considered in the following chapter.

CHAPTER FIVE

DISCUSSION

5.1. Introduction and Overview of Results

The results will now be discussed in a systematic way in accordance with the study's hypotheses and their respective presentation in the result's chapter. In general, the results supported Hypothesis 1 and 3, but Hypothesis 2 had mixed outcomes. T-tests showed that there were statistically significant decreases in the means of the RAASI and SDQ total scales from the pre-test to post-test 1 for the experimental group (Hypothesis 1a and 1b), and that these differences were maintained for the RAASI 'Adjustment Total score' (Hypothesis 2a). Analysis of variance of the three testing periods for the control group did not demonstrate any significance difference between their mean scores (Hypothesis 3a and 3b). These results will be discussed and interpreted in the ensuing section.

5.2. Demographic Details

The overall sample size of 167 participants is likely to yield respectable power in this investigation. However, when the overall sample is separated into the two sample groups used in the analysis of the hypothesis, there is a major discrepancy in their sample sizes. The experimental ($N = 136$) group has just over four times the number of participants as the control group ($N = 31$) does. Although it was expected that the majority of the learners would go on the WEP, it was assumed, from previous years' numbers, that the two groups (experimental and control) would be closer in size.

Randomly assigning participants to different groups was not achievable (due to practical, logistical and financial reasons) in this study and so a non-random convenience sample (i.e.

volunteers) was used. The initial selection criteria for the sample groups included choice and consent which also contributed to the differences in the two samples, which is a major limitation of the current study. However, inappropriate, non-equivalent experimental and control groups is a problematic aspects in general for empirical investigations of wilderness therapy (both WTP and WEP) (Bandoroff & Scherer, 1994; Gillis, 1992; Herbert, 1998; Kelley et al., 1997; Romi & Kohan, 1994; Weston et al., 1999).

Although the ethnic composition of the sample used in this study is proportionately representative of the South African population, it differs greatly from that outlined in the literature. Few studies have been conducted using participants from more traditional (i.e. African or Eastern) cultures and contexts, as the majority of available studies have been set in Western countries with mostly Caucasian participants. Both the experimental and control groups followed proportionately similar racial trends of the overall sample and the South African population. The initial aim of investigating the effectiveness of the WEP for adolescents of various race and ethnic backgrounds has been partially achieved. All racial groups were included in the analysis of the hypotheses, but because of the small sample sizes of most of the groups (i.e. white, Indian, coloured and 'other') analysis was not done on individual race groups.

For home language, class average estimation, parents' employment and home town data, the trends were relatively similar for the experimental and control groups. When examining the results, it is important to keep in mind the impact that the overall sample sizes (136 for the experimental and 31 for the control) had on the descriptive statistic presented.

5.3. Structure of the Scales (RAASI and SDQ)

5.3.1. Reliability analysis

The reliability of the two measures used, were considered adequate for this purpose. These Cronbach's Alphas were .66 for the SDQ and .74 for the RAASI. Therefore, this study yielded respectable internal consistency for both scales. The individual subscales for each measure were not tested for reliability because the analysis of the hypotheses only included the RAASI 'Adjustment Total score' and the SDQ 'Total Difficulties score' scales.

Although the test reliability for SDQ is lower than the suggested preferred reliability of at least .7 for research instruments (Aron & Aron, 1997; Finchilescu, 2002), it has been argued that if the scale is used to compare groups of people, then a reliability of .65 is sufficient. Thus, a reliability of .66 remains satisfactory, and is in alignment with the internal consistency of the SDQ reported by Goodman (n.d.) ranging from .61 to .82.

It is also important to note that the number of items in a scale influences reliability (Finchilescu, 2002), i.e. the more items in a scale the higher the reliability. Both the RAASI and SDQ are brief screening questionnaires (32 and 25 items respectively), thus affecting their test reliability negatively. Conversely, the problem of participant motivation needs to be considered (Finchilescu, 2002). If the questionnaires had been longer, participants would have been more likely to tire and give the items less attention which may have subsequently affected the validity of the scale.

5.3.2. Homogeneity of the experimental and control groups at the pre-test

The tests of homogeneity demonstrated that at the pre-test, the mean scores of the experimental and control groups for most of the RAASI and SDQ scales were significantly

different. For the two scales used in the analysis of the hypotheses, the RAASI ‘Adjustment Total score’ ($p = .001$) and the SDQ ‘Total Difficulties score’ ($p = .000$) the p -values were less than .005 thus demonstrating that the experimental and control groups differed in their variance for these respective scales. This was another outcome of the lack of randomisation of the sample, and the manual ways of matching the groups on critical attributes (like gender, race, age, first language, grade, etc.) (Tredoux & Smith, 2008), as suggested in the methodology section were not realistic. This was because most of these attributes appeared fairly consistent across the experimental and control groups anyway. Unfortunately, the omission of one critical attribute, gender, may have contributed to the lack of homogeneity between the two sample groups.

5.4. Descriptive statistics

The descriptive statistics were calculated for all RAASI and SDQ scales in order to obtain a general overview and understanding of the data. However, the hypotheses were only tested using the RAASI ‘Adjustment Total score’ and the SDQ ‘Total Difficulties score’ scales. These global measures of psychological adjustment and resilience were likely to provide the highest level of reliability and validity because they have a greater number of items (32 and 25 respectively) and breadth of content as compared to the other scales (i.e. a maximum of 10 items for the relevant RAASI scales and 5 items for each of the SDQ scales) (Finchilescu, 2002; Reynolds, 2001). Furthermore, besides the SDQ ‘Total Difficulties score’ scale, the remaining SDQ scales are not adequately defined by the author. Therefore a clear understanding of what is being measured is lacking. Nevertheless, the focus of this study was on a general assessment of resilience, and therefore the SDQ served the purpose of the study.

5.4.1. Descriptive Statistic for the RAASI

For four of the five scales, the pre-test means for the RAASI scales for the participants in the experimental group were greater than both the post-test means. This indicates a possible positive change following the WEP for those respective participants. The 'Positive Self' scale deviates from this trend, suggesting that there has been either a negative change (if the means are significantly different) or no significant change (if the means are not significantly different) in the self-esteem and sociability of participants after the WEP. Since the focus of this study was on general psychological adjustment, the individual scales were not analysed beyond these descriptive statistics.

5.4.2. Descriptive Statistic for the SDQ

With regards to the SDQ, the results for the 'Prosocial Behaviour' scale are of particular interest. The 'Prosocial Behaviour' scale, the only scale not scored in a pathological direction, shows a decrease in mean scores from the pre-test to both post-tests. One might expect that since there was a decrease in the other scales that there would be an increase in this scale. However, since *t*-tests were not run on this scale (due to the reasons discussed above in section 5.4.) only this broad observation can be made from the means.

The pattern for the SDQ 'Total Difficulties score' scale differs for the experimental and control groups. The experimental group means make a slight 'v'-shaped pattern, whilst for the control group the pattern is linear in a decreasing direction. A difference should be expected if the WEP has had a positive impact on participants in the experimental group.

5.5. Psychological Adjustment and Resilience Pre-and-Post-Test

5.5.1. Comparison of the psychological adjustment and resilience across pre-test and post-test 1

Statistically significant decreases were observed amongst the experimental group's RAASI and SDQ scores from pre-test to post-test 1. Therefore, the psychological adjustment and resilience of participants in the experimental group was significantly better immediately after the WEP. Positive improvement in various psychological measures as a result of WEPs is common in many studies and will be discussed below in section 5.5.5.

5.5.2. Comparison of the psychological adjustment and resilience across pre-test and post-test 2

The psychological adjustment of participants in the experimental group was significantly lower at the second post-test than it was before they went on the WEP (i.e. at the pre-test). Thus, there was a significant decrease in the experimental group's RAASI 'Adjustment Total' scores from the pre-test to the second post-test. Unlike psychological adjustment, resilience showed no significant improvement (i.e. decrease in SDQ scores) across the pre-test and post-test 2.

5.5.3. The control group's psychological adjustment and resilience over time

With regards to the control group, no significant differences were found between the means, indicating that there were no noteworthy changes in the control group's psychological adjustment and resilience across all three testing periods.

5.5.4. Summary

In terms of psychological adjustment, it can be concluded that positive change resulted for the participants in the experimental group because of their participation in the WEP, and that this improvement in psychological adjustment was maintained for at least two months following the WEP. Although the resilience also improved immediately after the WEP at the first pre-test, this improvement was not sustained at the follow-up post-test, two months later. No significant change was demonstrated for either of the measures (psychological adjustment and resilience) for the participants in the control group.

5.5.5. Contextualising the results within the wilderness therapy literature

As discussed in the literature review, a number of WEPs are currently being run throughout the country. WEPs are especially popular in schools however research examining the outcomes of such programmes on South African youth is lacking. This study attempts to address this.

Consistent with other research (Bandoroff & Scherer, 1994; Fischer & Attah, 2001; Harper, 2008; Herbert, 1998; Kelley, Coursey, & Selby, 1997; Larson, 2007; Norton, 2007; Romi & Kohan, 2004; Russell, 1999; Werhan & Groff, 2005; Wilson & Lipsey, 2000), this study also supports some positive outcomes to a WEP. Specifically, there was a significant increase in psychological adjustment and resilience initially after the WEP; however this effect was only sustained at the two month follow-up test for the former. The increase in the experimental group's resilience was short-lived, and by the second post-test was not significantly different to the initial scores at the pre-test.

