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The Role of Hope In Adjustment to Acquired Hearing Loss

A thesis presented in fulfilment of the requirements for the degree of the
Doctor of Philosophy in Health Science.

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Abstract

This study investigates the extent and nature of the relationship between individual and disability characteristics (age, sex, degree of hearing loss, age at onset of hearing loss, time since onset of hearing loss, use of technology, and use of services), and adjustment to acquired hearing loss, and the role hope has in that relationship. A sample of 114 adults with hearing loss who had accessed hearing therapy services participated in the study. It was hypothesised that hope would interact with the individual and disability characteristics and therefore function as a moderating variable. The second hypothesis was that hope may be related to individual and disability characteristics as well as adjustment but actually provides the only significant pathway to adjustment; more simply, hope may be a mediator of adjustment.

The results indicate that the degree of loss was the only statistically significant individual and disability characteristic related to adjustment. The trait of hope did not produce an interaction effect of statistical significance in the moderation model. However, the study does provide support for the hypothesis that the trait of hope serves as a mechanism by which the degree of loss affects adjustment. Hearing loss affects hope which in turn affects adjustment. In other words, hope was found to act as a mediating variable. The extent of this mediating role was substantial as hope was found to account for 45% of the relationship between the degree of loss and adjustment. Additionally, the study found that self-efficacy and personal meaning may influence hope and despair dimensions in different ways. The perception of one's ability to influence events is a major contributor to hopefulness while the construction of meaning appears to be related to lower levels of despair.

Current research in the area of positive psychology indicates that individual

traits are modifiable and therefore hope finding, hope bonding, hope enhancement, and hope reminding can instil and increase hope. The implication of these findings is that hearing rehabilitation programmes need to consider the role of hope in intervention strategies.

The study suggests possibilities for future research including the investigation of more complex mediational chains, refining individual and disability variables, and assessing the effect of hope-focussed intervention strategies.

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Abbreviations

AD	Acceptance of Disability Scale
ADHS	Adult Dispositional Hope Scale
AHD	Assistive hearing device
AVL	Adaptation to Age-related Vision Loss
BAD	Beliefs About Deafness Scale
BDI	Beck Depression Inventory
CCS	Children's Coping Strategies Checklist
CDI	Child Depression Inventory
CHS	Children's Hope Scale
CI	Cochlear implant
CMAS-R	Revised Children's Manifest Anxiety Scale
CMP	Code Muller Protocols
CPHI	Communication Profile for the Hearing Impaired
CSI	Coping Strategy Indicator
dB	Decibels
DS	Despair score on the NAS
DSHS	Domain Specific Hope Scale
FAD	Family Assessment Device
FIM	Functional Independence Measure
GHQ-12	General Health Questionnaire (short form)
GHQ-60	General Health Questionnaire (long form)
GIS	Goal Instability Scale
GPH	Global personal hopefulness on the NAS
HADR	Hospital Anxiety and Depression Rating Scale.
HHIA	Hearing Handicap Inventory for Adults
HOPES	Hunter Opinions and Personal Expectations Scale
HPI	Handicap Problems Inventory
HS	Hope score on the NAS
HSL	Hearing Services Limited
ICF	WHO International Classification of Functioning, Disability and Health

IDD	Inventory to Diagnose Depression
LIFE	Living Independently For Everyone (LIFE) Trust
MMPI	Minnesota Multiphasic Personality Inventory
NAS	Nottingham Adjustment Scale
NFD	National Foundation for the Deaf
NHS	Nowotny Hope Scale
NZ	New Zealand
NZSL	New Zealand Sign Language
PAI	Psychosocial Adjustment to Illness Scale
PDS	Posttraumatic Diagnostic Scale
PST	Psychosocial transition
PTS	Post Traumatic Stress disorder
SAC	Self Assessment of Communication
SAD	Social Anxiety and Distress Scale
SCI	Spinal Cord Injury
SIP	Sickness Impact Profile
SOC	Sense of Coherence
SPI	Structured Pain Interview
US	United States of America
WHO	World Health Organisation

Glossary of Terms

Adjustment

Adjustment to a disability is the process of establishing or restoring a sense of equilibrium that involves a person changing values that enlarge the significance of those aspects of life not closed to the person; that shifts the relative importance of some values; that contains the effects of disability, and that transforms comparative values to asset values. (See chapter 3).

Congenitally deaf

This may be a description of a person who is born with no hearing or substantially reduced hearing (see deaf below).

Deaf

This term represents the cultural and language identification of the Deaf community. It is therefore possible that people could be “deaf” but not identify as “Deaf”. Conversely, people with no restrictions on their ability to hear (those who are not deaf) may identify with the Deaf community and claim to be Deaf (e.g. children of Deaf parents, Sign Language users).

deaf

This refers to the audiological status of a person who has no hearing or substantially reduced hearing rather than the cultural and language status that is concomitant with Deaf.

Hearing impairment

Individuals who have a degree of hearing may be born with, or subsequently acquire, some restriction on that ability. Those who have a congenital hearing impairment do not experience a loss of hearing but may experience social and communication restrictions in a similar manner to those who acquire a hearing impairment. Alternatively, those with a congenital hearing impairment may identify themselves as Deaf and participate in society in those terms. People with a mild hearing impairment may accommodate that in their lives and function with little or no restriction in their ability to operate in an oral/aural context.

Hearing loss

People who have experienced the ability to hear (and function in an oral/aural environment) may undergo a decline in that ability. The extent of the loss may vary from mild to profound (in which case the person may become deaf). The reactions of those affected to the loss of hearing (of any degree) can range from the inconsequential to the significant and negative. The role of hope in adjustment to hearing loss is the focus of this study.

Hope

The trait of hope is the tendency of an individual to subjectively assess what is desired for the future as probable or so important as to constrain belief and behaviour and to be grounded upon the possibility of realistic attainment of the desired future. (See chapter 4).

Optimism

Optimism is the disposition to explain events in terms of positive affect so that the individual is distanced from failure. (See chapter 4).

Post lingually deaf

This refers to a person who becomes deaf after acquiring oral/aural language competence.

Schemas

Assumptions of how the world is that can substantially influence the beliefs and behaviours of people.

1. Introduction

He stands as an acknowledged genius, yet the experience of losing his hearing drove him to despair, isolation and the verge of suicide. Sixteen years prior to becoming totally deaf Beethoven described the progressive loss of hearing in these terms:

Though endowed with a passionate and lively temperament and even fond of the distraction offered by society, I was soon obliged to seclude myself and live in solitude ... if I appear in company I am overcome by a burning anxiety, a fear that I am running the risk of letting people know my condition.... Such experiences have almost made me despair, and I was on the point of putting an end to my life - the only thing that held me back was my art. (Beethoven, 1802, from the Heiligenstadt Document, quoted in Jones, Kyle & Wood, 1987, p. 36).

As Beethoven attests, personal adjustment to the loss of hearing can present a substantial challenge to those so affected. The personal changes associated with the loss of hearing are likely to affect far more than merely audiological functioning. Every dimension of daily life may be confronted by the loss or diminution of hearing capability. The resulting difficulty in social interaction is likely to affect the relationships with family, friends, casual acquaintances, and even the most fleeting of human interactions. The reduced ability to operate in society is likely to restrict vocational and recreational activities. Withdrawal from settings that demand interaction is a typical response, and

that in turn may restrict personal development socially, economically, mentally, and spiritually. The effects of the loss of hearing are likely to demand a revision of the previously held assumptions that shaped the affected individual's personal identity. Fundamental beliefs about life held by both the individual and the significant others who are also affected by the hearing loss may be challenged. The forced revision of such assumptions may exact a substantial cost.

This experience of acquired hearing loss provides the context for the current study. The individuals involved were born into, and developed an identity as a hearing person in a hearing world utilising oral/aural language capabilities. Against that background, they have, to some degree, lost the ability to hear. The loss of their capacity to hear invariably affects their social interaction, participation and integration. The restriction in social intercourse often challenges their established identity including, for example, self-worth, sense of mastery, and the capacity to fulfil various social roles (e.g. Ashley, 1985; Bibby, Beattie & Bruce, 1996; Erdman & Demorest, 1998a; Harvey, 2003, Luterman, 2001; Perry, 1996; Rutman & Boisseau, 1995). Although these people may learn a sign language, may share experiences and interests in the issues of the Deaf community, and may even come to identify themselves as culturally Deaf, the essential point remains that such people once had an ability to hear and, at some point in time, that ability was lost. For such people, the impact of an acquired hearing loss should not be underestimated. As Harvey (2003) points out, it "is a common error to minimize the psychological effects of a moderate hearing loss as merely quantitatively less than that of deafness" (p. 48). However, the sensory impairment, no matter how mild, may present a personal loss of ability that not only engenders limitations that interfere with individuals'

preferred mode of functioning but more importantly, challenges their world assumptions and belief sets. With an acquired hearing loss, the individual is likely to develop a “self-perception as not having cognitive competence, psychological skills, instrumental resources, and support systems needed to influence his or her environment successfully” (Schlesinger, 1985, p. 105). People who experience an acquired hearing loss are a heterogeneous group. Hearing loss affects every social, economic, racial, intellectual, cultural, and age group of both sexes. Although increasingly reported with advancing age (see chapter two), the onset may occur at any age. Audiologically, the degree of loss may range from those with barely perceptible mild hearing loss through to those with a clinically profound loss that necessitates extensive accommodation of communicative needs. Yet regardless of the diversity, the constant factor experienced is that of a sense of loss (in some instances an overwhelming sense of loss) associated with the onset of hearing loss. As Ashley (1985) comments, “the born deaf are denied the advantages gained by the deafened before their hearing loss, yet they are spared the desolating sense of loss” (p. 61).

The subjects in this study are those with acquired hearing loss, as this group of people must confront adjusting to the onset of a significant disability, the acquired loss (to some extent) of previous competence, and the forced changes that entails. Moreover, as Luterman (2001) observes, “in all change there is a loss.... It is the loss of the expected future that is grieved so deeply” (p. 48). It would appear therefore that adjustment for a person with an acquired hearing loss involves not merely adapting to changed audiological functioning, but more importantly, dealing with the ‘deep grief’ implicated in adjusting to the loss of an expected future, and the uncertainty of a different

one. This study focuses on the relationship between the perceived future and the present adjustment of people with acquired hearing loss.

Consideration of adjustment to hearing loss can be approached from different perspectives. For some, restoration of function through assistive hearing devices or medical interventions, accompanied by training in adaptive strategies, is viewed as the means to minimise the loss and concomitant communication difficulties. For example, Spitzer (2000) presents a 'contemporary model of audiologic rehabilitation' that has three foci: prostheses, auditory processing and communication strategies. A major goal in this proposed model is "teaching a person with hearing impairment ... how to cope with communication failure and how to persevere in adverse listening conditions" (p. 206). However, while audiological interventions are important, simply restoring or increasing functional ability does not necessarily result in psychological adjustment to acquired onset of a hearing loss, or even directly address it. As Blood (1997) noted, even the use of a hearing aid by normal hearing people in an experimental condition replicating a mild hearing impairment can have significant concomitant psychological effects that are related to the stigma of deafness rather than the reduced levels of sensory functioning. Additionally, there are other factors involved in adjustment including the personal impact of a forced change, loss, interpersonal relationships, and changed roles. As indicated below, the impact of a hearing disability or an individual's sense of wellbeing may be better predicted by personal psychosocial factors than simple audiological measurement (e.g. Erdman & Demorest, 1998b; Kerr & Cowie, 1997). The reticence of people with hearing loss to identify themselves as having a hearing loss and the strength of psychological factors in the perceived impact of a hearing loss raise the issue of what is

involved in the “health” of these people. The World Health Organisation (WHO) Ottawa Charter states that health incorporates the concept of an autonomous and resilient personality confident in the capacity to cope with life stresses within a supportive community (World Health Organisation, 2002). Galbally (2000) suggests that the “right to health requires a right to the skills that will help us generate health. This requires the development of systems that will enhance people's capacity to bear change and to hope” (p. 203). She further comments that it is desirable “to reconstruct our notions of physical acceptability so that the intrinsic worth of every human being is internalised” (p. 204).

The importance of factors other than strictly physiological or functional is reflected in the WHO International Classification of Functioning, Disability and Health (ICF). This represents the culmination of a move “away from a medical model of disablement towards a biopsychosocial model in order to comprehend human functioning at the bodily, personal and social levels” (Chatterji, Ustun & Bickenbach, 1999, p. 397). The individual adjustment to a perceived disability (such as hearing loss) is likely to be idiosyncratic and complex. Schlesinger (1985) considers that the numerous possible reactions to acquired hearing loss are not so much related to the loss of hearing capacity per se, as they are to the meaning the loss has for the affected individual. The individual's ability to interpret the past and present constructively and exert an influence on future events is captured in the construct of hope. The loss of an expected future implies the loss of hope (or despair). The perception of an acceptable future identity, a valued role, or a set of beliefs that are meaningful implies the attainment of a sense of hope.

The impact of hearing loss on an individual's psyche necessitates distinguishing

between acquired hearing loss and congenital deafness. People with a significant hearing impairment with congenital onset (congenitally deaf) may have a severely restricted capacity to operate in an oral environment. For these people a sign language may be their natural and preferred form of communication assuming that they are not given a cochlear implant in the early phase of their life. The attraction of easy social intercourse enhances the likelihood that congenitally deaf people will identify themselves as Deaf (i.e. with a capital D to represent that they culturally and linguistically belong to the Deaf community). In the Deaf community, deafness is regarded as a 'different ability' rather than a 'disability': a perspective that presents significant hearing impairment as a social condition with unique behavioural and linguistic attributes (Logan, 1995). Therefore, those who consider themselves as Deaf seek full participation in society with their culture and language intact. As a minority cultural group, Deaf can argue that their civil rights have often been infringed by the dominant (hearing) culture. This social model of deafness consequently emphasises the issues of power, rights and equity for those who have been devalued by the hearing majority. However, while some of the deafened (in the sense of significantly reduced hearing) people may establish a new identity as Deaf others do not and, even with profound hearing loss, may consider themselves 'neither in one world nor the other' (Carr, 2000). This latter group are those who are more likely to grapple with the individually defined meaning of their loss of hearing (Schlesinger, 1985), and experience change in their sense of personal equilibrium. It is instructive to heed the observation of Stokoe (2001) that the "inability to hear or hear well is an individual physical condition, but deafness is a socially constructed abstraction... [and that] whatever specialists and the public may say and think and do about deafness does

not necessarily apply to an individual who cannot hear” (p. 6).

The topic of this study developed from the author’s personal experience of acquired hearing loss over nearly four decades. This individual experience was validated by the reports of others facing similar situations. An emerging body of literature provides substance to the belief that individual perceptions regarding the loss of hearing are likely to influence the level of adjustment. If rigorous testing substantiates the experientially acquired understanding of the adjustment process referred to above, there are considerable implications for the prevalent approaches to professional practice and research. The despair and isolation exemplified by Beethoven’s account need not be perpetuated.

By examining the role of hope in the process of adjusting to the onset of a significant hearing loss, this study seeks to contribute to the understanding of that which will enhance the capacity of those with acquired hearing loss to bear change and to constructively shape their life on a realistic, positive future orientation. Put more simply, to be transformed by hope. The significance of this study lies in clarifying how such a process may occur. In the social sciences, investigations of the interaction effects among the variables of interest have often been achieved by testing moderation and mediation effects. Moderation processes specify conditional relationships while mediation processes indicate causal pathways among variables. The current study utilises this methodology to explore how hope contributes to adjustment to acquired hearing loss.