In a study by Herbert (1998), it was shown that a WEP was successful in promoting positive psychological change for two psychological measures (i.e. an increase in self-esteem and a shift toward an internal locus of control). The effects sizes (i.e. $d = 1.44$ for self-esteem, and $d = -.73$ for locus of control) for each of these measures dissipated over time. They decreased at the three-month follow-up test ($d = .34$ and $d = -.26$ for self-esteem and locus of control respectively), and were near zero ($d = -.01$ and $d = -.08$ for the two respective measures) at the one-year follow-up. Several reasons were given for why the initial changes were not sustained including length of the intervention.

Therefore, a significant result at post-test 2 in this study does not guarantee that the benefit (i.e. improved psychological adjustment) will be further sustained over time. Especially since, the mean difference between post-test 2 and the pre-test was less than the initial mean difference between post-test 1 and the pre-test. This suggests that the positive change observed at the first post-test, though still significant at post-test 2, appears to be decreasing over time. In order to establish this, a further six month or year follow-up test would be needed.

Several reasons may explain why immediate effects are not sustained. First, the length of the WEP impacts on its effectiveness. In light of the issues covered in the literature review chapter, it seems probable that longer programmes would have a greater impact on participants. In other words, if the WEP in this study had been longer, it may have had a more lasting therapeutic effect (Herbert, 1998). A meta-analysis of 96 studies conducted by Hattie et al. (1997) found that effects were greater for programmes longer than 20 days, both at the end of the programme and at follow-up. The length of the two-night, three-day programme in this study, and shorter programmes in other studies, may not have been of adequate duration

to produce sustainable, statistically significant changes in participants (Larson, 2007). This appears particularly true for the resilience measure in this study as its initial positive increase was not even sustained at the two month follow-up test.

Second, the participants' habitual environment (home, school, neighbourhood, etc.) could play a role in maintaining any positive changes that occurred due to the WEP. Unsupportive, violent or impoverished home environments (to name a few possibilities) may not be accepting of changes, or are unable to support and further promote them.

Another factor impeding the initial benefits post the WEP, particularly for the resilience measure, may be attributed to the absence of any follow-up interventions (Herbert, 1998). This could be at home or at school (e.g. during Life Orientation classes), where concepts or issues dealt with are further explored or reinforced. Alternatively, a follow-up intervention could be run at the bush school where the initial WEP took place, to sustain, or if possible, enhance therapeutic gains (Herbert, 1998).

A final factor influencing sustainability could be the peer relationships and support established or enhanced during the WEP. In their paper, Russell et al. (2000) discuss the importance of further investigation into peer dynamics and support established through wilderness living, communal tasks, and various debriefing sessions. Taylor (2001) agrees, highlighting the importance of the relationships developed during WEP. He suggests that these relationships can create and boost feelings of acceptance and safety, thus forming a potential support for growth and the possibility of its maintenance after the programme is over.

The use of psychological adjustment and resilience as outcome measures is not evident in the reviewed literature. Not even meta-analytical studies (Hattie et al., 1997; Moore & Russell, 2002) list general psychological adjustment or resilience as outcome measures used in wilderness therapy research. Consequently, no direct comparisons can be made between the results of this study to others. Research using these two measures, even for other comparable interventions, as outcome measures is not readily accessible. More recent studies in WTP and WEP (Fischer & Attah, 2001; Herbert, 1998; Kelley et al., 1997; Larson, 2007; Norton, 2007; Orren, 2007) support Bandoroff and Scherer's (1994) claim that the majority of research reports on self-concept, self-esteem or self-confidence, locus of control and social attitude following wilderness intervention. However it was felt that since psychological adjustment and resilience are an integral part in the process of positive development, particularly in childhood and adolescences, they would be appropriate measure for this study.

Acquiring a suitable, equivalent control group is a common limitation to WEP and WTP studies (Bandoroff & Scherer, 1994; Gillis, 1992; Herbert, 1998; Kelley et al., 1997; Larson, 2007; Romi & Kohan, 1994; Weston et al., 1999). Most quantitative research, not only in this field but in the social sciences in general, is quasi-experimental in design where randomisation of participants into groups is not logistically or financially possible (Durrheim & Painter, 2008). Tredoux and Smith (2008) suggest manual ways of matching the experimental and control groups on critical attributes (like gender, race, age, first language, grade, etc.) can be used to equate the groups. Unfortunately, it was not plausible for this study because of the differences in the sample sizes of the two groups and the omission of collecting critical information on gender.

Although the groups are not equivalent, the non-significant results of the control group could still allow for history and maturation affects to be ruled out. Thus, improving the internal validity of the study and providing further support that the positive changes observed in this study for the experimental group, were due to the WEP and not the result of other factors.

However, many extrinsic factors may have influenced the findings of this study. For example the differences in personality traits (e.g. level of motivation) between individuals that volunteer to participate in a WEP (i.e. experimental group) and those that do not (i.e. the control group). Herbert (1998) suggests that people who volunteer to participate in WEPs may be different on a number of personality traits from those who do not chose to participate. More importantly, people who volunteer for WEP may be more receptive to personal change or self-improvement (Kolb, 1988 as cited in Herbert, 1998). Thus in this study, the participants in the experimental group may have been inherently more receptive to change than those in the control group.

Additionally, there was a financial component (i.e. fee) to the camp. Therefore, some participants in the control group may not have been able to take part in the WEP because their parents could not afford it or because they are from families from a lower socio-economic status than those who attended the WEP. Alternatively, parents allowing them to participate or not might suggest a less or more supportive home environment. Nevertheless, both of these explanations contradict possible factors (i.e. unsupportive home environment and impoverished backgrounds) that were suggested above for contributing to the deterioration of any initial positive change resulting from a WEP. Despite all this, such assumptions cannot be made about the participants because their financial situations (or more aptly that of their parents' or guardians') were unknown.

Other external factors, not already mentioned (e.g. commitment to sporting and peer pressure), may have determined who volunteered for the WEP and those who stayed behind.

In addition, the length between testing periods may have had an effect on the outcome of this study. The time between the first testing period (the pre-test) and the second (post-test 1) was about a week, perhaps learners were able to remember their initial responses which could have had an influence on how they responded to the items in post-test 1. Previous test-retest reliability studies for the SDQ suggest that test–retest stability is satisfactory, with the internal consistency ranging from 0.61 to 0.82. The RAASI on the other hand, has a higher test-retest reliability, with coefficients ranging from 0.83 to 0.89; however, this was over a two-week interval. Thus despite the short testing period between the pre-test and post-test 1, the length between testing periods is not likely to be an issue in this study.

5.6. Consideration of Other Variables

5.6.1. Analysis of the impact supplementary questions and participants comments

For each of the supplementary questions in the pre-test, there were no significant differences in how the experimental and control groups responded to the questions.

Question 27 ('If you went on a camp, has it been helpful?') was found to be significantly different between the experimental and control groups for both post-tests. It is not surprising as it refers to only those participants who attended the WEP (i.e. the experimental group) and so a difference should be expected between the responses of the experimental and control groups. The responses to question 27 suggest most participants found the WEP beneficial. A

majority of the participants, in the experimental group, responded positively (either selecting the ‘a great deal’ or the ‘quite a lot’ option).

The other questions found to be significantly different across the experimental and control groups, involve issues around difficulties participants may have faced in the time period after the pre-test. For these questions, response trends for both groups were similar, but the mean scores of responses for each group differed significantly (see Appendix K).

The participants’ additional comments give an indication of their enjoyment of the WEP, as well as the potential range of difficulties faced by these grade 8 learners. Almost half of the comments made were positive comments about the WEP and their experiences on the camp. Other positive comments were made about the questionnaires, some participants found them to be useful in learning more about themselves. This illustrates an advantage (i.e. obtaining unexpected information) of qualitative methods (i.e. open-ended question).

5.7. Limitations of this study

Some of the limitations recognised and addressed in this study are similar to limitations addressed in other WTP and WEP studies (Bandoroff & Scherer, 1994; Gillis, 1992; Herbert, 1998; Kelley et al., 1997; Romi & Kohan, 1994; Weston et al., 1999), despite the researcher’s efforts to address these limitations in this study’s methodology and research design.

The most obvious methodological limitation is this study’s quasi-experimental design, specifically relating to the non-probability sampling. The unexpected, imbalanced sample sizes across the experimental and control groups resulted because participants choose whether they wanted to attend the WEP or not, as opposed to being randomly assigned to

either sample group. Furthermore, this lack of randomisation has additional implications. The grounds for choosing to attend the WEP, or not, may have contributed to the initial heterogeneity of the sample groups and so influenced the outcome of the results, as discussed above in section 5.5.5. This forced a false distinction between the experimental and control groups.