Before examining the nature and extent of the role of hope it is necessary first to consider the framework of this study. To address the research topic, chapter two will review literature on acquired hearing loss to provide background on the context of the

investigation and highlights the importance of psychosocial factors in adjustment to such a loss. Chapter three provides a definition of adjustment, reviews the literature and considers ways of measuring adjustment and the influence of individual and disability variables on adjustment. The discussion of adjustment introduces the possibility that hope may be another variable influencing adjustment. Hope is defined in chapter four and relevant literature on that topic is reviewed and summarised. Ways of measuring hope are reviewed and there is some discussion of determining the nature of the role hope might play in adjustment. Chapter five provides some detail of analytical procedures that suit the research issue and chapter six explains how the research question was investigated. The results are presented in chapter seven and followed by a discussion of the outcomes in chapter eight. The final two chapters provide a list of references and several appendices.

2. Acquired Hearing Loss: A Becoming Issue

2.1. Introduction

The British Member of Parliament, Jack Ashley recounted the emotional/psychological impact of hearing loss by using emphatic negative phrases such as: “All rational thought was engulfed by powerful emotion and depression. The unthinkable was becoming a reality” (Ashley, 1992, p. 141). Writing on auditory rehabilitation, Sanders (1993) talks of the ‘terror’ that the concept of hearing loss evokes. More simply Peck, Samuelson and Lehman (1926) wrote, “everybody who acquires deafness goes through hell” (cited in Jones et al., 1987, p. 22).

Understanding the process of adjusting to acquired hearing loss and the sequelae of such a loss is the first step in developing and implementing appropriate intervention strategies to facilitate adaptation to the loss (Herth, 1998). A person developing an acquired hearing loss must confront a range of major challenges to their identity and belief system. The individual faces a ‘forced fate’ that inevitably demands a reconceptualisation and a reformation of the person. Bibby, Beattie and Bruce (1996) surveyed 58 individuals who had an acquired hearing loss to explore their perceptions of coping with the hearing loss. Of the 58 respondents, 60% described their hearing loss as moderate to severe and 96.6% used an assistive hearing device. Over 70% indicated that they always wore hearing aids. Three themes confronting these adults with a hearing loss were identified: (a) issues of the adjustment process, (b) areas of communication difficulties, and (c) coping and the importance of support groups. The authors maintain that adjusting to hearing loss “is a process, taking time and requiring change With the

diagnosis and discovery of hearing loss the adult's world is turned upside down. The loss is not just that of hearing, it can also become a loss of the taken-for-granted sense of self, a loss of belonging to a community, the loss of a so-called normal life style, the loss of belonging to the hearing world" (Bibby et al., 1996, p. 20). These challenges include the need to process beliefs about hearing and deafness, attitudes to disability, and application of technologies (Hogan, 2000), as well as dealing with vocational issues and practical implications for social relationships. The individual may confront varying degrees of psychological reaction to the sense of loss that accompanies these challenges and have to deal with the demands of the psychological repositioning that is required. The accumulating evidence demonstrates that being supplied with a hearing aid 'is not enough' (Ross, 2000) and the effects of acquired hearing loss "extend beyond the communicative deficit to affect social and psychological aspects of people's lives" (Kerr & Cowie, 1997, p. 177). Indeed, it appears that individuals seek audiological treatment because of their experience of hearing disability and 'handicap' rather than simply the existence of hearing impairment (Erdman & Demorest, 1998a).

The New Zealand National Foundation for the Deaf estimated that there were between 420,000 and 450,000 people with hearing impairment in New Zealand (Upton, 1998). Using the 1991/1992 New Zealand census data, Greville (2001) reported an estimated prevalence of hearing loss of 10.3% of the population (or 390,600 people at that time). She also calculated from the 1996/1997 census that 5.7% of the population presented with a hearing loss causing disability (non-institutionalised) and 4.17% of the population presented with a hearing loss causing disability and requiring assistance (a combined total of 9.87% or 371,300 people at that time). These estimates of

approximately 10% of the total population with some form of hearing impairment are similar to the 10% (or 28 million people) reported in the United States (Herth, 1998).

Similarly, only 5.6% of the total population (223,500 of approximately four million) actually reported a hearing disability in the NZ Census of 2002 (New Zealand Disability Survey, 2002). This figure far exceeds the number of those treated in publicly funded hospitals for cancer (53,420), heart diseases (49,610), mental/behavioural disorders (19,416) or infectious diseases (17,339) (New Zealand Health Information Service, 2002). The prevalence of hearing loss in New Zealand is consistent with the assertion that, in the US, more people suffer hearing defects than suffer visual impairments, heart disease, or other chronic disabilities (Herth, 1998). Around 96.6% of those who report a hearing disability identify themselves as hearing impaired and about 3.4% (or 7,700) identify themselves as Deaf.

There are currently around 450 identified causes of hearing loss including toxins, tumours, trauma, and genetic conditions. The onset of hearing loss may occur at any age although there is clear evidence that it is more prevalent among older people. For example, while the overall rate of incidence of hearing impairment in Australia is around 10% of the whole population, Mitchell (2002) in the Blue Mountains Hearing Study found that 20.5% of the Australian population in the 48-59 age group had a hearing loss (defined as a loss >25dB in the better ear averaged over four frequencies). This figure increased to 38.5% for those aged 60-69; 66.6% for those aged 70-79; and 88.5% for those aged 80-92. These figures do not differ significantly from those reported in the US Epidemiology of Hearing Loss Study (Mitchell, 2002) and are comparable with data reported by Herth (1998), and Rutman and Boisseau (1995).

However, the epidemiological data may not reflect a portion of those individuals who do not readily self report hearing loss. For example, a study of 970 individuals with a hearing loss (69% severe or profound) conducted by the Rehabilitation Research and Training Center in San Diego on the mental health needs of people with a hearing loss reports that for 64% of the respondents the onset of hearing loss occurred prior to the age of 40 (Stika, 1997). These data suggest that a considerable portion of those with a hearing impairment may not identify themselves in the early middle age years of life. There are difficulties in achieving a precise definition of hearing impairment and of the numbers of people affected, but Pfeiffer (1999) contends that, in part at least, this may be complicated by the fact that “too many people with disabilities either will not or can not admit to any problem because of the social stigma attached to a disability. All of these people with disabilities (those who function well and those who will not identify) self-select themselves out of the population of persons with a disability” (p. 392).

Although there is a substantial minority of the population living with a hearing loss, there is relatively little published material examining the processes involved in adjusting to living with such a loss. The necessary adjustment to hearing loss is “a process wherein the individual makes cognitive and behavioural changes to minimise the problems experienced secondary to hearing [loss]” (Erdman & Demorest, 1998a, p. 107). Adjustment to hearing loss is a psychological process in which an individual’s self-esteem, personality, temperament, attitude to disability and other affective factors can often override auditory, social and environmental considerations (Thomas, 1988). Whatever the variety of factors in its presentation, hearing loss inevitably produces changes in the pattern of sensory perception and a subsequent modification of behaviour

(Bolton, 1981; Jackson, 1992). The forced change resulting from an acquired loss typically confronts the affected individual with the necessity to establish (in various ways and to varying extents) different attitudes, beliefs, or actions. The person enters the process of becoming different to what they were or what they presumed they might be. While a hearing impairment (current level of impaired auditory functioning of whatever degree) or profound deafness, may not of themselves present difficulties, commonly the loss of hearing does. This review of the literature underscores the potentially profound implications of a person with a hearing loss becoming someone other than what they assumed themselves to be. For some (like Ashley), the unthinkable may become a reality that has to be negotiated.

2.2. The Challenge of Becoming

Acquired hearing loss breaks the normal or anticipated flow of life and may engender “a forced renunciation of many things previously taken for granted as well as developments and plans for the future. The outcome [may be] viewed with total pessimism in that it means one can no longer be what one once was, and that one can no longer become what one once hoped to become” (Jones et al., 1987, p. 31). The impact of an acquired hearing loss cannot be understood by audiological measurement alone and a range of experiential factors is a better predictor. It appears that hearing loss, regardless of its extent, can entail communicative deprivation, restriction of participation, malinteraction by hearing people, feelings of distress and abandonment (Kerr & Cowie, 1997), loss of self-identity (Rutman & Boisseau, 1995), decreased self-assurance (Perry, 1996), increased fear of failure (Richardson & Woodley, 1999), and loss of future expectations (Luterman, 1999).

Such observations of the reaction to the loss of hearing are similar to Parkes (1994) description of psychosocial transitions (PSTs). PSTs are events that have such an impact that they may engender serious risks to the affected individuals' health and well-being. Parkes (1994) defined PSTs as involving:

- A forced major revision of assumptions about oneself and ones' life
- A lasting rather than transient event
- An inability to prepare for the event.

Although the third factor suggests that the most threatening life-change events are likely to be those occurring in a short time span (a devastating incident or sudden death for example), the uncertainty of prognosis of a hearing loss may constrain the individual's preparation to face change. On this basis, an acquired hearing loss (with either a sudden or gradual onset) is likely to meet the defining characteristics of a PST and therefore requires serious consideration of the wider ramifications for the health of the person so affected. Making forced changes to adapt to hearing loss shares features mentioned in relation to chronic illness or other disabilities (e.g. Carmen, 1983; De Ridder, Schreur & Bensing, 1998; Parkes, 1994; Roberts, 1973).

Whether sudden or progressive, acquired hearing loss precipitates a crisis in a person's life involving loss and the attendant grief. Reflecting on a 'lifetime of listening to people who are deaf or hard of hearing', Luterman (1999) commented that people with a hearing loss "experience profound senses of loss and they must grieve before they can go on to make meaningful changes in their lives" (p. 80). Whichever of the various

models of grief (e.g. Carmen, 1983; Kübler -Ross, 1969; Lendrum & Syme, 1992; Shipley, 1992; Vash, 1981) may be applied to acquired hearing loss, they all have a common element: the loss affects an individual's self-esteem and perception of 'normality'. "It is the natural resistance to changing this self-esteem that must be overcome in the initial stages of learning to cope with a hearing [loss]" (Giolas, 1986, p. 6). Hallberg, Passe and Ringdahl (2000) observe that "the driving force of coping [with hearing loss is] the individual's striving to protect their normal social identity and to avoid being defined as a deviant" (p. 2). This view is further supported by the personal experience of Cox (1985, cited in Jones et al., 1987), a psychologist with deteriorating hearing, who stated that personal pressure to deny the difficulty was considerable. She goes on to say that the feelings of normality, which we take for granted, are undermined and with that goes the loss of status we expect as 'normal' healthy people.

One source of grief is the loss of social context as the grieving individuals have lost a context for understanding, organising and validating feelings, actions and priorities (Rosenblatt, 1994). Early attempts to explain the psychological effects of hearing loss were characterised by assumptions that it alters experience, that it causes an imposition on monitoring, and that it forces detachment and isolation (Bolton, 1981). The tendency to detach, review self-esteem and to develop increased anxiety, especially when facing social interaction has been attested to by a range of people as indicated above. The hearing loss may become one dimension in the interactions with others and to achieve a sense of being 'deaf in my own way' involves the person's engagement in an existential situation that is likely to be characterised by latent instability as complex and competing social demands must be accommodated (Ohna, 2004). Ashley (1992) commented on the

isolating effect of hearing loss: “To be deaf in a hearing world is to be an alien” (p. 355). It may be that, in part, this sense of alienation reflects a dislocation between personal action and social ‘rules’ as described by Spicer and Chamberlain (1996). The way that the world is presumed to be is challenged. The individual experiencing the hearing loss must engage in a revision of their previously held schema (or set of beliefs) in the pursuit of restoring a sense of homeostasis. This can be a stressful experience because of the risk involved in becoming a ‘different’ person.

2.3. Risks of Becoming

An imposed and enduring threat to personal identity resulting from hearing loss has been established to present a risk to the health of the individuals concerned. The Blue Mountains Hearing Study (Mitchell, 2002) reports that self-reported hearing loss “was found to be an independent predictor of reduced perceived health ... after taking into account other factors” (p. 26). From in-depth interviews with 17 people with a post-lingual hearing loss, Hallberg et al. (2000) report that the core theme that emerged was ‘finding flow and entering a positive circle’. It was reported by the respondents that there were actually small margins in the ‘positive circle’ which did not allow too many or too severe mistakes. The conclusion drawn from this was that the threat of mistakes “could contribute to individuals with severe-profound hearing impairment living under considerable psychological pressure” (p. 7).

Early research reviewed by Rutman (1989) attempted to establish a causal relationship between acquired hearing loss and psychotic illness. Reports highlighted the association with paranoia, suspiciousness, hallucinations and schizophrenia. These

studies have been criticised for methodological problems, lack of empirical support and over-reliance on the work of clinicians using a Freudian approach. For example, the temporal relationship between onset of hearing loss and onset of psychiatric problems were not considered, factors such as physical illness, stress and even senility were not considered. Zoger, Svedlund and Holgers (2001) examined the relationship between tinnitus and psychiatric disorders and comment that patients with a psychiatric disorder usually suffer from their mental disorder prior to the onset of tinnitus. More recent studies (Erdman & Demorest, 1998a; Meadow-Orlans, 1991; Rutman, 1989) have not confirmed any causal link between acquired hearing loss and psychosis, however, as with other acquired disabilities, psychological difficulties may emerge due to other stressors experienced by a person with the hearing loss, particularly the forced changes in identity and the issues relating to the grief that accompanies loss of hearing. Similar experiences are reported for adventitiously blind people (Roberts, 1973).

Although Lane (1991) emphatically rejected the notion that there is a “psychology of the deaf” and Thomas (1984) showed that basic personality structure was not affected by hearing loss, the ‘uncontrollable’ nature of the process of hearing loss and its effect on the individual’s perception of their development does impose psychological stress on people (see also Parkes, 1994; Pulkkinen, & Ronka, 1994; Ramsdell, 1978; Roberts, 1973). The greater likelihood of suffering depression, difficulties in daily functioning (such as withdrawal and decreased motivation as mentioned in Heijmans & De Ridder, 1998), and elements of the depression schemas identified by Young, Beck and Weinberger (1993) are evident among those with acquired hearing loss. In the United Kingdom, between 19% and 27% of deafened adults are psychologically disturbed

compared to 5% of the general British population, and depression is the psychological disorder most commonly observed (McKenna, 1993). Anxiety and depression were strongly related to self-perceived 'hearing handicap' in a study of 42 elderly hearing impaired people (Andersson & Green, 1995, cited in Herth, 1998). Rutman and Boisseau (1995) suggest that a person with an acquired hearing loss may be torn between wanting to participate in social interaction and wanting to withdraw because of the anger, embarrassment and inadequacy associated with lip-reading and requests to repeat messages. The result may be that the deafened individual 'chooses' solitude, which in turn leads to isolation, depression and despair. Thomas (1988) endorsed this position by referring to his earlier studies which found that "clinically significant psychological disturbance in a hearing impaired sample was found to be over three times higher than in the general population" (p. 81). The data presented by Kerr and Cowie (1997) in their study outlined later also support this view. It is noted however, that psychological distress and depression reflecting elements of the schemas referred to above are consistently reported amongst people facing chronic illnesses or other significant loss as well (e.g. Heijmans & De Ridder, 1998; Lumley, Kelley & Leisen, 1997; Rapp, Exum, Reboussin, Feldman, Fleischer & Clark, 1997).