Another limitation relates to the control group whose participants continued to attend an adapted school programme while the experimental group was on the WEPs. Beyond the description in section 3.4.2. in the methodology chapter, the school did not provide the researcher detailed information about their altered school programme. In addition, although school attendance was mandatory, some of the learners in the control group elected to stay at home during this period, either for the whole time or just on selected days. Again, details of the participants in the control group's attendance was unknown. In other words, although it was clear that they did not attend a WEP, exactly what they did was unclear.

The findings of this study reflect a positive change in the psychological adjustment and resilience of the participants in the experimental sample and no significant change in the control group. However, these samples cannot be directly compared because of the great difference in sample sizes and heterogeneity in their mean scores at the pre-test. The control group is therefore not a 'true' control group and external validity of the design is further challenged.

Due to the uneven sample sizes between the experimental and control groups, and the general heterogeneity of the two groups, results cannot be generalised beyond this study. Others have also stressed these problematic aspects in empirical investigations of wilderness therapy

(Bandoroff & Scherer, 1994; Gillis, 1992; Herbert, 1998; Kelley et al., 1997; Romi & Kohan, 1994; Weston et al., 1999).

Due to the unequal sample sizes, lack of sufficient representation across the various groups and omission of critical information like participants gender, effects of estimation of class average, race, age, home language and parents' occupation could not be explored.

The RAASI and SDQ are not standardised for South African adolescents. Despite both measures having been utilised in South Africa, for research and clinical purposes, the lack of normed data for these measures suggests that the conclusions of this study should be interpreted with caution.

The focus on a single intervention programme is another weakness of this study (Sibthorpe, 2003). It does not allow for comparison to other types of intervention which would improve the external validity of the study.

Lastly, the purely quantitative nature of this study is a major limitation. Although there are many advantages to quantitative design (which is why it was selected by the researcher) there are many disadvantages too (some of which have already been highlighted and discussed).

One downfall of quantitative approaches is that the information obtained from the participants is limited to the predetermined information asked for by the researcher through questionnaires and scales (Durheim, 2008). Personal thoughts, feelings, experiences and opinions of participants are on the most part neglected. Quantitative methods, like in this study, are important in establishing and better understanding whether WEPs are effective; however qualitative research may help identify how it works.

5.8. Implications of this Study and Recommendations for Further Research

The limitations discussed in section 5.7 above suggest valuable areas of improvement for future research. In addition, and of great importance to the advancement of the field, is the establishment of a universal definition. Both researchers and potential participants would benefit from a clear, concise, collective definition (Russell, 2001).

With regards to research particularly in South Africa, and other African or Eastern communities, measures standardised for our population need to be developed and employed. This would improve the validity and reliability of the outcomes of research done on WEPs in South Africa.

Areas for further research could also include comparing length and content of WEPs, and investigating differences in outcomes across race, culture, gender, age and socio-economic status. Studies could compare the different WEPs in South Africa, in terms of cost, duration and outcomes. Perhaps then a standardised form of 'best practice' could be developed and implemented in all WTPs and WEPS to better investigate the positive effects of WEPs, and ultimately wilderness therapy.

CHAPTER SIX

SUMMARY AND CONCLUSION

This study was an attempt to investigate the effects of a WEP on a group of South African adolescents. A quantitative, quasi-experimental approach was taken in the research design, data collection and analysis. Data was collected from two non-randomised groups (an experimental and a control group). The experimental group attended a 2-night, 3-day WEP, while the control group attended an adjusted school programme. Data collection occurred on three occasions. There was an initial pre-test before the WEP and two post-tests subsequent to it. The first post-test was administered within a week of the WEP ending, and the second follow-up post-test was two months later. Not many replicable quantitative studies have been completed in this field, making comparisons and/or links between methods and results of various studies restrictive.

Further evidence for the benefits of WEPs has been produced by this study, although not totally conclusive. It showed significant improvements in the psychological adjustment and resilience of participants in the experimental group after the WEP at the first post testing occasion (post-test 1). However, this positive change was only maintained for the participants' psychological adjustment. In the control group, no significant changes were noted across the three testing occasions. Overall, this study may lack external validity and therefore cannot be generalised outside of this study (Tredoux & Smith, 2008). The fact that no changes were found in the control group, further support the findings of positive change resulting from participation in the WEP.

It is evident from the literature review that there is an immense healing potential in wilderness environments, and that there are apparent benefits to wilderness therapy, including WEPs. The difficulties arise when attempting to investigate, identify and understand these effects. More sensitive tools, including qualitative as well as quantitative approaches, need to be developed (Romi & Kohan, 2004). And, alternative designs, apart from the pre-test-post-test design, which dominates the literature and was used in this study, “could provide alternative sources of control against plausible rival hypotheses” (Hattie et al., 1997, p. 73). Much more research is needed in this field.

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APPENDIX A

PRE-TEST & POST-TEST QUESTIONNAIRES

Pre-test Questionnaire

Please answer the following questions truthfully.

Demographics

Circle or fill in the following demographic questions.

(Pre-test) 2009

1. CLASS: grade 8 ____

2. Are you going on a Highover camp? YES or NO

- If you are going on a camp, which one?

1st camp 2nd camp 3rd camp
23rd–25th March 25th– 27th March 30th March–1 April

- If you are not going on a camp, why? _____

3. INITIALS: _ _ _ (the 1st letter of all your names)

4. CODE: (to be allocated)

5. AGE: ____ years and ____ months old

6. ETHNICITY/RACE:

<u>White</u>	<u>Black</u>	<u>Indian</u>	<u>Coloured</u>	<u>Asian</u>	Other ____
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7. HOME LANGUAGE/
MOTHER-TONGUE:

<u>English</u>	<u>Xhosa</u>	<u>IsiZulu</u>	<u>Afrikaans</u>	Other _____
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8. CLASS AVERAGE:

<u>40-49%</u>	<u>50-59%</u>	<u>60-69%</u>	<u>70-79%</u>	<u>80-89%</u>	<u>90-99%</u>
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9. PARENTS' OCCUPATIONS:

Mother : _____

Father: _____

10. HOMETOWN:

RAASI Adolescent Questionnaire

The following statements describe how people feel about themselves, others and the world around them. To answer each statement, put a \checkmark or **X** in the box that shows best describes you or how you feel; that is your answer. There are no right or wrong answers to the statements below. Just answer how you have been feeling. Be as honest as you can in answering each statement. If you are not sure of a statement, just choose the answer that best describes you or how you feel. Please work carefully and answer all questions.

"IN THE PAST 6 MONTHS...."	Never/almost never	Sometimes	Nearly all the time
I have felt that everything was OK in my life.			
I have argued with my teachers or parents.			
I have used drugs or alcohol			
I enjoyed getting together with my friends or family.			
I have lost my temper			
I felt good about myself.			
I argued with adults			
I did what adults asked me to do.			
I did things to bother people.			
If someone told me to do something I did the opposite.			
I felt very angry.			
I felt like getting back at others.			
I broke the rules at school or at home.			
At night, I stayed out later than I was allowed.			
I got so mad that I threw things at home or at school.			
I felt comfortable meeting new people.			
I did things that were against the law.			
I was very lonely.			
I had fun with friends.			
I felt very tense.			
I got into trouble at school or at work.			
I felt nervous.			
I felt depressed or sad.			
I stayed away from home without telling my parents where I was.			
I did not study or hand in my homework.			
I worried about a lot of things.			
I worried about a lot about the future.			
I had trouble falling asleep.			
I felt upset.			
I had trouble concentrating.			
I felt like crying for no reason.			
I did something I knew was bad.			

Strengths and Difficulties Questionnaire

For each item, please mark the box for 'Not True', 'Somewhat True' or 'Certainly True'. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of how things have been for you over the last six months.

	Not true	Somewhat true	Certainly true
I try to be nice to other people. I care about their feelings			
I am restless, I cannot stay still for long			
I get a lot of headaches, stomach-aches or sickness			
I usually share with others (food, games, pens etc.)			
I get very angry and often lose my temper			
I am usually on my own. I generally play alone or keep to myself			
I usually do as I am told			
I worry a lot			
I am helpful if someone is hurt, upset or feeling ill			
I am constantly fidgeting or squirming			
I have one good friend or more			
I fight a lot. I can make other people do what I want			
I am often unhappy, down-hearted or tearful			
Other people my age generally like me			
I am easily distracted, I find it difficult to concentrate			
I am nervous in new situations. I easily lose confidence			
I am kind to younger children			
I am often accused of lying or cheating			
Other children or young people pick on me or bully me			
I often volunteer to help others (parents, teachers, children)			
I think before I do things			
I take things that are not mine from home, school or elsewhere			
I get on better with adults than with people my own age			
I have many fears, I am easily scared			
I finish the work I'm doing. My attention is good			

Overall, do you think that you have difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

No	YES – minor difficulties	YES – definite difficulties	YES – severe difficulties
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If you have answered "YES", please answer the following questions about these difficulties:

- How long have these difficulties been present?