In addition to the relationship of psychological disequilibrium and hearing loss, "the severity of deafness, clinically assessed, is less crucial to the individual than [the] personal perceptions of the amount that it interferes with [the person's] life" (Kerr & Cowie, 1997, p. 186). Psychological factors appear to have more effect on perceptions of quality of life than the severity of the hearing loss. For example, Erlandsson and Hallberg (2000) found that a regression analysis of the variables relating to perceived

quality of life in 122 tinnitus patients indicated that 61% of the variance was explained by psychological variables and 4% by audiological variables. Ironically, faith in the audiological intervention process may mask a person's perceived need to deal with the psychological and social losses consequent on hearing impairment (Rutman & Boisseau, 1995). If unobtrusive use of hearing aids is possible (hiding them under long hair is not uncommon), then the individual may maintain the pretence of normality and avoid confronting the challenge of a hearing loss or live a 'phantom normalcy' (Perry, 1996). Alternatively, the use of the hearing technology itself may present difficulties and be perceived to embody undesirable features of what it means to have a hearing loss.

2.4. Undesirable Becoming

The tendency to try and preserve an image of normalcy and the reluctance to be identified as having a hearing loss reflect an aversion to assumptions of what it means to become a person with a hearing difficulty. Hetu (1996) considers that the perception of a 'spoiled identity' imposed by a hearing loss and the concomitant stigma "constitutes the *major* obstacle to rehabilitation" (p. 19, author's italics). Among other self reports that substantiate this assertion, Perry (1996) writes of the experience: "My self-identity is at stake, and to relate with this part of me (having a hearing loss) and present it as my defining characteristic is to further limit and blemish myself" (p. 252). This sense of being 'blemished' appears to be supported by the substantial resistance to acquiring and using hearing aids or avoiding identification as hearing impaired (Noble, 1996). Estimates based on official US statistics indicate that only 21% of those who would benefit from using hearing aids actually wear them (Arnold & MacKenzie, 1998). In

their study of older persons with disabilities, Tomita, Mann and Welch (2001) found that 75% of those who reported that a hearing loss had a large impact on daily life did not use a hearing aid. The negative stigma associated with hearing aids is a significant factor. The study by Stephens, Lewis, Davis, Gianopoulos, and Vetter, (2001) provides further support for this view. After reviewing five studies on hearing aid use in the United Kingdom spread over 17 years, Stephens et al. (2001) report that, while 20% of the adult population report hearing difficulty, 3.4% use hearing aids regularly and a further 0.9% have aids but do not use them. They conclude that, while the quality of aids and service provided have improved over the 17 year period, the uptake of hearing aids has not and only a coherent effort at early intervention and addressing the stigma of hearing aids is likely to change that. It seems their hypothesis that the perceived social stigma in the use of hearing aids is greater than the stigma of not being able to hear is supported.

The 'Hearing Aid Effect' demonstrates that the mere presence of a hearing aid inclines observers to evaluate the wearer more negatively in terms of intelligence, achievement, personality and appearance. Blood (1997) found support for this phenomenon when she simulated hearing loss in clinical conditions for 100 normal hearing university students. Of that group, 25% preferred not to wear hearing aids to improve their hearing due to negative stigma and adverse cosmetic reasons. Hetu (1996), in reviewing detailed analyses of the experience of hearing loss, observed that reluctance to acknowledge hearing difficulties, concealing signs of hearing loss and the negative impact of disclosing hearing loss are common difficulties. Similarly, Pollard (1996) comments that "concerns about body image and identity are neither rare nor insignificant" (p. 19) among those undergoing a psychological assessment prior to a

cochlear implant.

Because people do not lose hearing in a social vacuum (Hogan, 2000), the ‘handicapping’ element of acquired hearing loss is not located solely within the affected person in terms of perceptions or individual vulnerabilities. While these factors are vital in comprehending the individual needs of people with hearing loss, the ‘handicapping’ element is also constructed through social interaction (Stephens, Jaworski, Lewis & Aslan, 1999). Acquired hearing loss affects all interpersonal interactions, which may in turn diminish social relationships, occupational goals and overall quality of life (Rutman, 1989). Self-identity issues are closely related to the social and political context in which the individual is located (Rutman & Boisseau, 1995). The stigmatisation of hearing impairment has been examined by Hetu (1996) within the framework of viewing social interaction as role performance involving different strategies to protect the social image adopted by the individual. In this perspective, the social actions of people with hearing loss may be regarded as the actions of people attempting to manage a ‘spoiled identity’. Hearing loss is perceived as a discredited or discreditable attribute that reduces an individual’s social worth and may reflect the discriminatory practices underlying the ‘ablist’ ethos of society (Hogan, 2000). For example, Gething (1997) criticises the erroneous assumption that people with hearing loss are better suited to work in noisy environments. Such ‘handicapping’ beliefs and practices result from common perceptions of the characteristics associated with use of a hearing aid. These presumed characteristics have been identified as mental disability, weakness or failing, disability and looking old (Kochkin, 1993): all features of human experience that are not well tolerated in most social groupings. “[Hearing loss] is peculiar in that it is social from the

beginning ... it strikes at the heart of social interaction” (Jones et al., 1987, p. 16). The heart of social interaction is the ability to communicate and problems in communication can easily lead to feelings of failure, isolation and low self-esteem. A major concern is the impact of hearing loss on the interactions with other people, which may lead those affected to feel dissociated from or to withdraw from society (Rutman & Boisseau, 1995). Luey (1980, cited in Rutman, 1989) illustrated instances of social change or isolation when she reported that 86% of her subjects with hearing loss made new friends, 60% changed career goals, and 50% divorced following the onset of deafness. These figures tend to support Vash’s (1981) observation that acquired hearing loss may increase the likelihood of a disjuncture in personal relationships.

The findings of the Kerr and Cowie (1997) study indicate that the factor that contributes most to the prediction of impact of hearing loss on the psychological functioning of an individual is the feeling of distress in interaction. The clinically defined extent of deafness does not directly relate to the severity of the experienced loss that emerges in a social context (Hogan, 2000; Kerr & Cowie, 1997; Thomas, 1984). Within a family some members may become isolated because they are unclear about how to define the situation and consequently lack a foundation for interaction with the person who has the hearing loss. The closer the relationship with the person with the hearing loss, the more likely others are affected by this process and also grieve a loss.

The hearing rehabilitation model proposed by Stephens (1996) emphasises the key role of the significant other in the rehabilitative process and also notes the possibility that one partner’s hearing loss may generate secondary disadvantages for the significant other. For example, there is the potential of alienating significant others (Lane &

Hobfoll, 1992). Family relationships (partner, siblings, children, and other family members), friendships and relationships with workmates may be affected. Sanders (1982, 1993) believes that acquired hearing loss is a family problem, since those close to the person who experiences a sudden loss of hearing also experience considerable anxiety and apprehension. Communication, even in intimate relationships, must take account of hearing loss, acoustic feedback, and visual communication (Sanders, 1993). Bandura's (1989) comment that self-efficacy beliefs mediate stress, depression, and motivation, suggests that these elements may be addressed through reframing individuals' beliefs about their ability to function in taxing social and familial situations. Improving communication strategies in social and interpersonal contexts as part of any attempt to deal with acquired hearing loss may enhance beliefs of self-efficacy (Knutson & Lansing, 1990) and the inclusion of normal hearing relatives in any professional intervention for people with hearing loss is very desirable (Luterman, 1999; Stephens, 1996). Hallberg and Barrenas (1994) evaluated short-term and long-term effects of group rehabilitation for males with noise-induced hearing loss. They consecutively selected 53 males and randomly assigned them to an experimental and a control group. The males in the experimental group and their spouses were invited to participate in a group rehabilitation programme. The authors found that the spouses should be included in rehabilitation programmes to facilitate their own understanding of their husband's hearing loss and to develop confidence in interpreting daily interactional problems. As one of the participants in the study reported, "Now we can talk about the hearing loss without being irritated by one another" (p. 76, see also Lane & Hobfoll, 1992). This comment supports the contention of Jones et al. (1987) that the ways in which family members behave

towards each other influences the coping process, and changing that behaviour alters the individual's response to disability.

Hallberg and Barrenas (1993) also examined the perspective of spouses living with hearing impaired males by carrying out in-depth interviews with 10 couples. They identified two core concepts: the husband's reluctance to acknowledge hearing difficulties and secondly the impact of hearing loss on the intimate relationship. Repeatedly they found confirmation of the male's fear of being inadequate, abnormal or "deviant"; the strong denial was intended to avoid the stigma of having a hearing loss. Hetu et al. (1990) had earlier noted that this denial is in fact part of an adaptive process.

Certainly the reluctance to admit to hearing loss is a common feature (e.g. Hetu, 1996). Kyle and Wood (1983) found in their study of 123 adults with hearing loss that "never more than 20 percent were prepared to divulge the secret of their hearing loss in public" (cited in Jones et al., 1987, p. 32). This secrecy or failure to talk openly to others is not unique to people with hearing loss. Lumley, Kelley and Leisen (1997) also note that life stress involved in other chronic illnesses tended to increase these behaviours, which indicates the potency of the human desire to protect self-identity through a PST.

From in-depth clinical interviews with 16 couples, Armero (2001) considers that a patient who denies their hearing loss "is often in crisis with his or her spouse and family" (p. 44). While the males with noise-induced hearing loss are prone to deny their difficulties, the spouse may or may not participate in the 'game'. However, if she does, it appears that she does so to protect the image of a socially 'normal' couple (Hallberg & Barrenas, 1993). In response to the demands that are made on their lives by the acquired

hearing loss, spouses may attempt to deny, mediate, minimise or distance themselves from the loss. Interestingly, most spouses accepted the male's reluctance to communicate on the topic of hearing loss. Hallberg and Barrenas (1993) conclude their study by suggesting that the spouse is probably the most important person for motivating the affected partner to participate in audiological interventions. They also questioned whether the different strategies adopted by the couples are permanent or different steps in the process of adjusting to hearing loss. It would be illuminating to compare the spousal actions/reactions in the case of females who acquire a hearing loss. Carr (2000) indicates that a female who develops a hearing loss may confront additional complexities as the male partner processes the inevitable changes in the relationship. It appears that the impact of an acquired hearing loss may expose fundamental beliefs (possibly unexpressed) that people hold about their relationship and thereby catalyse change. It may also reveal previously unspoken and stigmatising beliefs about hearing loss or disability.

The development of a hearing loss of a parent may generate a significant secondary difficulty through the effect it has on that parent's ability to communicate with children in the family. The role, expectations and perceptions of both parent and child may be affected. Sanders (1993) suggests that children may feel threatened by being shut off from a parent, that they may feel a sense of guilt or a fear of their own future well-being. They may also feel resentful at the parent for letting this happen. In addition, Jones et al. (1987) note the tendency for children to turn to the parent with normal hearing. Such family interaction suggests the necessity for all family members to monitor and adjust their interpersonal relationships. This includes the individual with

hearing loss who may withdraw or otherwise negatively react to the family interactions (Harvey, 2003).

Progressive hearing loss demands that the person consider future options and objectives (Sanders, 1993) and for people in the workforce that has substantial ramifications. The above-mentioned tendency of people with acquired hearing loss to conceal their condition “governs the strategies adopted by workers ... to cope with hearing difficulties in the work place. A direct consequence is self-restriction in career advancement” (Hetu & Getty, 1993, p. 399). The workers who acquire hearing loss may avoid demanding situations and refrain from applying for promotion that may involve frequent verbal communication. Likewise, Scherich (1996) noted that many personal coping strategies used by people with hearing loss in the workplace did not improve communication and participation. For example, avoiding meetings, not talking with co-workers or not attending work-related social functions were specifically mentioned (see also Roessler & Rumrill, 1994). Hetu, Getty, Beaudry, and Philibert (1994), further explored the relationships of co-workers and noted that the concealment and social withdrawal of workers with hearing loss resulted in exclusion by others as a result of the image provided to their co-workers and significant others. They may be perceived as unsociable, or inappropriate responses may be attributed to some personal, unattractive deficiency. In addition, the negative stigma is reinforced by possibly offensive jokes expressed in an atmosphere of ignorance of the implications of hearing loss. Although concealment can cause difficulties for people with acquired hearing loss, the vocational prospects of people identified as having a hearing loss appear more promising.

Doggett (1989) cites a study by Powers and Lewis (1976) in which 59 of 74

employers who had hired hearing impaired employees said there was no relationship between the disability and the work. Moreover, 95% said they would consider hiring another hearing impaired employee. Increased experience and knowledge of hearing loss improve employer attitudes towards such workers (Jackson, 1992; Levinson, 1984; Doggett, 1989). However, the stigma of hearing impairment still does create a perception of communication problems (Jackson, 1992). This may be “largely in the eye of the observer (i.e. the world of hearing employers and employees), but it is difficult to deny it has a profound effect on the employment prospects and other post-secondary opportunities of many [people with hearing loss]” (Schildroth, Rawlings & Allen, 1991, p. 50). Doggett (1989) also suggests that the lack of prominent achievers with hearing loss reinforces misconceptions of the capabilities of these workers. Certainly, summaries on the employment and earnings of deaf and hearing impaired people (Hogan, 2000; Jackson, 1992) recount their under-employment and lower than average incomes.

The current evidence indicates that the discrepancy between the income levels of deaf and hearing impaired people compared to the general population is related to the level of education attained (Jones, 2004). This seems to support the view of Logan (1995) who maintains that people with hearing loss in New Zealand tend to be unemployed, underemployed and have limited qualifications. This reality is liable to reinforce negative perceptions of hearing loss and of a hearing impaired individual's future.

2.5. Conclusion

The literature reviewed indicates that acquired hearing loss imposes change on an

individual's life. Coping with the loss involves psychological, familial, social and vocational factors that may induce significant stress in those affected by the hearing loss. A wide range of responses is inevitable given the multiplicity of individual differences but there are some common experiences shared by many people with hearing loss. The change in sensory perception imposes varying degrees of adaptation of communicative means; challenges the individual's sense of self (i.e. self-esteem, self-confidence, self-image, perception of future) and sense of homeostasis. Together with the decline in hearing, this may instigate a crisis in the person's life involving some or all of the typical manifestations of the grief process. The person may have to cope with the negative stigma associated with hearing loss; concern about future developments may generate a sense of anxiety and affect relationships; close family members (especially spouses) will be affected and may share the same concerns as the person with the hearing loss as well as developing their own personal concerns; the person with hearing loss is likely to practise non-disclosure or denial and experience restriction (probably self-imposed) in their career; wider social contacts will become more difficult and may be avoided. Among the multitude of individual experiences of acquired hearing loss is a common need for achieving personally satisfying resolution of self-identity issues. The transition from 'what I was' to 'what I am' and 'what I will become' encapsulates the process of adjusting to acquired hearing loss. Chapter three will therefore consider what is involved in adjustment, how it can be defined, ways in which it can be measured, and whether hope may be another variable that influences adjustment.

3. Adjustment: Acceptable Being

3.1. Introduction

The process of adjusting to a disability is a psychological challenge situated in varying contexts. The onset of a disability has fundamentally affected the individual's perception of normality that embodied 'what I was' and 'what I expected to be'. The multidimensional realignment that is necessary to restore a sense of homeostasis represents adapting to 'what I am' and 'what I wish to become'. Even the restoration of a degree of functional ability may not result in the restoration of homeostasis in terms of one's sense of self nor optimum participation in society due to the multifaceted impact of acquired hearing loss as discussed in chapter two. Establishing an acceptable sense of 'what I am' requires more than re-establishment of function. There must be reconciliation of current and past perceptions of self, as well as future expectations of being.