Less than a month	1 – 5 months	6 – 12 months	Over a year
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- Do the difficulties interfere with your everyday life in the following areas

HOME LIFE	Not at all	Only a little	Quite a lot	A great deal
FRIENDSHIPS	Not at all	Only a little	Quite a lot	A great deal
CLASSROOM LEARNING	Not at all	Only a little	Quite a lot	A great deal
LEISURE ACTIVITIES	Not at all	Only a little	Quite a lot	A great deal

- Do the difficulties make it harder for those around you (family, friends, teachers, etc.)?

Not at all	Only a little	Quite a lot	A great deal
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Do you have any other comments or concerns?



Thank you very much for your help



Post-test questionnaires 1 and 2



Please answer the following questions truthfully.



Demographics

Circle or fill in the following:

(Post-test 1 & Post-test 2) 2009

1. CLASS: grade 8 **A B C J L** or **M**

2. Did you go on a Highover camp? YES or NO

3. INITIALS: _____ (the 1st letters of all your names)

4. CODE: _____

5. AGE: ____ years old

6. ETHNICITY/RACE:

<u>White</u>	<u>Black</u>	<u>Indian</u>	<u>Coloured</u>	<u>Asian</u>	Other ____
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**7. HOME LANGUAGE/
FIRST LANGUAGE:**

<u>English</u>	<u>Xhosa</u>	<u>IsiZulu</u>	<u>Afrikaans</u>	Other _____
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8. PARENTS' JOBS (What work do your parents do? / What do your parents do?):

Mother : _____

Father: _____

RAASI Adolescent Questionnaire

The following statements describe how people feel about themselves, others and the world around them. To answer each statement, put a \surd or **X** the box that shows your answer. There are no right or wrong answers to the statements below. Just answer how you have been feeling. Be as honest as you can in answering each statement. If you are not sure of a statement, just choose the answer that best describes you or how you feel. Please work carefully and answer all questions.

"SINCE THE LAST TEST SESSION IN APRIL...."	Never/almost never	Sometimes	Nearly all the time
I felt that everything was OK in my life.			
I argued with my teachers or parents.			
I used drugs or alcohol			
I enjoyed getting together with my friends or family.			
I lost my temper			
I felt good about myself.			
I argued with adults			
I did what adults asked me to do.			
I did things to bother people.			
If someone told me to do something I did the opposite.			
I felt very angry.			
I felt like getting back at others.			
I broke the rules at school or at home.			
At night, I stayed out later than I was allowed.			
I got so mad that I threw things at home or at school.			
I felt comfortable meeting new people.			
I did things that were against the law.			
I was very lonely.			
I had fun with friends.			
I felt very tense.			
I got into trouble at school or at work.			
I felt nervous.			
I felt depressed or sad.			
I stayed away from home without telling my parents where I was.			
I did not study or turn in my homework.			
I worried about a lot of things.			
I worried about a lot about the future.			
I had trouble falling asleep.			
I felt upset.			
I had trouble concentrating.			
I felt like crying for no reason.			
I did something I knew was bad.			
	Never or almost never	Sometimes	Nearly all the time

Strengths and Difficulties Questionnaire

For each item, please mark the box for 'Not True', 'Somewhat True' or 'Certainly True'. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of how things have been since the last test session in April.

	Not true	Somewhat true	Certainly true
I try to be nice to other people. I care about their feelings			
I am restless, I cannot stay still for long			
I get a lot of headaches, stomach-aches or sickness			
I usually share with others (food, games, pens etc.)			
I get very angry and often lose my temper			
I am usually on my own. I generally play alone or keep to myself			
I usually do as I am told			
I worry a lot			
I am helpful if someone is hurt, upset or feeling ill			
I am constantly fidgeting or squirming			
I have one good friend or more			
I fight a lot. I can make other people do what I want			
I am often unhappy, down-hearted or tearful			
Other people my age generally like me			
I am easily distracted, I find it difficult to concentrate			
I am nervous in new situations. I easily lose confidence			
I am kind to younger children			
I am often accused of lying or cheating			
Other children or young people pick on me or bully me			
I often volunteer to help others (parents, teachers, children)			
I think before I do things			
I take things that are not mine from home, school or elsewhere			
I get on better with adults than with people my own age			
I have many fears, I am easily scared			
I finish the work I'm doing. My attention is good			

Since the last test session, are your problems:

Much worse	A bit worse	About the same	A bit better	Much better
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If you went on a Highover camp, has it been helpful?

Not at all	Quite a little	Quite a lot	A great deal
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Overall since the Highover camp or first test session, have you had any difficulties in one or more of the following areas: emotions, concentration, behaviour or being able to get on with other people?

No	YES – minor difficulties	YES – definite difficulties	YES – severe difficulties
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If you have answered "YES", please answer the following questions about these difficulties:

- Do the difficulties upset or distress you?

Not at all	Only a little bit	Quite a lot	A great deal
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- Do the difficulties interfere with your everyday life in the following areas?

HOME LIFE

FRIENDSHIPS

CLASSROOM LEARNING

LEISURE ACTIVITIES

Not at all	Only a little	Quite a lot	A great deal
Not at all	Only a little	Quite a lot	A great deal
Not at all	Only a little	Quite a lot	A great deal
Not at all	Only a little	Quite a lot	A great deal

- Do the difficulties make it harder for those around you (family, friends, teachers, etc.)?

Not at all	Only a little	Quite a lot	A great deal
------------	---------------	-------------	--------------

Do you have any other comments or concerns?



Thank you very much for your help!



APPENDIX B

Principal permission/consent letter

Date

The Principal
School address

Dear _____

I would like to invite the Grade 8s at _____ High School to participate in an investigative research study which aims to explore the outcomes of wilderness therapy on South African adolescents. I, Carla Nunes, will be conducting this research project as partial fulfilment of the requirements for obtaining a Masters degree in Counselling Psychology at the University of KwaZulu-Natal, Pietermaritzburg.

I am interested in examining the impact of wilderness experience programmes (like _____) on participants. Ultimately, my hope is to learn if there are positive psychological benefits and if these benefits are sustained over several months.

Participants in the study will be asked to complete a questionnaire, which will include some basic demographic information and two psychological tests assessing participant's resilience and psychological adjustment. The questionnaire will need to be completed three times, once before their school trip to _____ and another two times at different dates afterwards. Each questionnaire will require approximately one hour of their time.

All information collected is for scientific purposes only and will remain confidential. The school's name will be omitted, although a basic description of the school will be included in the methodology section of the thesis. Learners full names will not be used in filling out the study's forms so all responses will be anonymous. No one at the school will have access to any of the information collected. Questionnaires will only be accessible to the researchers. There are no foreseeable risks to participating in the study.

Participation in the study is entirely voluntary and there will be no penalty for not participating. All learners for whom we have parent consent will be asked if they wish to participate and only those who agree will complete the questionnaires. Moreover, participants will be free to stop taking part in the study at any time.

The results of this project will be presented as a thesis and submitted to the School of Psychology for marking. Lastly, a question session could be held at _____ High School later on in the year for those parents and pupils who are involved to have the opportunity to ask any questions they may have regarding the results of this study. Please let me know if you are interested so that we may arrange a suitable date and time.

Should you have any questions about the study please contact me, at: 0764866462, e-mail: carlaenunes@hotmail.com, or my supervisor, Dr Bev Killian who can be reached at: 033 260 5371.

Thank you for your time.

Yours sincerely

Carla Nunes

Masters' Student in Counselling Psychology
University of KwaZulu-Natal

School of Psychology
P/Bag X01 Scottsville
PIETERMARITZBURG, 3209
South Africa
Phone: +27 33 2605371
Fax: +27 33 2605809



To be completed by Principle/Head Teacher of participating school

Declaration of Consent

I have been informed about the aims and procedures involved in the research project described above.

I reserve the right to withdraw any child at any stage in the proceedings and also to terminate the project altogether if I think it necessary.

I understand that the information gained will be anonymous and that children's names and the school's name will be removed from any materials used in the research.

Name: _____

Signed: _____

School: _____

Date: _____

APPENDIX C

Parental consent forms

DATE

Dear Parent or Legal Guardian

INFORMED CONSENT PARENT PERMISSION LETTER

My name is Carla E. Nunes and I am a counselling psychology master's student at the University of KwaZulu-Natal in Pietermaritzburg. I am conducting a research study which aims to explore the outcomes of wilderness therapy on South African adolescents, specifically Grade 8 learners from _____ High School. I am interested in examining the impact of wilderness camps, like those offered at _____, on participants. Ultimately, our hope is to learn if there are positive psychological benefits and if these benefits are sustained over time. With the permission of the school's Headmaster, we are requesting that you allow your child to participate.

Participants in the study will be asked to complete a questionnaire, which will include demographic information and two psychological tests. The questionnaire will need to be completed three times, once before their school trip to _____ Bush School and another two times at different dates afterwards. Each testing period will require approximately one hour of their time, and all questionnaires will be completed at the school during allocated class times.

All information collected is for scientific purposes only and will remain confidential. Only research numbers will be used in completing the questionnaires so all responses will be anonymous. No one at the school will have access to any of the information collected. Questionnaires will only be accessible to the researchers. There are no foreseeable risks to participating in the study.

Participation in the study is entirely voluntary and there will be no penalty for not participating. All learners for whom we have parent consent will be asked if they wish to participate and only those who agree will complete the questionnaires. Moreover, participants will be free to stop taking part in the study at any time.

The results of this project will be presented as a thesis and submitted to the School of Psychology for marking. A question session will be held at _____ High School later on in the year. Those parents and pupils who are involved will have the opportunity to ask any questions they may have regarding the results of this study.

Should you have any questions about the study please contact me at: 0764866462, e-mail: carlaenunes@hotmail.com or my supervisor, Dr Bev Killian, who can be reached at: 033 260 5371.

Please indicate your permission by signing the enclosed consent form and having your youngster return it to his or her class teacher.

Thank you for your time.

Sincerely
Carla Nunes

Masters' Student
Counselling Psychology
University of KwaZulu-Natal

School of Psychology

P/Bag X01 Scottsville

PIETERMARITZBURG, 3209

South Africa



Consent to Participate

I have read the attached informed consent letter and agree to allow my child to participate in this research project. I understand that s/he will complete three questionnaires on three different dates, will be free to participate or withdraw at any time, and his/her identity will remain confidential.

Learner's Name

Parent's or Guardian's Name (please print)

Parent's or Guardian's Signature

Date

APPENDIX D

Assent Form for Participants

School of Psychology

P/Bag X01 Scottsville
PIETERMARITZBURG, 3209
South Africa
Phone: +27 33 2605371
Fax: +27 33 2605809



Date 2009

Dear Learner

Informed assent to participate in this research study

I would like to thank you in advance for participating in my research project.

If you decide to participate in this study you will be asked to complete a questionnaire, which will include demographic information and two psychological tests. The questionnaire will need to be completed three times, once before the school trips to _____ Bush School and another two times at different dates afterwards. Each testing period will require a maximum of one hour of your time, and all questionnaires will be completed at the school during allocated class times.

All information that you write down is for scientific purposes only and will remain confidential. Your full name will not be asked for in the questionnaires, instead your initials and an allocated code will be used so that the researcher can match all 3 of your questionnaires together. Anonymity will be ensured. No one at your school will have access to your test papers or results. Your full name, your initials and the name of your school will not be used in the project write up at all. You are free to change your mind and to discontinue participation at any time without judgement.

Your signature below means that you have read and understood the information above, and have decided to consent to being a participant in this study.

Signature of learner/participant

Date

APPENDIX E
ADMINISTRATORS INSTRUCTIONS

Participants will need pencil, an eraser and a ruler.

Participants can fill in necessary details whilst instructions are being read.

All participants should be allowed enough time to complete the questionnaire. Most learners should be finished in half an hour.

Information about the exact purpose of the research should not be revealed.

To be read to the participants

- This study is being conducted by a master's student at the University of KwaZulu-Natal.
- All the information will be kept confidential. You are not going to be asked for your full names.
- If you assent to participating in this study you will be required to complete three questionnaires over the next few months. Even if you are not attending a camp your contribution is useful to the research.
- You are free to change your mind and discontinue participating at any time without judgement.
- Feedback will be made available to the school and participants after the results have been collected, analysed and interpreted.
- On the second page, there is CODE. Each learner has their own individual code, please remember your codes and use the same code for every test session.
- This is not a test, there are no wrong or right answers. These questionnaires are kept confidential, and the information is for scientific purposes only.
- Please read the instructions carefully and follow them to the best of your ability.
- Please do not separate the pages from each other. Take care when turning pages.
- Participants are encouraged to answer questions quickly, marking their initial (first) reaction to each question.
- No questions should be skipped.
- The questionnaires may be answered in any order.

THANK YOU

APPENDIX F

Tables displaying results of the independent samples t-tests comparing the difference between measures of the experimental and control group at the pre-test for the RAASI and SDQ scales

H₀: there is no difference in the mean scores between the experimental and control groups at the pre-test with respect to the RAASI and SDQ variables

H₁: there is a difference in the mean scores between the experimental and control groups at the pre-test with respect to the RAASI and SDQ variables

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
RAASI Antisocial Behaviour	Equal variances assumed	17.949	.000	3.369	497	.001
	Equal variances not assumed			4.031	176.059	.000*
RAASI Anger Control	Equal variances assumed	2.346	.126	3.108	495	.002*
	Equal variances not assumed			3.495	160.028	.001
RAASI Emotional Distress	Equal variances assumed	4.504	.034	2.207	499	.028
	Equal variances not assumed			2.045	126.965	.043*
RAASI Positive Self	Equal variances assumed	.482	.488	.951	496	.342
	Equal variances not assumed			1.532	356.876	.126
RAASI Adjustment Total Score	Equal variances assumed	.323	.570	3.291	499	.001*
	Equal variances not assumed			3.427	143.715	.001
SDQ Emotional Symptoms	Equal variances assumed	1.140	.286	1.672	499	.095
	Equal variances not assumed			1.709	140.644	.090
SDQ Conduct Problems	Equal variances assumed	.435	.510	2.867	499	.004*
	Equal variances not assumed			2.929	140.481	.004
SDQ Hyperactivity / Inattentive	Equal variances assumed	10.803	.001	4.045	499	.000
	Equal variances not assumed			4.715	168.164	.000*
SDQ Peer Relationship Problems	Equal variances assumed	2.372	.124	2.468	499	.014*
	Equal variances not assumed			2.634	148.166	.009
SDQ Prosocial Behaviour	Equal variances assumed	9.562	.002	-1.428	499	.154
	Equal variances not assumed			-1.525	148.338	.129
SDQ Total Difficulties score	Equal variances assumed	2.681	.102	4.033	499	.000*
	Equal variances not assumed			4.537	159.281	.000

DESCRIPTIVE STATISTICS

Group Statistics

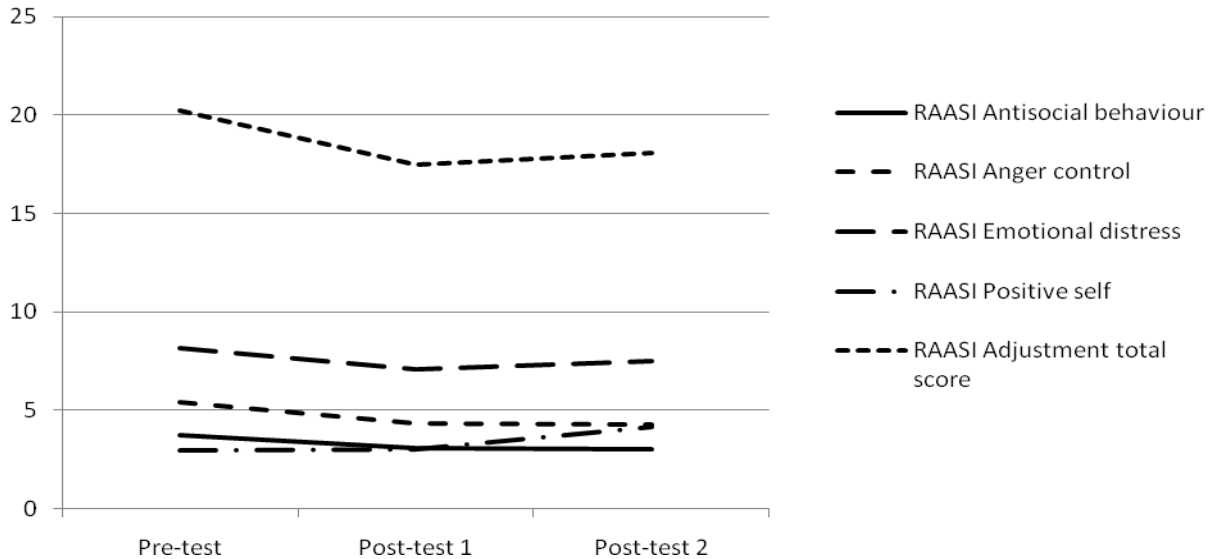
RAASI/SDQ Scales	Camp	Mean	Std. Deviation	Std. Error Mean
RAASI Antisocial Behaviour	experimental group	3.30	2.72	0.14
	control group	2.29	2.04	0.21
RAASI Anger Control	experimental group	4.67	2.63	0.13
	control group	3.75	2.18	0.23
RAASI Emotional Distress	experimental group	7.58	3.93	0.19
	control group	6.56	4.44	0.46
RAASI Positive Self	experimental group	3.40	5.39	0.27
	control group	2.86	2.23	0.23
RAASI Adjustment Total Score	experimental group	18.61	8.42	0.42
	control group	15.46	7.89	0.82
SDQ Emotional Symptoms	experimental group	3.51	2.23	0.11
	control group	3.09	2.16	0.22
SDQ Conduct Problems	experimental group	2.27	1.70	0.08
	control group	1.71	1.65	0.17
SDQ Hyperactivity / Inattentive	experimental group	3.24	1.97	0.10
	control group	2.35	1.54	0.16
SDQ Peer Relationship Problems	experimental group	2.63	1.81	0.09
	control group	2.13	1.64	0.17
SDQ Prosocial Behaviour	experimental group	7.48	2.05	0.10
	control group	7.81	1.85	0.19
SDQ Total Difficulties score	experimental group	11.65	5.27	0.26
	control group	9.28	4.36	0.45