The view of Wright (1983), even after twenty years, retains relevance when considering adjustment to disability. For example, she argues that the impact of a disability can be increased or diminished by environmental conditions and that issues in coping and adjustment cannot be validly assessed without examining reality problems in the prevailing social and physical context. The person involved should be seen not as a decontextualised, isolated individual, but as part of a larger group that includes other people, often the family. While noting the influence of the context on an individual's ability to adjust to disability, Wright (1983) elucidates intra-individual elements that are essential for the process of adjustment to occur. The assets of the person with the

disability need to receive considerable attention and the perspective of the person affected must be given due regard. In particular, the significance of the disability is affected by the person's feelings about the self and the situation being encountered.

On the basis of such principles, Wright (1983) considers that adjustment essentially involves people with a disability (and indeed society) confronting social and psychological presumptions about disability and their place in society. In this sense, 'acceptance' of disability is not resignation to the inevitable nor bowing to misfortune, but rather a non-devaluing belief in personal worth. Adjustment is therefore the process of changing values that enlarges the significance of those aspects of life not closed to the person; that shifts the relative importance of some values; that contains the effects of disability, and that transforms comparative values (as, for example, in comparing one's diminished functional abilities and necessity for a hearing aid with those who are non-disabled) to asset values (such as valuing the functional advantages provided by the use of a hearing aid). The envisaged outcome is a person who can state, "I am as I am, and though I don't have all the possible assets that can be imagined, I am fully a whole person" (Wright, 1983, p. 192).

3.2. Defining Adjustment

It has been established that negotiating a 'spoiled' sense of identity is a key issue for people who experience loss of hearing (e.g. Bibby et al., 1996; Erdman & Demorest, 1998a; Hallberg, Passe & Ringdahl, 2000; Hetu, 1996; Jones et al., 1987; Kerr & Cowie, 1997; Luterman, 1999; Perry, 1996; Ross, 2000). In common with other health contexts, there "is the sense of being different from others and the previous self" (Shapiro, Angus

& Davis, 1997, p. 545) which may activate a response that seeks to incorporate events into a meaningful or coherent interpretation so as to restore a sense of personal worth and agency. People may be considered to be adjusted when they achieve a relatively stable equilibrium, or homeostasis, between disparate elements (such as the disability, the social context, intervention measures, the previous sense of self, or the perceptions of who they might become) and their current way of living and being. Those who have not achieved such a sense of equilibrium may be viewed as not adjusted to their current situation. On the continuum between a state of non-adjustment and a state of adjustment, the process of adjustment may be conceived of as the individual changing their scope of values or, as evident from the experience of the participants in the Wright and Kirby (1999) study, 'adapting to a new way of being and living' that involves multiple variables.

Adjustment is a multidimensional psychosocial process that can be viewed as a person-environment interaction. Who one is, how one changes, where one is going, and the levels of stress experienced are all dependent on relationships to others and responses to social expectations (Durkin, 1997; Lazarus & Folkman, 1984; Stroebe & Stroebe, 1995). How people develop and sustain health beliefs involves interaction with the social/cultural environment. The person-environment interaction includes the influence of social perceptions regarding disability or illness, the influence of family perceptions and relationships, and the potentially constructive effect of social interactions on intrapersonal dimensions (Radley, 1996). The prevailing social perceptions of a disability, illness or loss may have a significant impact on the individual. The stigma of a disability, for example, involves not only intrapersonal beliefs, but also forces an encounter with wider social beliefs about disabilities, competence and social roles (e.g.

Blood, 1997; Conrad & Overbury, 1998; Hetu, 1996). These perceptions extend beyond the individual to fundamental philosophical positions that determine social identity, medical diagnosis, programme funding, political policies, and institutional actions (e.g. Chatterji, et al., 1999; Devlieger, 1999; Lidoff, 1997; Logan, 1995; Tepper, et al., 1997). As explicated by the International Classification of Functioning (WHO, 2002) or The New Zealand Disability Strategy (Ministry of Health, 2001), disability can be a social construction. However, the subjective appraisal of their circumstances by people with disabilities may have a substantial bearing on the effect of specific social encounters. Johnson (1996, 1997) noted that social influences in adjustment do not rule out psychological influences, and that social factors may be mediated by psychological factors. This position is supported by French (1993), a visually impaired person who agrees with the perspective of the social model of disability, but also believes that some of the more profound problems experienced by people with impairments may not be amenable to social manipulation. Similarly, Woolley (1993), a person with an acquired hearing loss, referred to continuing difficulties with psychological elements of loss and self-concept despite considerable functional adaptation. These comments from individuals personally affected by sensory impairments tend to support the view of May (1999) that outside factors can become pivot points anchoring 'lines of tension', that the individuals draw into themselves in adjusting to life demands. This is indicative of the importance of considering intra-individual variables.

The increasing interest in the systematic study of positive psychology is fully cognisant that psychological characteristics are located within people and people are located within their settings. But "it is just as obvious that individuals and their traits

need to be accorded a central role in understanding the good life. It is individual people, after all, who lead these lives” (Peterson & Seligman, 2004, p. 11). Events that require people to undertake a major revision of their assumptions about the world, are lasting rather than transient, occur in a manner that does not allow for preparation and are often featured in disability, chronic illness and loss/grief experiences. Perceptions of vulnerability and self-view are significantly altered for those experiencing such events (Gluhoski & Wortman, 1996). Restoration of a sense of psychological equilibrium involves a shift in personal values, revision of assumptions about the world (Parkes, 1994), an elevation of intrinsic aspects of the self, and a redefinition of what are meaningful aspects of life (Elliot, 1999, Wright, 1983). The process of changing or reorganising one’s assumptive world is likely to include a degree of disequilibrium or may involve depression (Corney, 1997; Heijmans & De Ridder, 1998; Rutman & Boisseau, 1995). It is also subject to individual differences in timing, foci, and outcomes (Elliot, et al., 2000; Horowitz & Reinhardt, 1998; Kendall & Buys, 1998).

The forced change to an individual’s schemas (assumptions of how the world is) is consistent with the reported experience of people with disabilities. For example, the ‘shock’ and challenge of recognising or accepting an acquired disability is referred to by Roberts (1973) who asserted that one of the most common barriers to the rehabilitation of adventitiously blind people was fear that blindness would change or destroy their self-esteem. He stated that the usual response of the people affected was refusal to identify themselves as ‘blind’ because, as they later reported, they did not want to become a different person and were not sure just what they would become. Individuals are likely to develop psychological distress if they are unable to incorporate negative events into their

existing worldview or if they cannot develop a new one (Janoff-Bulman, 1989). When faced with challenging circumstances the person concerned will persist with the prior schemas even though they no longer adequately explain the environment (i.e. the person appears to 'deny'). Parkes (1994) contends that the individual must relinquish previous assumptions and develop a new set of assumptions related to the new life circumstances. Resistance to change is common but this may be understood by awareness that while "the old model of the world may be imperfect ... it is the best we have, and if we abandon it we have nothing left" (Parkes, 1994, p. 96). The process of adjustment following the onset of disability may be affected by specific beliefs about the implications of the condition (Erdman & Demorest, 1998b; Elliot & Richards, 1999; Kerr & Cowie, 1997; Perry, 1996; Ross, 2000; Troster, 1998) and some of those beliefs may not be conducive to optimum adjustment. The literature on self-theories indicates that maladaptive beliefs put basic needs or goals in conflict with each other, interfere with the attainment of chosen goals, and lead people to traffic excessively in fictions instead of realities (Dweck, 1990). The development of individual schemas may be affected by the disability (in the context of this study, hearing loss) and depression experienced in response to the onset of hearing loss (Kerr & Cowie, 1997). Wright (1983) considers that disability is often accompanied by 'succumbing' of which depression is the most frequent concomitant. While it is very unlikely that individuals with an acquired disability would possess a pre-morbid measure of equilibrium, it can reasonably be assumed that the restoration of a sense of equilibrium to the imposed life circumstances would produce lower levels of depression. This view is consistent with a clinical description of depressed patients as those who "typically have a negative view of themselves, their

environment, and the future. They view themselves as worthless, inadequate, unlovable, and deficient. Depressed patients view the environment as overwhelming, as presenting insuperable obstacles that cannot be overcome, and as continually resulting in failure or loss. Moreover, they view the future as hopeless; they believe that their own efforts will be insufficient to change the unsatisfying course of their life” (Young, Beck & Weinberger, 1993, p. 241). Depressive schemas of people facing the challenge of a disability may develop because their “beliefs in their capabilities affect how much stress and depression they experience in threatening or taxing situations, as well as their level of motivation” (Bandura, 1989, p. 1177). The earlier discussion of acquired hearing loss provides evidence of a relationship of hearing loss with a number of the depressive characteristics. The markedly higher level of depression among deafened adults has been established (McKenna, 1993; Rutman & Boisseau, 1995; Thomas, 1988). Similarly heightened levels of depression and anxiety are reported among those facing other health challenges (Corney, 1997; Heijmans & De Ridder, 1998; Lumley, Kelley & Leisen, 1997; Rapp et al., 1997).

The individual experiences in dealing with the impact of disability (including distress and depression) underscore the certainty of variability in the process of adjustment. The different contexts of an individual’s life may alter the relative priority of particular circumstances (such as the age specific concerns in the Horowitz & Reinholdt (1998) study). Elliot, et al. (2000) note that clinical conceptualisations of adjustment to physical disability have historically been dominated by psychoanalytic thought relating to the individual (the ego) coming to terms with the rational acceptance of a permanent loss. This perspective encouraged a range of ‘stage models’. The process of adjusting to an

acquired disability or loss in these frameworks has commonly been described as a linear progression through stages which must be 'worked through' before a person can satisfactorily move on towards the ultimate goal of acceptance (e.g. Carmen, 1983; Kübler-Ross, 1969). A similar recent formulation of the experience of illness and injury (Morse & Penrod, 1999) suggests there is a cycle involving enduring, uncertainty, suffering, and hope before the emergence of a reformulated self. The evidence does support a general trend towards acceptance of a disability over time, but the literature indicates, "individual differences consistently predict emotional reactions following the acquisition of a disability" (Elliot, et al. 2000, p. 251).

The stages model presents some difficulties that have been highlighted by Kendall and Buys (1998). The stages imply that the individual concerned is passive and that the adjustment process is fundamentally dependent on the passage of time. Secondly, the stages model normalises responses such as denial and distress and may even encourage these responses as necessary to 'work through' the grief process. Thirdly, the stages approach may be argued as a form of social oppression that encourages people with disabilities to accept fewer alternatives and less personal control than others. Finally, and most importantly, the stages model does not encapsulate the experience of people with disabilities and ultimately many consider "that they will never 'adjust' to their disability because this implies the acceptance of a situation that is unacceptable" (Kendall & Buys, 1998, p. 17). The process of adjustment to a disability is guided by three themes: "The search for meaning in the disability and in post-disability life; the need for a sense of mastery and control over the environment, the disability and the future; the effort to protect and enhance the self and one's post-disability identity" (Kendall & Buys, 1998, p.

17). This understanding of a transition process is supported by Oles (1999) who suggests that the necessary and sufficient condition to engender a personal crisis is a values crisis involving difficulties in hierarchization, integration, and realisation of values over time. The impact of a loss may be determined by whether it can be incorporated into the “interwoven system of beliefs, assumptions or expectations related to oneself, others and the world that provide a sense of meaning” (Wortman, Silver & Kessler, 1994, p. 364). Vulnerability is not so much related to the coping resources that people possess, but rather to the individual cognitions and beliefs that are held. Indeed, the concept of ‘coping’ does not adequately explain adjustment for a number of reasons including: (a) there is a lack of correspondence between what people mean and how the concept is used in research, (b) the validity of checklists commonly used is open to challenge, (c) the outcome of using different coping strategies is unexplored, and (d) what may be coping in one situation could be problematic in another (Andersson & Willebrand, 2003). The underlying cognitions and beliefs influence behaviours and it may even be necessary to support people as they identify revised future objectives: “an alternate good, something worth risking and living for” (Beck, 1994, p. 7). Hetu (1996), working in the context of hearing impairment, concludes that while it has been studied extensively from a pathophysiological and psychoacoustic position, little attention has been given “to the key factor of rehabilitation outcome, that is, the meaning people ascribe to hearing impairment” (p. 23). This is suggested by Hetu (1996) to be central to the experience of hearing loss in terms of the degree of psychological pain and also the way that people adjust to the effects of the impairment. In terms of Antonovsky’s (1987, 1993) Sense of Coherence (SOC) and Salutogenesis, coping with adversity is understood to be facilitated

by the affected individual maintaining or restoring equilibrium in the perception of manageability, comprehensibility and meaningfulness. Distressing circumstances on the health ease/dis-ease continuum (Antonovsky, 1987) may be countered by a strong SOC. There is some evidence to support the utility of the SOC model. For example, Lustig, Rosenthal, Strauser and Haynes (2000) report a correlation between SOC and the level of adjustment in individuals with a disability. Similarly, Carstens and Spangenberg (1997) found negative correlations between SOC and depression (see also, Flannery, Perry, Penk & Flannery, 1994; McSherry & Holm, 1994). However, in their current classification of character strengths and virtues, Peterson and Seligman (2004) regard the SOC as a nonreligious but spiritual model as it addresses transcendence by means of the individual sense of purpose in life. The phrase “by means of” implies a mediating role in transcendence. While a sense of coherence may very well promote adjustment by enhancing transcendence, there could be some debate as to whether SOC adequately captures the concept of adjustment as represented in the reviewed literature.

The conceptualisation of adjustment offered by Dodds, Bailey, Pearson and Yates (1991) provides a means of comprehending the individual psychological challenge of restoring a sense of equilibrium without negating the influence of social contexts. These authors sought to clarify the inter-relationships among variables implicated in adjustment to acquired visual impairment. Their study considered the perspectives of both the traditional loss model of rehabilitation (that emphasised the need for affected individuals to ‘work through’ feelings of loss and depression) and the approach of those who emphasised the need to restore function as soon as possible. Dodds et al. (1991) identified seven psychological variables relevant to the broader concept of adjustment.