APPENDIX G

Line graphs presenting mean scores across all three testing periods for the RAASI and SDQ scales

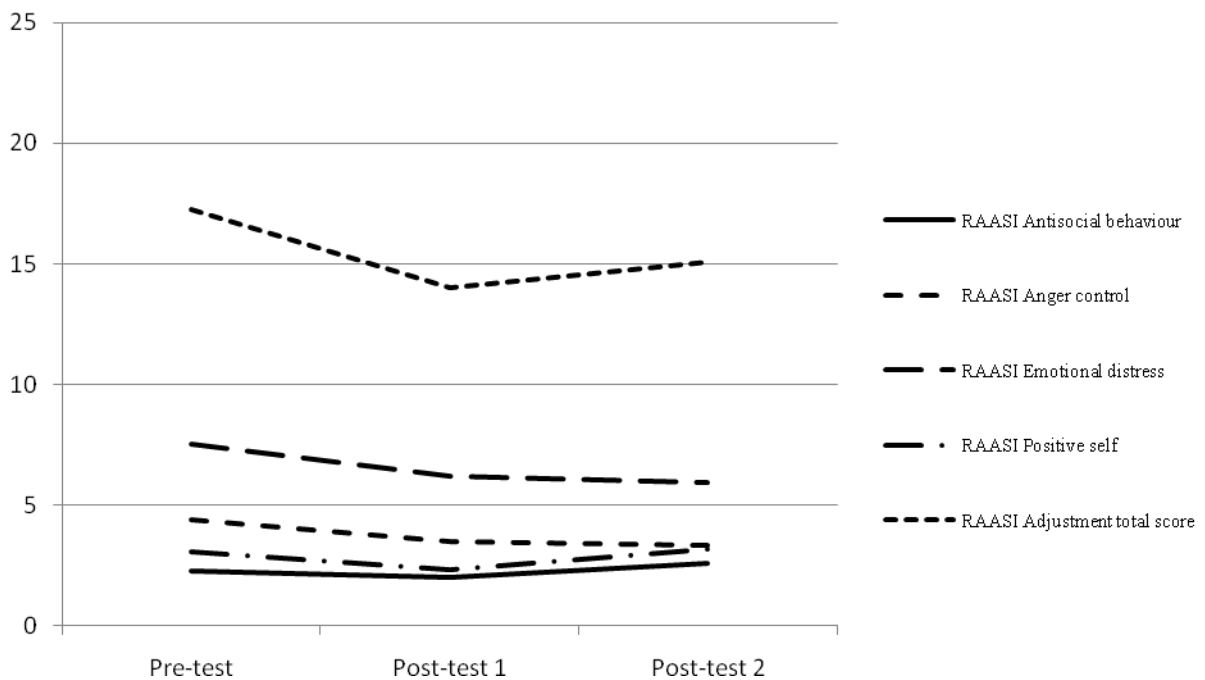
RAASI - Experimental Group

Line graph showing the means of each of the RAASI scales with regards to time for the experimental group



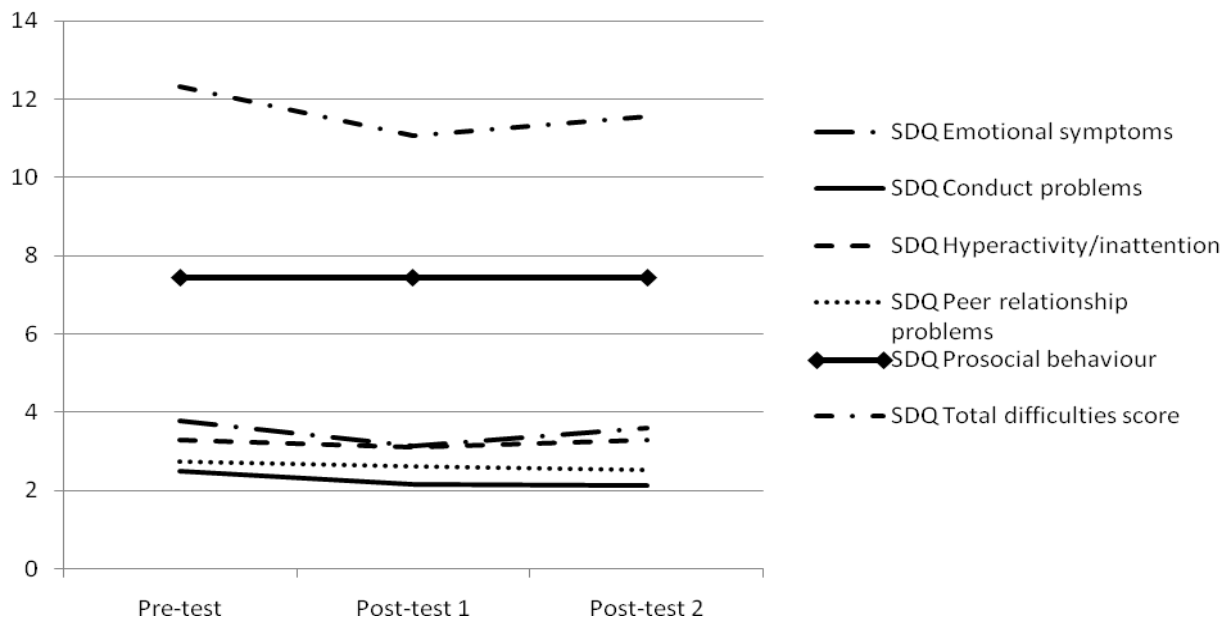
RAASI - Experimental Group

Line graph showing the means of each of the RAASI scales with regards to time for the control group



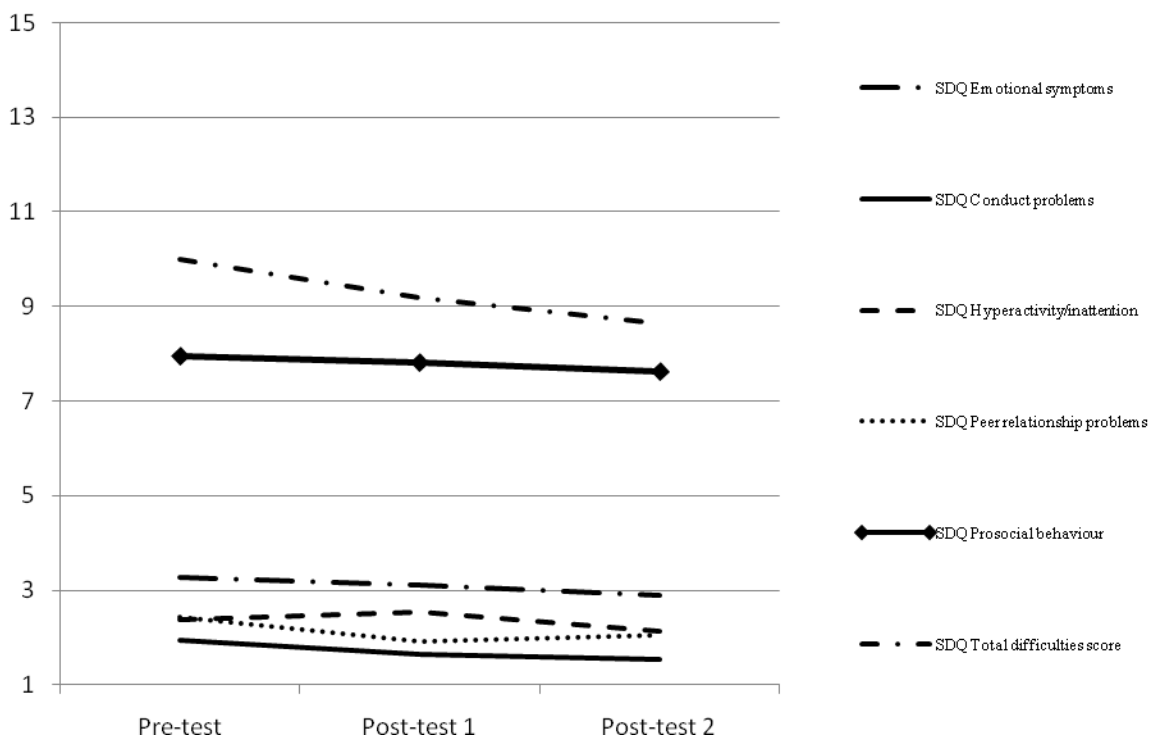
SDQ – Experimental Group

Line graph showing the means of each of the SDQ scales with regards to time for the experimental group



SDQ - Control Group

Line graph showing the means of each of the SDQ scales with regards to time for the control group



APPENDIX H

Tables displaying results of the independent samples t-tests comparing the difference between the pre-test and post-test 1 (Hypothesis 1) of the experimental group for the RAASI and SDQ scales

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
RAASI Adjustment Total score	Equal variances assumed	2.362	.126	2.846	270	.005*	2.76471	.97154	.85194	4.67747
	Equal variances not assumed			2.846	264.101	.005	2.76471	.97154	.85175	4.67766
SDQ Total Difficulties score	Equal variances assumed	1.319	.252	2.036	270	.043*	1.27206	.62464	.04227	2.50185
	Equal variances not assumed			2.036	267.919	.043	1.27206	.62464	.04223	2.50189