The variables are: learned helplessness and depression, attributional style, self-esteem, locus of control, self-efficacy, and acceptance of disability. With an initial sample of 50 clients at a vocational training centre for visually impaired people, Dodds et al. (1991) tested the inter-item correlations of several published questionnaires (the Goldberg General Health Questionnaire; Linkowski's Acceptance of Disability Questionnaire; Sherer's Self-efficacy Questionnaire; Recovery Locus of Control Questionnaire; Rosenberg Self-esteem Questionnaire; Attitudes to Blindness Questionnaire; Attributional Style Questionnaire) that evaluated the identified variables. Inter-item correlations identified the items that should be retained. Through a cluster analysis, a single questionnaire was constructed and tested on a sample of 200 clients in order to examine the factorial structure of the questionnaire and the validity of the constructs involved. Apart from Attributional Style that correlated significantly with Self-efficacy only, the inter-correlations of the other variables were significant at the $p = .001$ level (except for the $p = .01$ correlation of Attitudes to Blindness and Recovery Locus of Control). A principal components analysis using varimax rotation was carried out at the item level. Five components emerged: 'Hopelessness' accounted for 12.63% of the total variance, 'Acceptance' accounted for 12.41%, 'Self-efficacy' accounted for 9.95%, 'Anxiety' accounted for 8.43%, and 'Attitudes' accounted for 6.26%. A further refinement and second-order principal components analysis was completed to produce a 43-item scale (the Nottingham Adjustment Scale, or NAS as referred to below) with one component accounting for 50.84% of the total variance. From this analysis, Dodds et al. (1991) state that adjustment "is characterized by low levels of anxiety; an absence of depression; high self-esteem; a high sense of self-efficacy; a high sense of responsibility

for recovery; a positive attitude towards visually impaired people; and a high acceptance of one's own visual disability" (p. 309). Their findings support the hypotheses that (a) one's acceptance of a disability is associated with one's attitudes towards people who have that disability, (b) self-efficacy and locus of control are strongly related, and (c) high self-esteem is associated with an absence of depression and high self-efficacy. The latter finding is suggestive of the possibility that self-esteem may be increased by alleviating depression as well as by increasing self-efficacy: the two debated models that instigated their study. Dodds et al. (1991) concluded that the psychological variables they had identified as encapsulating adjustment are likely to be implicated in any area of acquired disability. Further testing of the conceptualisation of adjustment captured in the NAS was carried out by Dodds, Ferguson, Ng, Flannigan, Hawes and Yates (1994) using 469 clients aged 21 to 48 who were scheduled for rehabilitation at the Royal National Institute of the Blind in the UK. The authors used structural modelling which required that they apply competing models against which to compare the adequacy of the proposed models. The results of this investigation identified two latent factors (Internal Self-worth and Self as Agent) that have robust links to the factors specified in the NAS. The results supported the understanding of adjustment as presented by Dodds et al. (1991).

The following summation of several studies (in different contexts and using different methodologies) illustrates current understandings of, and important elements in promoting adjustment. Common features involved in adjustment that are addressed include depression, belief schemas, attitudes to disability (including acceptance), self-concept and self-efficacy (as in the use of coping strategies). Such features are consistent

with the Dodds et al. (1991) definition of adjustment.

3.3. Studies in Adjustment

Elliot, Uswatte, Lewis and Palmatier (2000) provide a critique of conceptualisations of adjustment to an acquired disability as a progression through various stages from initial shock, and denial through depression to acceptance. Referring to previous studies (Elliot & Richards, 1999; Elliot et al., 1991) they note that the evidence supports the view that the ability to selectively process and to negotiate reality is positively associated with optimal adjustment to acquired disability. They build their study on the understanding of the process of adjustment to disability as involving (a) a secure sense of self, (b) the pursuit of meaningful goals, and (c) adaptive relationships with others. Elliot et al. (2000) tested the prediction that adults who report low goal instability (i.e. a secure sense of self) are likely to experience less distress, greater life satisfaction, greater well-being, and better social integration than those who report high goal instability regardless of the time since the onset of the disability. They did this by undertaking a series of three separate studies involving people with spinal cord injuries (SCI) and one study of people with amputations:

(a) Study 1

One hundred and nine people (79 males, 30 females) with traumatic onset SCI consecutively referred for psychological assessment as part of their rehabilitation programme participated. The average age was 32.72 years (range 15 years to 73 years, SD = 12.97 years). The majority (n = 64) were Caucasian and there was a large minority of African Americans (n = 45). Data on the cause and type of the SCI was recorded. All

the participants were within the first year post-injury. The measures used were the Goal Instability Scales (GIS), the Inventory to Diagnose Depression (IDD), the Linkowski Acceptance of Disability Scale, the Career Factors Inventory, and the Functional Independence Measure (FIM). Correlational and regression analyses were used to test the hypothesis that goal instability would be significantly associated with distress, acceptance, career decision needs, as well as motor and cognitive gains during the rehabilitation programme. After controlling for the level of injury greater goal instability was associated with higher depression ($R^2 = .41$); greater depression at admission was associated with lower acceptance at discharge ($R^2 = .26$); greater goal instability at admission was associated with lower acceptance at discharge ($R^2 = .11$); higher depression and goal instability were both associated with higher career decision needs ($R^2 = .24$ and $R^2 = .03$ respectively).

(b) Study 2

A total of 97 people (45 male, 52 female) consecutively referred for psychological assessment as part of their inpatient rehabilitation programme participated. The average age was 55.46 years (range 17 years to 83 years, $SD = 19.74$ years). Sixty-four of the participants were Caucasian and 33 were African American. Data on the type of amputations was recorded. The measures used were the IDD, the GIS and the FIM. Correlational and regression procedures were used to test the hypotheses that goal instability would predict distress, and motor and cognitive gains in rehabilitation of those with disabilities acquired through chronic disease processes. The results indicated that goal instability was predictive of greater depression ($R^2 = .22$) but did not significantly predict the motor scores at discharge. The findings in conjunction with Study 1 indicate a

strong relationship between goal instability and distress regardless of the cause or suddenness of the onset.

(c) Study 3

The first two studies in this series were conducted with rehabilitation inpatients in the first year of their programme. Elliot et al. (2000) hypothesised that low goal instability would be associated with greater life satisfaction in the year after SCI onset regardless of the handicapping conditions of the impairment and the environment. Conversely, those with greater goal instability were hypothesised to be more likely to set new goals, new values, and pursue meaningful activities while residing in the community. There were 61 participants with SCI (45 male, 16 female) in the third study conducted one year following discharge from the inpatient programme. The average age was 31.56 years (SD 12.85 years) and 40 were Caucasian, 21 African American. Apart from being younger than those who did not return for the annual evaluation, the sample of those who returned did not differ from those who did not. The measures used were the Satisfaction with Life Scale, the Craig Handicap Assessment and Reporting Technique, the FIM, and the GIS scores at admission. The results indicated that goal instability assessed at the onset of the disability accounted for a significant degree of the variance in lower life satisfaction one year following discharge ($R^2 = .28$).

(d) Study 4

The fourth study in this series explored two possible mechanisms that might mediate (see later discussion on mediating and moderating effects between variables) the relationship of goal instability to life satisfaction among those with SCI and other severely disabling conditions. The authors tested the possibility that the relation of goal

instability to life satisfaction was mediated by either (a) perceived stigma, or (b) mobility restriction. The participants were 41 males and 15 females attending an outpatient clinic (32 Caucasian, 24 African American). The average age was 33.48 years (SD = 11.56 years, range 17 years to 61 years). The measures used were the Life Satisfaction Index-A, the Perceived Social Stigma Scale, the Mobility Scale of the Sickness Impact Profile, and the GIS. The results demonstrated that goal instability is associated with life satisfaction independently of both perceived mobility restrictions and perceived social stigma.

The key outcomes of this series of studies are that the individual's goal orientation is associated with emotional adjustment following disability regardless of the suddenness of the onset, the severity of the condition, or the degree of handicap imposed by the environment. Additionally, the goal orientation demonstrated at the time of the disability onset may predict life satisfaction one year later. The results also provide evidence that goal instability is associated with distress at various times after the onset of disability and with self-reported handicap and perceptions of social stigma. The latter indicates that those who rely on external support for their sense of self may be vulnerable to stigmatising effects of disability. Elliot et al. (2000) consider that their findings parallel those in reality negotiation literature by confirming, "subjective perceptions of the self and one's future are often associated with subjective experiences of adjustment and distress" (p. 263). A healthy (well adjusted) self is suggested to be characterised by optimistic views of the self and strong personal goals.

Livneh (2001) discusses a model conceptualising the structure, content and process of psychosocial adaptation to chronic illness and disability. Livneh's (2001)

model seeks to integrate the disparate elements likely to be related to adapting to illness or disability and considers the outcomes of the process in terms of intrapersonal, interpersonal and extrapersonal quality of life dimensions. This reflects the earlier work of Livneh, Antonak and Gerhardt (1999) who examined the roles of demographic, disability, and coping strategy variables in psychosocial adjustment to amputation. The authors studied 61 members (59% male) of the Outreach Amputee Support Education Services in Oregon. The age range was 15 years to 84 years ($M = 54.6$ years, $SD = 16.9$ years) and 97% were classified as white. Most of the participants were married (58%) while 20% were divorced, 18% single, and 4% widowed. The types of amputations were classified as were the causes (illness 45%, accidents 42.5%, birth disorders 10%, unspecified 3%) and the duration of the impairments (range 2 months to 64 years; $M = 15.8$ years, $SD = 16.1$ years). The COPE Inventory Scale was used to measure coping, the Linkowski Acceptance of Disability Scale measured acceptance of loss, and the Livneh and Antonak (1990) Reactions to Impairment and Disability Inventory was applied to evaluate eight theoretical phases of psychosocial adaptation to disability. A series of multiple regression analyses were performed to account for the varying contributions of the variables. Predictor variables included (a) the sociodemographic variables, (b) disability-related factors (type of amputation and time since amputation), and (c) the scores on the coping strategies measures. Of the demographic variables used, sex, marital status, and educational level did not produce significant correlations with other outcome measures. Time since amputation (duration) and the individual's age were both significantly and negatively correlated with anxiety and depression. The interaction effect of duration and age showed an even stronger correlation. The type of amputation

was significantly associated with externalised hostility. Active problem-solving coping was negatively and significantly associated with anxiety and depression as well as positively associated with adjustment. Livneh et al. (1999) concluded that the findings demonstrated the contribution of certain sociodemographic (e.g. age, sex) and disability-related variables (e.g. time since amputation and type of amputation) to the level of adjustment. One acknowledged limitation of the study however, is the heterogeneity of understandings of adjustment.

Like Dodds et al. (1991), Horowitz and Reinhardt (1998) investigated the conceptual and empirical basis for developing a scale to assess psychosocial adjustment to vision loss. In their study, Horowitz and Reinhardt (1998) were focusing on older people (aged 65 and over) who experienced age-related vision loss and the need for indicators of adjustment that would be more appropriate to those in later life. Although they did draw on the conceptualisation of Dodds et al. (1991) and other studies in the field, Horowitz and Reinhardt (1998) particularly considered issues pertinent to gerontological research such as subjective well-being, life satisfaction, and current emotional state. They viewed adjustment as existing on a continuum: a divergence from 'stage' theorists and more consistent with the stress-coping concepts such as those promoted by Lazarus and Folkman (1984). The relevance of this perspective is that at different times a person with a vision loss (or other disability) may vary in the degree of successful adjustment "depending on personal and social resources, characteristics of the impairment, and use of rehabilitation services" (p. 33). The adjustment process is therefore considered to be dynamic and open to change over time. The authors constructed their own scale entitled the Adaptation to Age-related Vision Loss (AVL)

and administered it to two samples. The first sample of 155 people (83 female and 72 male) aged 65 years and over had a mean age of 78.3 years, 80% were Caucasian, and 52.9% were unmarried. Data was collected on the degree of vision loss by means of a 33-item scale and the respondents also rated their health status apart from vision loss (an average of three additional health problems per person were reported). Item analyses were performed on the data from the first sample and the refined, 24-item AVL was administered to a second sample. This sample of 343 older people (188 female and 155 male) had a mean age of 79.2 years, 86% were Caucasian and 60% were unmarried. Factor structure of the AVL was analysed (and achieved .77 on the Kaiser-Meyer-Olkin Measure of Sampling Adequacy) and internal reliability of the scale produced Cronbach alpha coefficients of .84 and .86. These results suggest the AVL is acceptable for assessment of psychosocial adjustment to vision loss among older people, however there was a lack of consistency in the factor loadings across the two samples that indicated that the subscales of the AVL need refinement.

The AVL is designed to address the specific needs of an older age group and is intended to be applied in conjunction with global measures of psychosocial well-being and measures of skill acquisition. Within the limitations of its design (for a specific age group), three factors are identified as most relevant to adjustment: (a) acceptance of loss, including neither rejecting it, nor succumbing to the loss as totally incapacitating, (b) attitudes towards rehabilitation that are positive, optimistic, and valuing of learning new skills, and (c) attitudes towards relationships with others that demonstrate a positive outlook. Horowitz and Reinhardt (1998) conclude that responses to specific items on the AVL Scale can be useful for assessing psychosocial elements relevant to adjustment to

vision loss among older people. The elements specifically mentioned are those relating to the vision loss, general health, and psychosocial items such as the individual's strengths, fear, misconceptions, and general attitudes towards the visual impairment.

To examine positive and negative adjustment strategies of people with low vision, Lindo and Nordholm (1999) surveyed a group of people with low vision comprised of (a) a subgroup of 23 elderly people (9 males, 14 females, with an average age of 81 years) and (b) a subgroup of 25 working-age people (12 males, 13 females, average age 42.6 years). The data from the low vision group were then compared with matching reference points in data collected from a study of 335 people with neurological difficulties (67% females, 33% males, mean age 51.6 years), and another group of 112 non-disabled people matched for age and sex.

All participants in the low vision group completed a questionnaire requesting background data (age, sex, marital status, living conditions, degree of assistance, and medical data including diagnosis, time of onset and degree of loss). Three instruments were administered: (a) Persson's Adaptation Questionnaire which is a 66-item scale relating to adjustment strategies for people with low vision, (b) Mood Adjective Checklist which consists of 71 adjectives describing various moods and can be used to assess psychological well-being, and (c) a modified Activities of Daily Living questionnaire to measure experienced difficulties with daily living activities. The positive strategies considered were: acceptance, trust, positive avoidance, minimization, independence, and control. The negative strategies were: denial, resentment, shame, isolation, and helplessness. Lindo and Nordholm (1999) found that in comparison with neurologically disabled people, the group of working age people with low vision used the

strategy of helplessness to a lower extent: presumably because they were employed and experienced a sense of mastery and social interaction. The elderly low vision group used reevaluation, minimisation, and control less than the neurological disability group. Across all the groups a wide repertoire of strategies were used which led to the conclusion that affective adjustment requires flexible use of a range of strategies. The implication Lindo and Nordholm (1999) drew from the study was that individuals need support at two levels in their rehabilitation: the emotional level and the level of functional daily activities. This conclusion parallels the research issue that prompted the Dodds et al. (1991) conceptualisation of adjustment (the need to address affective and functional concerns) and therefore supports the validity of the theoretical underlay of that view.

The studies summarised above investigated adjustment to disabilities other than hearing loss. Some examples related to the topic of the current project are now considered. To examine the impact of acquired hearing loss, Kerr and Cowie (1997) designed a study with the objectives of (a) generating quantitative data that describe audiological and non-audiological aspects of the experience of those with acquired hearing loss, (b) measuring the extent to which the aspects identified affect the quality of deafened people's lives, and (c) determining whether biomedical variables relate to the themes identified. The 87 subjects were interviewed and also completed a questionnaire constructed by the authors.

The study questionnaire was developed from themes identified in the literature, in autobiographical accounts, and from analysis of interviews from earlier trials. The questionnaire was presented in such a format that there was a response section to gather factual data relating to communicative situations and a second section to assess the

impact of the experience on a person's life. These two parts of the questionnaire were subjected to factor analyses and multiple regression analyses to assess the extent to which scores on given variables could be predicted by specified factors. The data collected provided information about (a) audiological and demographic characteristics, (b) experiences encountered by the participants, (c) the perceived impact of those experiences, and (d) an indication of the overall impact of acquired hearing loss on the person's quality of life.