Group Statistics

	time	N	Mean	Std. Deviation	Std. Error Mean
RAASI Adjustment Total score	pre-test	136	20.2574	7.38868	.63357
	post-test 1	136	17.4926	8.58940	.73653
SDQ Total Difficulties score	pre-test	136	12.3309	4.91868	.42177
	post-test 1	136	11.0588	5.37314	.46074

APPENDIX I

Tables displaying results of the independent samples t-tests comparing the difference between the pre-test and post-test 2 (Hypothesis 2) of the experimental group for the RAASI and SDQ scales

H₀: There is no difference in the experimental group mean scores with respect to the pre-test and post-test 2 Raasi and SDQ totals

H₁: There is a difference in the experimental group mean scores with respect to the pre-test and post-test 2 Raasi and SDQ totals

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of Diff.	
RAASI Adjustment Total score	Equal variances assumed	5.954	.015	2.180	270	.030	2.17647	.99853	.211	4.142
	Equal variances not assumed			2.180	260.1	.030*	2.17647	.99853	.210	4.143
SDQ Total Difficulties score	Equal variances assumed	.958	.328	1.225	270	.221	.77206	.63002	-.468	2.012
	Equal variances not assumed			1.225	267.1	.221	.77206	.63002	-.468	2.013

Group Statistics

	time	N	Mean	Std. Deviation	Std. Error Mean
RAASI Adjustment Total score	pre-test	136	20.2574	7.38868	.63357
	post-test 2	136	18.0809	9.00046	.77178
SDQ Total Difficulties score	pre-test	136	12.3309	4.91868	.42177
	post-test 2	136	11.5588	5.45794	.46801

APPENDIX J

Tables displaying results of the ANOVA comparing the differences between the pre-test, post-test 1 and post-test 2 (Hypothesis 3) of the control group for the RAASI and SDQ scales

H₀: The RAASI and SDQ mean scores for the pre-test, post test 1 and post test 2 within the control group are equal ($\mu_{pre} = \mu_{post\ test\ 1} = \mu_{post\ test\ 2}$)

H₁: At least one pair of the RAASI and SDQ mean scores for the pre-test, post test 1 and post test 2 within the control group are unequal ($\mu_{pre} \neq \mu_{post\ test\ 1} \neq \mu_{post\ test\ 2}$)

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
RAASI Adjustment Total score	1.671	2	90	.194
SDQ Total Difficulties score	1.934	2	90	.151

ANOVA

		Sum of Squares	Df	Mean Square	F	Sig.
RAASI Adjustment Total score	Between Groups	167.505	2	83.753	1.355	.263
	Within Groups	5563.613	90	61.818		
	Total	5731.118	92			
SDQ Total Difficulties score	Between Groups	28.796	2	14.398	.752	.475
	Within Groups	1723.935	90	19.155		
	Total	1752.731	92			

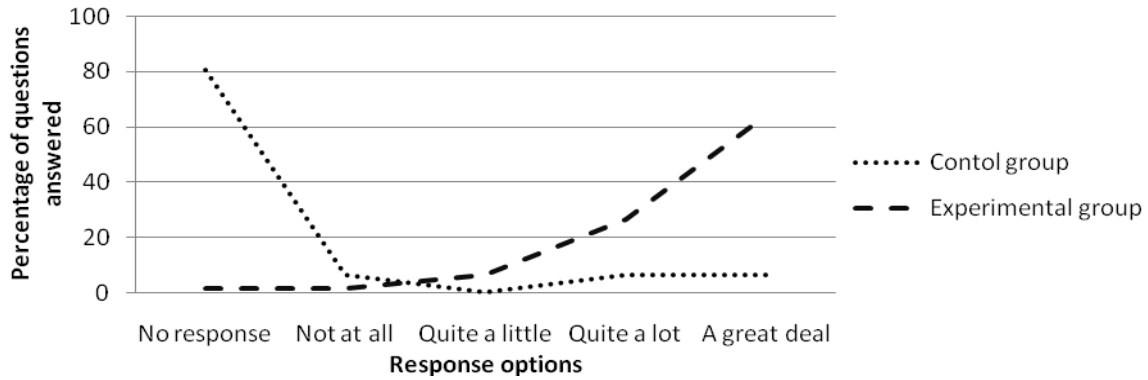
APPENDIX K

Figures showing the experimental and control group's responses to the respective SDQ supplementary questions

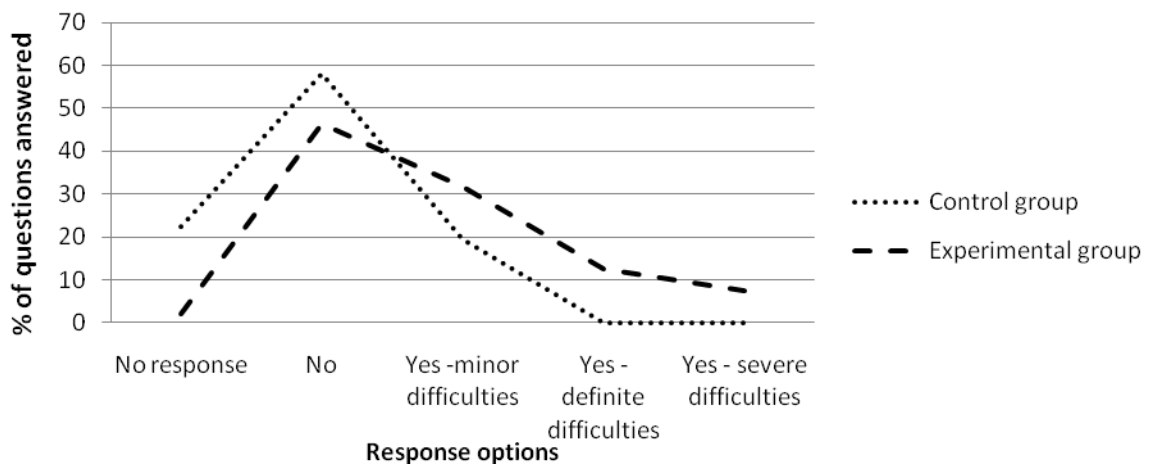
Test	Ques	Experimental grp mean	Control grp mean	Homogeneity (sig value)	Sig value (2 tailed)
Pre-test	26	1.779	1.968	0.162	0.285
	27	1.309	1.258	0.465	0.854
	28a	1.662	1.484	0.676	0.369
	28b	1.757	1.484	0.34	0.215
	28c	1.809	1.516	0.284	0.143
	28d	1.603	1.516	0.555	0.661
	29	1.507	1.29	0.104	0.229
Post-test 1	26	3.926	3.613	0.082	0.184
	27	3.5	0.516	0.094	0.000*
	28	1.765	0.968	0.001	0.000*
	28a	1.147	0.677	0.433	0.021*
	28b	1.199	0.742	0.288	0.037*
	28c	1.199	0.774	0.234	0.053
	28d	1.309	0.871	0.39	0.062
	28e	1.066	0.645	0.465	0.029*
28f	1.096	0.645	0.337	0.018*	
Post-test 2	26	3.868	3.677	0.5	0.448
	27	3.154	0.484	0.54	0.000*
	28	1.625	1.032	0.007	0.001*
	28a	1.059	0.677	0.144	0.072
	28b	1.11	0.742	0.201	0.092
	28c	1.081	0.613	0.075	0.027*
	28d	1.147	0.774	0.153	0.088
	28e	1.044	0.645	0.295	0.056
28f	1.037	0.742	0.568	0.135	

POST-TEST 1

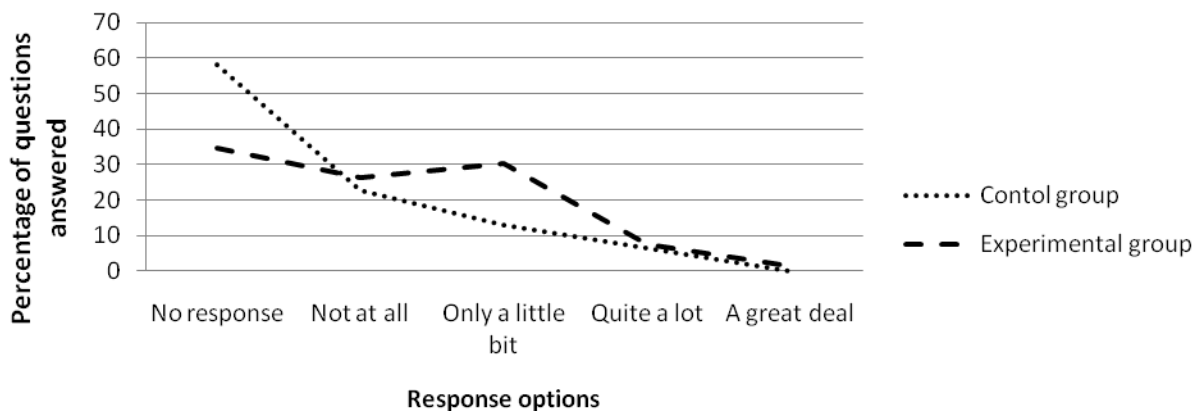
Line graph showing the experimental and control group's responses to the SDQ supplementary question 27.



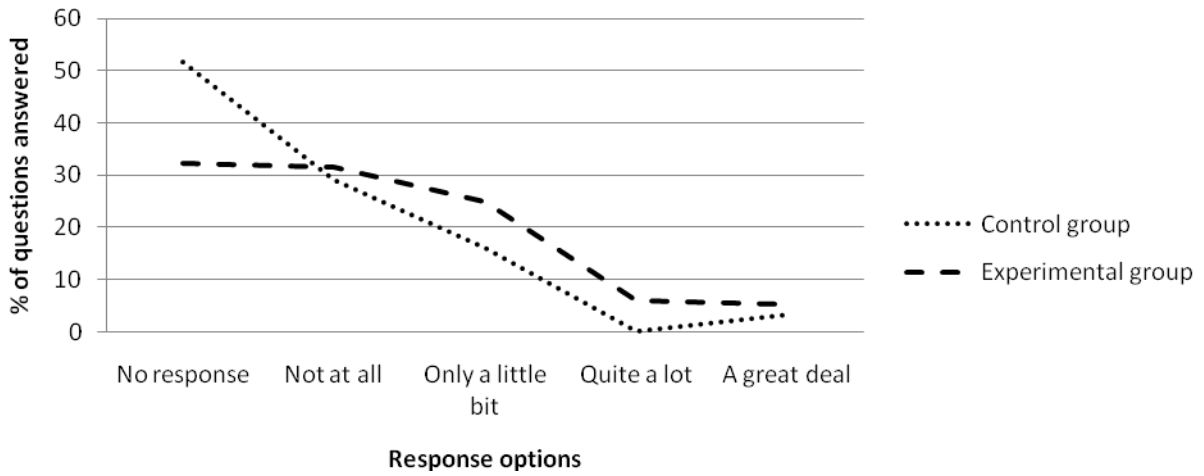
Line graph showing the experimental and control group's responses to the SDQ supplementary question 28.



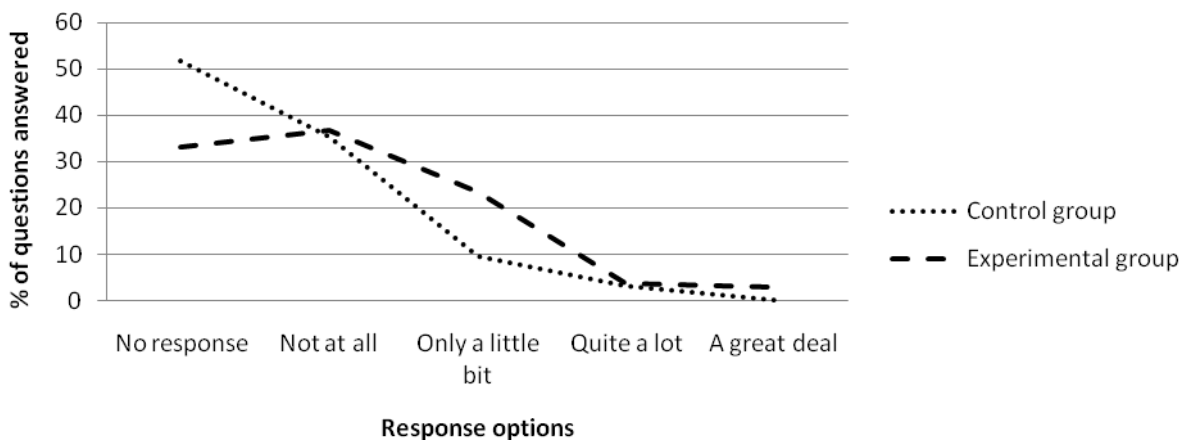
Line graph showing the experimental and control group's responses to the SDQ supplementary question 28a.



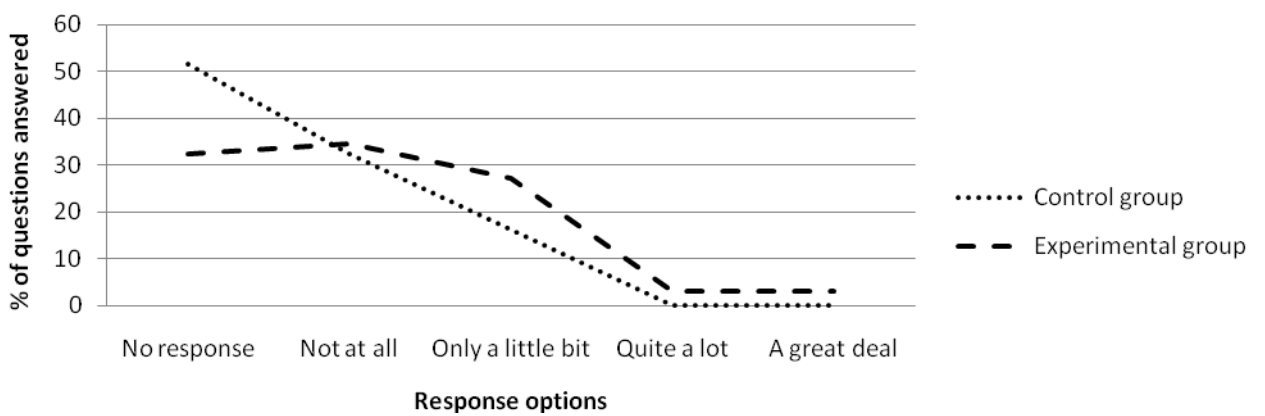
Line graph showing the experimental and control group's responses to the SDQ supplementary question 28b.



Line graph showing the experimental and control group's responses to the SDQ supplementary question 28e.

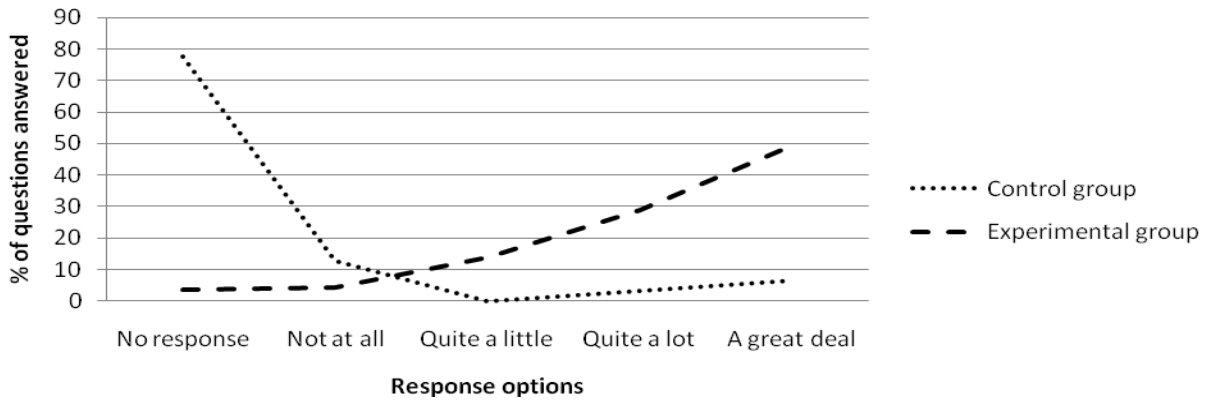


Line graph showing the experimental and control group's responses to the SDQ supplementary question 28f.

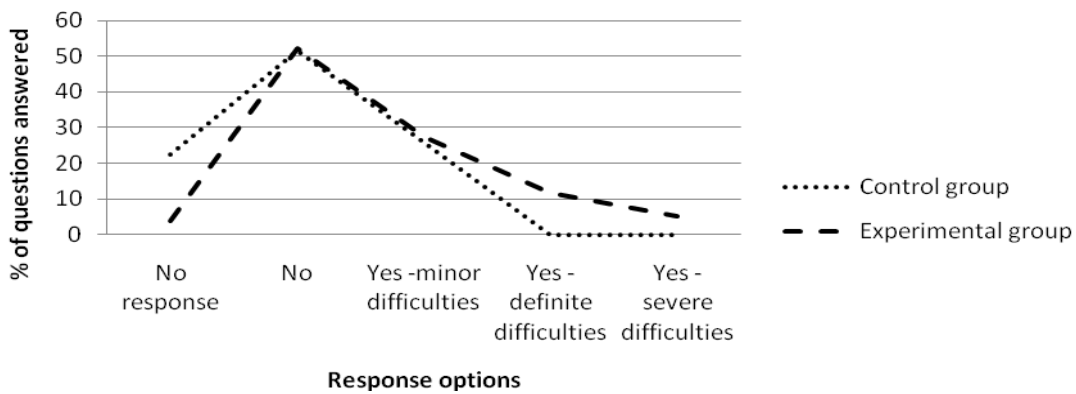


POST-TEST 2

Line graph showing the experimental and control group's responses to the SDQ supplementary question 27.



Line graph showing the experimental and control group's responses to the SDQ supplementary question 28.



Line graph showing the experimental and control group's responses to the SDQ supplementary question 28c.