The data indicated that an acquired hearing loss does have a severe emotional impact on the life of those affected. Three indicator variables were identified: (a) the general effect on the person's life, (b) the frequency of depression, and (c) the impact of depression. These indicator variables were then used as dependent variables in a regression analysis using demographic and audiological characteristics as independent variables. The independent variables were (a) the demographic variables of sex, age, marital and employment status, and (b) audiological variables of degree of pure tone loss, age at onset of hearing loss, frequency of hearing aid use, lip-reading dependence, sign language and annoyance from tinnitus. Only three variables showed significant, or near significant associations with the indicator variables: degree of loss (associated with overall effect, $t = 2.256$, $p = 0.03$), tinnitus that caused annoyance (a near significant effect associated with depression frequency, $t = 1.94$, $p = 0.06$), and employment status (associated with overall effect, $t = 2.75$, $p = 0.007$).

Factor analyses of the experience items derived from the questionnaire identified six factors as experiential dimensions of acquired hearing loss: (a) communicative deprivation, (b) restriction of participation, (c) malinteraction by hearing people, (d)

feelings of distress in interaction, (e) feelings of abandonment, and (f) benefit from positive experiences. The first dimension is the only one that deals with the disability condition, two dimensions deal with the visible limitations associated with acquired hearing loss, and three with psychological aspects. Multiple regression analyses were then conducted to examine the extent to which audiological and demographic characteristics were predictive of the experiential dimensions. Of the six experiential dimensions, three were predicted by audiological and demographic variables namely, communicative deprivation ($r^2 = 0.34$, $p = 0.002$), malinteraction by hearing people ($r^2 = 0.37$, $p = 0.007$), and restriction of participation ($r^2 = 0.34$, $p = 0.0004$). Communicative deprivation was most associated with degree of loss ($p = 0.005$) and dependence on lip-reading ($p = 0.05$). Restriction in participation was most associated with employment status ($p = 0.0001$). Malinteraction by hearing people had an association with marital status that only approached significance ($p = 0.07$). Kerr and Cowie (1997) point out that several aspects of the experience of acquired hearing loss are not predicted by audiological and demographic characteristics. Psychological variables are regarded as most likely to differentiate people in their experience of these less tangible dimensions.

The evidence from this study indicated that while some people are successful at finding positive aspects to their experience of an acquired hearing loss, they cannot be predicted on the basis of their audiological profile. The experiential factors (listed above) are supported in this study as the better predictors of the impact of hearing loss. Kerr and Cowie (1997) therefore conclude that "understanding people's experiences is essential for any effective response to the problems that they face" (p. 186), even if some of the less tangible dimensions of acquired deafness still need clarification. The elements they

identified are consistent with the common features of adjustment mentioned above. Kerr and Cowie (1997) maintain that these experiential variables “have a more direct bearing on quality of life than audiological or demographic variables” (p. 185) and that the variables were widespread over a large group of people. They claim that their findings confirm autobiographical accounts of people who have experienced hearing loss. In their view, optimum adjustment to hearing loss cannot be predicted on the basis of biomedical variables. The individual perceptions of the impact are more instructive of the nature of the appropriate response to the problems they face. Kerr and Cowie (1997) endorse the view of Stephens and Hetu (1991) of the importance of clarifying why acquired hearing loss affects people in the way it does.

To some extent, the perspective of Kerr and Cowie (1997) is confirmed by Erdman and Demorest (1998a) who sampled clinical records of 1,008 hearing impaired people from five centres in different states of the United States to investigate the audiological and demographic correlates of adjustment to hearing loss. The sample consisted of 56% males and 44% females with a mean age of 64.4 years (ranged from 16 years to 97 years). Education attainment was recorded as well as employment status (28% full time, 10% part time, 47% retired, 15% not employed). The percentage of the participants that were married totalled 56%, with 17% widowed, 17% single, and 10% divorced or separated. Racial and ethnic data were collected and collapsed into three categories: Caucasian (83%), African Americans (10%), and other (7%). Standard audiological data were gathered and provided 10 audiological variables. The Communication Profile for the Hearing Impaired (CPHI: see p. 61 on assessment measures) was administered by trained staff at each of the five clinics. The CPHI

consists of 25 scales covering five dimensions: Communication Performance, Communication Importance, Communication Environment, Communication Strategies, and Personal Adjustment. Behavioural and psychosocial adjustment to hearing impairment is considered to be measured by all 25 scales. The Personal Adjustment dimension is comprised of Self Acceptance, Acceptance of Loss, Anger, Displacement of Responsibility, Exaggeration of Responsibility, Discouragement, Stress, Withdrawal, and Denial. Correlations and multiple regression analyses were performed. The results indicated that audiological measures correlated moderately strongly with the CPHI Communication Performance scale. The further normal hearing extended across the measured frequency range, the fewer communication problems were reported. All the multivariate tests of the demographic measures were significant in contributing to adjustment (as measured on the CPHI instrument) to some modest degree. Sex effects were few and of small magnitude although females appeared to place greater importance on social communication and use nonverbal strategies more than males. Females also seemed to score lower in several areas of personal adjustment than males (lower self-esteem and higher anxiety). Increasing age was associated with decreasing communication demands although there was a suggestion that the age-adjustment relationship may be nonlinear with lower levels among the oldest and youngest individuals. Educational level correlated with adjustment although educational levels were noted to be not particularly well defined in the study. Employment status responses indicated that those who were employed had greater communication need and were more likely to communicate in adverse listening conditions than those who were not employed. Race/ethnicity produced only small correlations with Communication Performance and

Problem Awareness (both greater among Caucasian than African American individuals). Marital status did not produce any significant effects. From these results Erdman and Demorest (1998a) drew two conclusions: (a) the Communication Environment dimension on the CPHI is the most predictable aspect of adaptation assessed by that instrument, and Social/home Communication Importance dimensions together with the Acceptance of Loss (Personal Adjustment) dimension are the least predictable and, (b) psychosocial and behavioural adjustment cannot be predicted from the audiogram.

Although some demographic variables (such as age and level of education) correlated with adjustment to hearing loss, Erdman and Demorest (1998a) stated that “other variables that impinge upon this adjustment process clearly remain to be identified” (p. 133). Not only must those variables be identified but, they urged, their role must be fully explicated as well. They suggested that while variables such as the extent of hearing loss, age and educational levels are implicated in adjustment to hearing loss, it may be that they are related to a set of psychosocial variables rather than a simple biological marker (such as an audiological measure).

The evidence from the Erdman and Demorest (1998a) study confirms the findings of Knutson and Lansing (1990) who examined the relationship between communication problems and psychological difficulties among individuals with profound acquired hearing loss. The 27 consecutive candidates for cochlear implantation completed pre-surgery audiological and psychological assessment. The subjects of the study ranged from 22 to 71 years of age ($M = 49$, $SD = 15$) and had a bilateral, post lingual profound hearing loss and derived minimal benefit from hearing aids. Fifteen of the subjects were females and 16 were unemployed at the time of the assessment. The measures used were

the CPHI, the Minnesota Multiphasic Personality Inventory (MMPI), the Beck Depression Inventory (BDI), the UCLA Loneliness Scale, and the Social Anxiety and Distress Scale (SAD). Personal characteristics of the subjects were recorded for chronological age, age at onset of hearing loss, length of bilateral profound deafness and years of hearing aid use. The results indicated that the sample was more depressed, more socially introverted and somewhat more suspicious than the general population but no relationship was reported with the listed personal characteristics. Knutson and Lansing (1990) concluded that specific communication strategies and accommodations to deafness rather than deafness per se may contribute to some psychological difficulties. They also noted that any conclusions regarding mediating variables in psychological difficulties awaited further study at that time.

Herth's (1998) study is the first to describe the process of individuals adjusting to hearing loss using a phenomenological approach. The author sought to address the question "what is the lived experience of integrating a hearing loss into one's life?" Data from the interviews with 32 adults who had acquired a hearing loss was sorted into themes that seemed to be concerned with the same phenomenon. The recurring themes were assessed for credibility, transferability, dependability and confirmability as is standard for such methodology (Lincoln & Guba, 1985). The core theme of "dancing with" was used by the author to capture the participants' descriptions of the dynamic process of dealing with hearing loss. This theme was considered to reflect the constant movement and the necessity for those affected to learn to move with the changes. Herth (1998) found participants described four distinct themes: (a) dancing with loss and fear, (b) dancing with fluctuating feelings, (c) dancing with courage amidst change, and (d)

dancing with an altered life perspective. “All participants, regardless of age, sex, degree of hearing loss, educational level, or employment status, described that coming to terms with a hearing loss was often a long and lonely struggle that seemed for many to have no ending point” (p. 219). Throughout this process many individuals grappled with multiple losses, fear, isolation, and fluctuating emotions. While most of the participants learned to ‘dance with an altered life perspective’ and even found the hearing loss became a source of personal growth, there remained the on-going need for them to draw on internal resources of courage, resilience, humour and hope to adjust to new situational demands. Like Wright and Kirby (1999), Herth (1998) has focused on describing an experience and capturing a complex and dynamic process from the perspective of the hearing impaired individual. The implications drawn from this study are that practitioners dealing with people with hearing impairments need to ‘hear the stories’ and to understand the experiences, challenges, and complexities of hearing loss. However, it is noteworthy that the description of adjustment is not captured by specific variables of age, sex, degree of loss, educational level, and employment status. Herth (1998) concludes by suggesting that there is a need for further research to determine which strategies or interventions are most effective and at what point in the person’s process of integrating the hearing loss these should be employed. This latter remark indicates that there needs to be some means of establishing the nature and timing of the application of interventions. By implication this is likely to involve some quantitative measure.

Additional studies further illustrating the recurrent topics involved in adjustment are summarised in Appendix 2. Consistently repeated variables that demonstrate adjustment (or the lack of it) in a range of studies other than Dodds et al. (1991) and

spread across various health contexts are: (a) depression (Elliot, 1999; Elliot & Richards, 1999; Erlandsson & Halberg, 2000; Gallagher & MacLachlan, 1999; Karlsson, 1998; Lindo & Nordholm, 1999; Lumley et al., 1997; Rapp et al., 1997), (b) belief schemas (Conrad & Overbury, 1998; Elliot, 1999; Elliot & Richards, 1999; Elliot et al., 2000; Herth, 1998; Horowitz & Reinhardt, 1998; Lindo & Nordholm, 1999; Shapiro et al., 1997; Wright & Kirby, 1999), (c) attitudes to disability, including acceptance (Elliot, 1999; Erlandsson & Halberg, 2000; Herth, 1998; Horowitz & Reinhardt, 1998; Wright & Kirby, 1999), (d) loss (Bibby et al., 1996; Elliot & Richards, 1999; Gallagher & MacLachlan, 1999; Herth, 1998; Horowitz & Reinhardt, 1998; Rutman & Boisseau, 1995), and (e) coping strategies and self-concept factors (Belgrave, 1991; Bibby et al., 1996; Conrad & Overbury, 1998; Elliot, 1999; Gallagher & MacLachlin, 1999; Halberg et al., 2000; Lindo & Nordholm, 1999; Rutman & Boisseau, 1995; Wright & Kirby, 1999).

There is a dynamic tapestry of elements that influence adjustment. Understanding features of adjustment such as the extent to which people may or may not experience depression, the degree of acceptance, self-efficacy, or the nature of the attitudes to disability that they hold is challenging. A variety of approaches have been applied as evident in the following review of measurement of adjustment.

3.4. Measurement of Adjustment

Prior to engaging in the current study it is necessary to review how adjustment is measured. Adjustment is understood to be represented by the elements defined by Dodds et al. (1991) that have been cited on p. 39-40. That multidimensional conceptualisation is

supported in a range of studies. While adjustment is individually experienced and may be usefully described in qualitative terms (e.g. Herth, 1998; Thoren-Jonsson, 2001; Wright & Kirby, 1999), examining the extent of the influence of various dimensions is more appropriately achieved through analyses utilising quantitative measurements. The instruments used to measure some components of the adjustment process are varied and range from the long-established such as the MMPI personality measure, the General Health Questionnaire (GHQ-60 and short form GHQ-12), the Acceptance of Disability (AD) Scale, and the BDI measure of depression to other less well known such as the Coping Strategies Indicator, the Handicap Problems Inventory (HPI), and the Hospital Anxiety and Depression Rating (HADR) Scale. A number of researchers have constructed their own surveys (e.g. Conrad & Overbury, 1998; Karlsson, 1998; Kerr & Cowie, 1997; Herth, 1998; Rutman & Boisseau, 1995; Shapiro, 1997).

The 567-item Minnesota Multiphasic Personality Inventory (MMPI), (Hathaway & McKinley, 1943) has been used (or components of it) to assess outcomes for a variety of mental health issues. Similarly, the BDI (Beck, Ward, Mendelson, Mock & Erbaugh, 1961) has an established reputation as a measure of depression and is often used to measure that aspect of health outcomes. It is important to note that both of these well-known instruments were originally standardised on psychiatric patients and therefore may not be appropriate to assess affective and cognitive states in people facing a disability rather than a form of psychopathology. Generic measures of quality of life offer single instruments that assess a range of health variables to enable comparison across populations and interventions. Johnson and Danhauer (1999) remark that functional health status and overall quality of life measures may establish the effectiveness of

hearing aid benefits, particularly for the purpose of attracting health funding. However, while generic quality of life instruments may be useful in medical research they may lack the specificity desired for investigating psychosocial adjustment. The Psychosocial Adjustment to Illness (PAI) Scale (Derogatis, 1986) is a measure of psychological and social domains implicated in illness but, as implied, the measure has a health care orientation, which may not be appropriate to the current study that is concerned with psychosocial elements of an acquired disability rather than an illness. A commonly used approach has been for researchers to use a well-known instrument (or a subtest) to measure a component identified as intrinsic to adjustment. For example, Elliot and Richards (1999) used three subtests from the MMPI to measure denial, defensiveness and hostility, and the BDI to measure depression; Gallagher and MacLachlan (1999) used the short form of the GHQ to measure health factors and the Coping Strategy Indicator (CSI) to measure coping skills. Some instruments have been constructed to include affective, cognitive and behavioural components that are related to perceived adjustment. The Beliefs About Deafness (BAD) Scale (Spitzner, Leder & Giolas, 1993) addresses a range of factors related to what people may believe about deafness including (a) attitude to disability (e.g. item 2: If a deaf person had hearing he/she would most certainly have a happy life), (b) beliefs (e.g. item 28: Life is meaningless for the deaf person who can't work), and (c) identity (e.g. item 32: Losing one's hearing means losing one's self). However it is an assessment of an individual's understanding of the state of deafness at a given point, not a measure of adjustment. The Hearing Handicap Inventory for Adults (HHIA) (Ventry & Weinstein, 1983; Newman, Weinstein, Jacobson & Hug, 1991) is a 10-item instrument assessing emotional responses to hearing disability and identifying

contexts of communication difficulties. It has been used in the assessment of functional limitations of elderly/adult patients (e.g. Alpass, Long, Pachana & Blakey, 2001; Patterson, 1994) and is currently in use in research in audiological rehabilitation settings (Wark, 2000). While the HHIA is used in such settings it is essentially a screening instrument for functional communication handicap rather than a focused measure of psychological adjustment. This is reflected in the questions used, for example:

- Item 1 Does a hearing problem cause you to feel embarrassed when meeting new people?
- Item 3 Does a hearing problem cause you difficulty hearing/understanding co-workers, or customers?
- Item 4 Do you feel handicapped by a hearing problem?
- Item 8 Does a hearing problem cause you difficulty when listening to a TV or radio?

In this regard, the HHIA is similar to the Self Assessment of Communication (the SAC, Schow & Nerbonne, 1982); another 10-item measure intended to identify the problems hearing loss may cause people. It addresses various communication situations, the way people feel about communication and relationships with others. Examples of the questions used are:

- Item 2 Do you experience communication difficulties in situations when conversing with a small group of several persons?
- Item 5 Do you experience communication difficulties when you are in an unfavourable listening environment? (for example, at a noisy party, where there is background music, when riding in an

auto or bus, when someone whispers or talks from across the room).

- Item 8 Does any problem or difficulty with your hearing upset you?
- Item 10 Do others leave you out of conversations or become annoyed because of your hearing?

This instrument also has a companion version administered to significant others so that comparisons can be made of individual perceptions.

The CPHI referred to on p. 52 (Demorest & Erdman, 1986, 1987) is a 145-item self-assessment questionnaire that was developed to assess the rehabilitative needs of a hearing impaired population and includes environmental, behavioural, communicative and psychological variables. Although there has been some discussion of the validity of the instrument in view of the population that was used (military veterans) the general pattern of results has been reflected in later studies. The consistent findings are that communication performance is worst in social situations and best at home, communication importance is greatest at work and least in social situation, communication environment needs are more problematic than the attitudes of others, maladaptive behaviours are less frequent than adaptive behaviours, and that acceptance of hearing impairment is characteristic of those seeking audiological services (Erdman & Demorest, 1998a; Garstecki & Erler, 1996). The principal domains considered are Communication Performance, Communication Environment, Communication Strategies, and Personal Adjustment. Christopher, Jerram and Purdy (1999) suggest that a shortened version (29-item) of the CPHI may be of some clinical use. While this instrument may be useful for clinical screening, the current study aims to investigate adjustment variables

in depth rather than communication dimensions and the CPHI is rejected as too limited to achieve that purpose. It is also noted in the summary of the Erdman and Demorest (1998a) study (see above) that while the CPHI measured the communication environment well, personal adjustment dimensions were not well predicted from the results: an outcome that may be related to the limitations of the instrument for measuring psychosocial variables.

The Code Muller Protocols (CMP) (Code, Muller, Hogan & Herrmann, 1999) is a 10-item instrument designed to assess psychosocial adjustment in the face of a communication difficulty. It has considerable clinical utility (A. Hogan, personal communication, July, 2000). It aims to compare the interpersonal perceptions of psychosocial adjustment to aphasia but has been used in laryngectomy and acquired deafness and contains items which address identified adjustment variables, for example:

- Item 5 Do you think the ability to cope with depression due to the [whichever condition applies] will: get much worse; get a little worse; stay the same; improve a little; improve a lot?
- Item 8 Do you think the ability to cope with frustration due to the [whichever condition applies] will: get much worse; get a little worse; stay the same; improve a little; improve a lot?

While this instrument addresses aspects of psychosocial adjustment identified by the above literature and is 'user friendly' it was designed to compare individual perceptions "and its function was not to diagnose and quantify psychological changes or adjustment or the emotional responses to impairment or disability" (Code et al., 1999, p. 194). The CMP have not been validated, at this point, as a measure of intrapersonal psychosocial

adjustment (C. Code, personal communication, July, 2000). Despite the appeal of the concise nature of the instrument, the unequivocal statements by the author of the CMP indicate that the CMP would not be an appropriate measure of adjustment for the purpose of this study.

The factors that are consistently referred to in the literature on adjustment include a sense of affective equilibrium, appropriate cognition, a satisfactory self-esteem, a perception of personal competence, general health factors and adequate social participation and relationships. These factors are addressed in the NAS. As outlined above (see p. 38-40), the NAS was derived from the factor analytic work of Dodds, et al. (1991). This scale is a 55-item self-report assessment of adjustment to an acquired disability covering seven factors based on psychological variables identified by Dodds (1989) as implicated in adjustment: depression, self-esteem, attitudes, locus of control, acceptance, self-efficacy, and attributional style. The Cronbach Alpha coefficients on the seven subscales ranged from 0.72 to 0.92. The NAS was originally designed as a measure of adjustment to acquired visual loss (Dodds et al., 1991) and is featured in a prominent text on psychosocial adjustment to disability (Livneh & Antonak, 1997) as one of the accepted measures of adjustment to visual impairments. A recent study (Dersh, 1996) used the NAS to anchor the measure of psychological well-being of 61 visually impaired adults while repeated measures of functional skills were made. Another recent study in the Netherlands (Kef, 2002) used the subtest relating to acceptance from the NAS in a nationwide study to assess the psychosocial adjustment of Dutch adolescents with visual impairments. This was considered to be particularly useful for assessing self-acceptance of the participants encountering the demands of adolescent identity

development, wish for independence, peer acceptance, and negative attitudes of others. The subtest was used in a structural equation model to assess psychosocial adjustment. In a personal communication the principal author of the NAS endorsed the adaptation of the instrument for use with people with acquired hearing loss (Dodds, 21 January 2000). For the purpose of this study, the NAS provides an assessment measure that is grounded in a robust and tested theory of adjustment.

The literature demonstrates that a range of variables may influence the level of adjustment experienced by an individual. As indicated above, various studies have used specific personal dimensions as variables in examining features of adjustment.

3.5. Disability, Individual Characteristics, and Adjustment

Despite some diversity there is a considerable degree of commonality in the conceptualisation of adjustment. The restoration of a sense of equilibrium is a broadly shared understanding. How this sense of equilibrium might be achieved is another issue. Elements of the disability itself may influence adjustment processes. For example, the degree of hearing loss or the extent of communication impairment may be considered significant variables in the restoration of equilibrium and there is some evidence to support that view (e.g. Erdman & Demorest, 1998a). However, simply restoring function may not necessarily result in adjustment (e.g. Kerr & Cowie, 1997) and even the means of restoration might exacerbate a sense of disequilibrium as demonstrated by the 'hearing aid effect' (Blood, 1997) discussed in chapter two. The literature reviewed in chapter two and earlier in this chapter supports the view that adjustment is likely to require other elements in addition to restorative mechanisms. It is noted that clusters of individual

characteristics are similar among individuals who successfully accommodate various kinds of trauma in their life such as natural and human disasters (e.g. McMillen, Smith & Fisher, 1997) or loss and death (Park, Cohen & Murch, 1996; Tedeschi & Calhoun, 1995). The evidence “suggests that benefit-finding has more to do with characteristics of the individual than with characteristics of the event” (Nolen-Hoeksema & Davis, 2002, p. 604). Comprehending what individual characteristics are significant variables in promoting adjustment to disability is clearly desirable.

A number of sociodemographic variables have been noted in the Livneh et al. (1999) study mentioned previously (see p. 46). These are included in the Livneh (2001) model of psychosocial adaptation to chronic illness and disability that provides a classification of contextual variables likely to be implicated in that process. The variables are those associated with: (a) the condition itself (e.g. type, severity, duration, visibility, medication), (b) sociodemographic characteristics (e.g. age, sex, ethnicity, marital status, occupational classification), (c) psychological attributes (e.g. self-concept, optimism, beliefs, coping styles, locus of control), and (d) external environment characteristics (e.g. isolation, mobility, social support, social stigma, medical services, financial resources). The application of this model in the Livneh et al. (1999) study produced evidence of a significant relationship of age variables and some condition-specific variables (time since amputation and type of amputation) to the reported level of adjustment. Other demographic variables such as sex, marital status, and educational level were not significantly related to adjustment. By contrast, Elliot et al. (2000) reported that the level of adjustment in their sample of people with SCI was not significantly associated with the suddenness of onset, the severity of the condition, or the

degree of handicap imposed by the environment the person functioned in. Similarly, Horowitz and Reinholdt (1998) constructed their measure of AVL on the assumption that age is a significant variable in adjustment to disability, yet it was not found to be so in the Gallagher and MacLachlan (1999) study (see Appendix 2). Moreover, Kerr and Cowie (1997) report consistent experiential features in adjustment that are widespread over a large group of people of varying ages while Lindo and Nordholm (1999) found some variation in the type of strategies used by working-age people with low vision compared to an elderly low vision group, but also found use of a wide range of strategies across all their age-determined study groups.

Of particular interest to the context of hearing loss is the Kerr and Cowie (1997) study which considered demographic and audiological characteristics including age, sex, degree of loss, age at onset of loss, and use of supportive technology as core variables in their investigation of experiential features of acquired hearing loss. While the degree of loss was supported as a contributing factor in some aspects of the perception of impact other undefined psychological variables were suggested as potentially significant variables.

The study of 1,008 hearing impaired people by Erdman and Demorest (1998a) reported multivariate analyses on the interactions among data from clinical records, audiometric tests, the CPHI, and demographic variables. The demographic features pertinent to their study were age, sex, ethnicity, level of education, employment status, and marital status. They report that age and level of education are correlated with adjustment to hearing impairment but these correlations do not permit prediction of individuals likely to experience difficulties. One variable for consideration is the extent

of hearing impairment since it would be expected that a greater loss would involve greater need for adjustment. Further recommendations by Erdman and Demorest (1998a) include health status, social support, marital satisfaction, the use of assistive devices and factors related to the onset of deafness. Like Knutson and Lansing (1990), they note that other variables that affect communication and are involved in the adjustment process are yet to be identified. They suggest that those variables they found to be significant might be better understood as part of an unspecified set of psychological variables that affect the level of adjustment rather than as discrete biological markers. The individual and disability variables selected for the current study (age, sex, age at onset, degree of loss, time since onset, use of technology, and use of services) are informed by the above literature and detailed on pages 109-111.

Individual and disability variables sometimes are significant in explaining the reported level of adjustment among people who have experienced a disability. However, they do not provide an unequivocal explanation and the frequently extensive struggle to restore a sense of equilibrium is suggested as occurring regardless of age, sex, degree of loss, educational level or employment status (Herth, 1998). It is possible that, as Erdman and Demorest (1998a) suggest, such variables may be better understood as contributing to a larger set that has a dynamic relationship with adjustment. Typically, individual characteristics and disability variables represent what has been established in a person's life history: the current existence is determined by the past. However, the literature repeatedly alludes to the fact that individual perceptions of the present are influenced by perceptions of the future. Depressive schemas are characterised by a sense of hopelessness (Young et al., 1993), and coping with life challenges must include dealing

with the loss of future hopes and plans (e.g. McIntosh et al., 1993; Silver & Wortman, 1980). People appear to benefit from establishing a sense of meaning in their life and a sense of control over the environment, disability and future (e.g. Kendall & Buys, 1998) and this is reflected in goal setting strategies (e.g. Elliot et al., 2000; Stephens, 1996). Given that the impact of a challenging event or condition is determined to a large extent by personal perceptions and beliefs, a sense of what is a desirable future is implied. What individuals believe they could become may affect their ability to adopt new ways of being and living. A future orientation is intrinsic to 'coping'. It is also a fundamental component in the concept of hope. The commonly used individual characteristic and disability variables may influence the extent to which an acquired hearing loss has an impact on an individual but they do not provide a complete explanation of adjustment to such a loss. Among the individual characteristics that are associated with adjustment, it is likely "that people high on dispositional hope would be precisely those people who go searching for benefits in their losses" (Nolen-Hoeksema & Davis, 2002, p. 603). The role of hope as a key individual characteristic in the adjustment to acquired hearing loss requires examination.

3.6. Conclusion

A well adjusted individual with a disability, according to the literature, would have: low levels of anxiety, absence of depression, high self-esteem, high sense of self-efficacy, high sense of responsibility, and a positive attitude. The process of adjustment to a chronic illness or a disability involves a redefinition of the self against a unique backdrop of biological, psychological and social components. Successful engagement in

this process will result in the individual revising their scope of values and adopting new ways of being and living in their world so that despite a disability they can truly declare 'I am a whole person'.

The literature indicates that the schemas the individual holds influence the individual perception of the impact of the loss and that the individual perception is more predictive of the impact than the severity of the condition (Elliot et al., 2000; Goodheart & Lansing, 1997; Heijmans & De Ridder, 1998; Pain et al., 1998; Rapp et al., 1997; Troster, 1998). This is evident in adjustment to a range of disabilities (e.g. Elliot, 1999; Gallagher & MacLachlan, 1999; Kendig et al., 2000; Roberts, 1973) and specifically, hearing loss (Blood, 1997; Kerr & Cowie, 1997; Stephens et al., 1999). An acquired hearing loss is one form of disability in which the affected individual may be confronted with challenges to the personal schemas they hold since the loss has an effect on how the person functions in society, maintains interpersonal relationships and consequently creates a sense of self. The literature indicates that the adjustment process has a dynamic and recurrent nature (Elliot et al., 2000; Kendall & Buys, 1998; Newsome & Kendall, 1996). The Kendall and Buys (1998) analysis of psychological challenges following acquired disability identifies three themes: developing meaningfulness; self-efficacy; enhancing self-esteem. This is similar to the Dodds et al. (1994) model that identified two latent factors in psychological adjustment to disability: internal self-worth and self as agent.

A range of measures has been used to quantify adjustment. Some have originated from work in psychopathology or are more oriented towards illness and health care than adjustment to disability. Instruments developed for use in the context of hearing

impairment may measure views of deafness or communicative issues rather than adjustment. The Dodds et al. (1991) study provides a conceptual and empirical foundation for understanding adjustment as well as providing an instrument for assessing levels of adjustment.

There are a number of variables that may influence the degree to which an individual is able to achieve an acceptable sense of equilibrium. Age appears to have had some minor relationship to programme adherence (Elliot et al., 2000), and a definite influence in intervention emphases in the Horowitz and Reinholdt (1998) study. In adjustment to hearing loss, aspects of age characteristics appear to have a correlation with adjustment in some way (Erdman & Demorest, 1998a). However, age is not a significant factor in other studies in adjustment (e.g. Gallagher & MacLachlan, 1999). Adjustment does seem to take time (e.g. Bibby et al., 1996), but is better understood as an on-going process rather than a time-determined state (e.g. Kendall & Buys, 1998). The nature of the loss may have some influence on adjustment as in, for example, traumatic amputations (Elliot et al., (2000), or the variations in communication difficulties noted by Erdman and Demorest (1998b). The degree of hearing loss is a pertinent variable that influences communication patterns and relationships (Erdman & Demorest, 1998a; Kerr & Cowie, 1997). Some consideration of use of supportive technology and time since loss has been given in the studies reviewed (Erdman & Demorest, 1998a; Kerr & Cowie, 1997; Knutson & Lansing, 1990). However, as noted by Erdman and Demorest (1998b), variables other than individual characteristic or disability elements influence the process of adjustment to acquired hearing loss. The wider literature is very consistent in supporting the view that individual perceptions are significant influences in adjustment

and an individual characteristic common among studies of adjustment to traumatic challenges is a positive perception of the future. It could be that adjustment to an acquired disability may be not only a product of the past, but it may also be a product of the individual's perception of their future. Therefore it is appropriate to explore the understandings of hope, how it is defined, measured, and may influence the process of adjustment.

4. Hope: Potential To Be

4.1. Introduction

Human experience is inherently bound to time. The subjective perceptions of the past, the present, and the future are inter-related. Therefore what a person considers is 'yet to be' may influence his/her attitudes about the present experience and interpretations of past experience. Sanna, Stocker and Clarke (2003) comment that "imaginative thoughts about the past and the future ... inexorably intertwine and intermingle with those of our present, determining varied reactions such as affect and emotions and future behaviours" (p. 105). Hope for a future state of being is inseparable from the process of adjustment from 'what was' to 'what is'.

A body of literature explaining the role of hope in human experience over the lifespan has evolved from the 1950s (see review in Magaletta & Oliver, 1999). Erikson (1963) maintains that hope in human development is a legacy of attachment and is "the enduring belief in the attainability of fervent wishes" (p. 118). At the earliest stages of life (prior to the emergence of language) enduring beliefs are formed about the extent to which wishes or intentions are attainable. These formative experiences are integral to identity development. The role of a positive future orientation in later life is supported as beneficial to overcoming challenging circumstances (e.g. Elliot, Kurylo & Rivera, 2002; Pulkkinen & Ronka, 1994) and is beneficial to a person's health in the widest sense (Nekolaichuk, Jevne & Maguire, 1999). In one of the classic works on existential psychotherapy, Yalom (1980) states that "psychotherapy is successful to the extent that it allows the patient to alter his or her future" (p. 346). He also notes that at both the

conscious and unconscious levels there are future-oriented constructs such as a sense of purpose, an idealised self, a series of goals, an awareness of destiny and these powerfully influence inner experience and behaviour. Following a succession of studies of hope and vulnerability, Nunn (1999) considers that hope may be “of central importance in mind-body interactions” (p. 152). Snyder (1994) reports that studies of people with spinal cord injuries and another of arthritis sufferers indicate that patients with higher levels of hope make a better adjustment to their difficulties.

A considerable amount of literature has developed around concepts related to hope such as motivation (e.g. Weiner, 1992); expectations (e.g. Bandura, 1977, 1982, 1986; Peterson & Vaidya, 2001) and hopelessness/optimism (e.g. Seligman, 1990). “Psychotherapy researchers have come to view hope as a shared aspect of many therapies” (Irving et al, 2004, p. 423) and practitioners have found that working to construct a hopeful future with clients generates practical and positive directions for the present (e.g. Altmaier, Russell, Kao, Lehmann & Weinstein, 1993; Beck, 1994; Chang, 1999; Kent, 1995; Pearpoint, O’Brien & Forest, 1993; Roessler & Rumrill, 1994; Stone, 1998; Strauser, 1995). Lazarus (1999) maintains that hope is a “vital psychological resource in our lives; without it, there would be little to sustain us” (p. 1). The relevance of such a resource for adjustment to an acquired disability is apparent.

4.2. Defining Hope

Benzein and Saveman (1998) carried out a concept analysis on hope using over 100 references in the literature to establish the critical attributes. These attributes are stated as: (a) future orientation, (b) positive expectation, (c) intentionality, (d) activity, (e)

realism, (f) goal-setting, and (g) inter-connectedness. Factors incorporated in the concept of hope have been summarised even more succinctly by Nunn, Lewin, Walton and Carr (1996) and Nunn (1999) and include: (a) future orientation, (b) desirability, and (c) expectancy (subjectively anticipated likelihood of attainment). Nunn (1999) provides a parsimonious definition that is consistent with the wider body of literature when he states that hope “is that general tendency to construct and respond to the perceived future positively. The *hopeful* person subjectively assesses what is desired for the future to be *probable or so important* as to constrain belief and behaviour to be grounded upon its *possibility*.” (p. 153, author’s italics). There are various models exploring the concept of hope and some of the literature is briefly outlined below.

Snyder et al. (1991) introduced a conceptualisation of the construct of hope to psychological literature and emphasised the dual components of hope: the sense of agency (will), and the perception of pathways to achieving desired goals (way). Snyder (1994, 1995, 2000) further refined this model of hope. Snyder (1994) defines hope as “the sum of mental willpower and waypower that you have for your goals” (p. 5). This definition is comprised of (a) *goals*, something a person desires to obtain (such as an object) or attain (such as an accomplishment), (b) *willpower*, the mental energy involving determination and commitment to initiate and sustain actions directed at a desired goal and, (c) *waypower*, the capacity to identify, plan or generate means to effect the desired goals. Closer examination of these components by Magaletta and Oliver (1999) established that while ‘will’ has some relationship to self-efficacy it constitutes a separate element. The ‘will’ appears to encompass the cognitive sets that might reflect a positive future orientation and includes self-efficacy, optimism and well-being. ‘Ways’ has only

weak links to optimism and is more similar to problem-solving confidence and generation of alternatives (Magaletta & Oliver, 1999). The work of Elliot (1999) provides a similar analysis to the 'will' and 'ways' concept of Snyder (1994) when he writes in terms of problem orientation and problem-solving skills. The former is presented as being comprised of beliefs and expectancies while the latter relates to the cognitive-behavioural skills of problem solving. Elliot (1999) concludes that the problem orientation component is significantly predictive of disability acceptance and that prior distress, severity of disability or individual characteristics do not mediate this relationship. It also appears that problem-solving skills are associated with problem orientation in that the lower the level of distress the more likely the individual is to engage in affective problem solving.

While goals, 'willpower', and 'waypower' capture the essence of the Snyder et al. (1991) understanding of hope, Snyder (1994) has provided some exclusions. He maintains that hope is not:

- Wishful optimism as this does not necessarily provide critical thinking or plans for the desired future;
- Learned optimism as this is a style of explaining events so that the individual is distanced from failure (see also, Peterson & Seligman, 2004);
- A behaviour pattern such as typified by 'Type A' people who are strongly goal oriented. Snyder (1994) draws the distinction of a high hope person as goal oriented but also focused on the process that leads to goal achievement;
- Emotion and self-esteem as these elements are a by-product of affective pursuit of desired goals.

- Intelligence or previous achievement as hope is a learned way of thinking about oneself in relation to goals;
- Vague since hope is a specific way of thinking about one's sense of self and goals.

While the Snyder model is well defined and has demonstrated utility (e.g. Michael, Taylor & Cheavens, 2000, Taylor, Feldman, Saunders & Ilardi, 2000) other perspectives are also well developed. In summarising his theoretical perspective after several decades of work in the area of stress, emotion and coping, Lazarus (1999) outlines a form of 'modified subjectivism'. This incorporates three themes: (a) ongoing individual appraisal of wellbeing and significance, (b) coping (thinking, feeling and acting) and, (c) constructing meanings through the relationship between environmental conditions and personality. Against this thematic background Lazarus (1999) believes it impossible to address hope without considering despair, helplessness, hopelessness and depression. Lazarus (1999) indicates that the meaning of hope must include dimensions beyond those presented by cognitive-mediational thinking. A second feature of hope according to Lazarus (1999) is the role it plays in activating coping strategies whereas despair undermines such mobilisation of resources. Although he concurs with the Snyder et al. (1991, and Snyder 1994, 1995) view of hope as a trait, Lazarus (1999) does challenge the tendency to equate hope with successful agency because people can hope when helpless to effect outcomes. Hope "provides the grounds for our continuing engagement in life, even when there is only a slender thread of hope on which to rely" (p. 15). Self-efficacy assists problem-focused coping but is not essential to hope. Lazarus (1999) would dispute Snyder's (1994) contention that hope is not an emotion because, in his view, it is a

response to goal outcomes and also involves a change in the intensity of an individual's mental state (see also Scioli et al., 1997).

Like Lazarus (1999), Nunn (1999) incorporates despair in his understanding of hope and acknowledges the individual variability of different determinants. Nunn (1999) holds that a hopeful person subjectively assesses a desirable future so that belief and behaviour are influenced by the possible attainment of that future. Therefore the components of hopefulness include: mastery, meaningfulness, social support, self-esteem, optimism, and subjective wellbeing. Nunn et al. (1996) operationalized this conception of hope for clinical use (see later discussion) by the development of an instrument that provides a means of addressing an individually perceived future that accommodates subjective evaluation of multiple dimensions that may engender hope and/or despair.

Nekolaichuk et al. (1999) point out that hope is a highly individualised experience and this complicates the development of a model that adequately encapsulates hope. Nekolaichuk et al. (1999) offer another multidimensional model for the concept of hope in health and illness by postulating that it is comprised of three dimensions: (a) intrapersonal, (b) ecological, and (c) interpersonal dimension (see below). Just as Elliott and Olver (2002), question the usefulness of a definitive definition of hope and suggest focusing on a more subjective 'hope-in-action', so too Nekolaichuk et al. (1999) avoid defining hope. Nekolaichuk et al. (1999) believe that "the intangible qualities of hope are grounded in the uniqueness of experience – qualities that may be difficult to describe in words" (p. 592) and therefore suggest a framework intended to identify different components to promote individualised hope-enhancing strategies. The model they propose is distinctive for offering a three dimensional framework of measurement that

captures the nature of hope rather than a measurement of uni-dimensional amount. This aspect of the model addresses the view of Nunn (1999) that an accurate method of identifying defective dimensions of personal hopefulness “may provide a meaningful basis for choosing and integrating various treatment strategies” (p. 167). The study by Nekolaichuk et al. (1999) established that the personal dimension of hope is the dominant component and that this dimension revolves around the core theme of meaning.

Although there are differences among the models mentioned above, there are areas of consensus such as the multidimensional nature of hope, the role of affect, cognition and social/environmental factors. Additionally, the construct of hope appears to be similar cross-nationally and cross-culturally (Peterson & Chang, 2003).

As noted above, Snyder (1994, 1995, 2000) views emotion as a by-product of the pursuit of goals. Lazarus (1999) states that hope is an emotion because it arises “from a strong desire to be in a different situation than at present” (p. 7). He maintains that given the definition of emotion as physiological activation, hope increases activation or mobilises action. In a similar manner, Nunn (1999) accommodates the motivating aspect of emotion and bases his model on the assumption that hope includes desirability. The desire for a ‘wished-for’ future impels pursuit of that goal. But hope is not to be confused with optimism from which it is empirically distinguishable (Magaletta & Oliver, 1999; Snyder, 1995). While hope includes a belief that there is a desirable and achievable future state it also accepts the possibility of a negative outcome. By contrast, optimism is usually defined to exclude such a possibility (c.f. Lazarus, 1999; Snyder, 1994, 1995, 2000). This distinction is important as hope presents a reality-based awareness of the subtle and complex conditions of human experience that can include

despair and its emotional concomitant, depression. The distinction also has practical significance for personal wellbeing. An overly optimistic bias can distort realistic perception of health risk (e.g. Peterson & Vaidya, 2001; Peterson & Vaidya, 2003). For example, an optimistic explanatory style among the elderly is predictive of depression following stressful events (Isaacowitz & Seligman, 2001). In their study, Scioli et al. (1997) noted that the scores reported on a measure of hope were a more robust predictor of reported health outcomes than optimism. Scioli et al. (1997) regard optimism as a cognitive variable addressing generalised beliefs about positive outcomes and dependent on ego strength and an internal locus of control. However, hope is seen as an affective variable motivating action and thoughts that is less dependent on rationality and ego and more open to the influence of external factors and beliefs.

Snyder (1994) suggests that hope is a process that constantly involves personal reflection on desired goals, which in turn influences behaviour (i.e., "how we think about and interpret our external environment is the key to understanding hope" p. 12). The role of reflection is apparent in the analysis of hope presented by Morse and Doberneck (1995). That analysis inductively identified the attributes of hope as: (a) a realistic initial assessment of the 'threat', (b) the envisioning of alternatives and resetting of goals, (c) bracing for negative outcomes, (d) realistic assessment of available resources, (e) acquiring personal and external resources, (f) evaluating indicators that reinforce the goals, and (g) determination to endure. Morse and Penrod (1999) suggest that, according to their model, moving from suffering to hope via 'acceptance', an individual consciously holds emotions in check while processing an action plan to achieve the desired goal. In reviewing the acceptance of loss theory, Keany and Glueckauf (1999) note the common

perception of disability as a misfortune or 'value loss'. 'Acceptance' of loss therefore requires a restructuring of the affected individual's value system to accommodate the changes related to disability (see also Elliot, 1999). Since a value is defined as "an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" (Keany & Glueckauf, 1999, p. 147) the factors of hope (future orientation, goals, desirability and expectancy) are implicit. Given that hope involves aspects of an individual's beliefs it may become more relevant in paradoxical circumstances. Scioli, et al. (1997) note that "even where personal control is impossible and optimism fades, hope may remain and perhaps even flourish in the presence of collaborative or external control beliefs" (p. 732). Inevitably, cognitions and beliefs may be influenced by social/environmental factors.

Nekolaichuk and Bruera (1998) acknowledge the personal dimensions of hope but also emphasise the need to include ecological elements. Ecological components were supported in the Darlington and Bland (1999) study that highlighted the role of support people in offering knowledge, working within the client's frame of reference and focussing on clients' strengths in addition to the intrapersonal elements such as achievement, anticipation and sense of the possible. This is accommodated in Snyder's (2000) most recent formulation of hope that adds the factor of social support to the above conceptualisation. Nunn (1999) cites research that demonstrates that hope may be learned through environmental contributors and this is further supported by the Magaletta and Oliver (1999) study, which confirms the problem solving nature of 'ways' (see above) as a major component of hope. Russinova (1999) also underscores the role of

supportive relationships in promoting personal hopefulness on the basis that “hope is something that occurs between persons in the context of a relationship” (p. 51). This view emphasises the importance of the beliefs and behaviours of both professionals and significant others engaged with the person. For example, May (1999) believes that a key component in counselling is viewing suffering as one of the potentially most creative forces and that therefore the counsellor should utilise suffering as a means of generating the ‘wish’ to activate the will to change. This has some relevance to the findings of Benzein and Saveman (1998) who note that the antecedents of hope as reported in the literature are: stressful stimuli; loss; life-threatening situation; temptation to despair (see also, Lazarus, 1999). However, the perception, interpretation, and use of challenging circumstances are likely to be filtered through wider social influences. This observation is supported by the Elliot and Sherwin (1997) study that notes familial and cultural dynamics play a major role in the development of hope and this may have implications for clinical interventions, particularly in a collectivist culture. As Elliot and Sherwin (1997) point out, individuals from a collectivistic social grouping are more attuned to external and situational effects on personal behaviour with corresponding differences in health, adjustment and responsibility. The standing or identity of the individual’s culture can be reflected in the relationship between collective self-esteem and hope (i.e. higher hope is positively correlated with ‘how good one’s social groups are’). The strength of a cultural identity may provide a person with a sense of meaning because it encapsulates a past, a present and a future. There is also an indication that the nature of any group intervention may be influenced by individual factors.

4.3. Studies and Contexts of Hope

Menninger (1959, cited in Nekolaichuk et al., 1999) challenged the medical community to address the validity of hope in human development. Since then, health care practitioners have increasingly acknowledged the importance of this concept (e.g. Kodish & Post, 1995). For example, Frankl (1984) reviewed his philosophy and practice of psychiatry and highlighted the role of hope in the field of mental health. The origin of neuroses, according to Frankl (1984) could be located in the lack of meaning in an individual's life. Establishing a sense of meaningfulness in one's experience of the world and the attendant perception of an acceptable future are therefore protective factors in mental wellbeing. Some representative studies illustrating the exploration of hope in broad health contexts are now examined.

The study by Greer, Morris and Pettingale (1979, cited in Steptoe & Wardle, 1994) provided a stimulating watershed in the acknowledgement of psychological factors in managing cancer. They evaluated the psychological adjustment of women with breast cancer three months after mastectomy. The women were categorised as showing denial (17%); fighting spirit or vigilant optimism (17%); stoic acceptance (56%) or hopelessness (9%). After five years only 10% of the women in the first two categories had died compared to 31% of the 'stoics' and 80% of those who had been categorised as presenting hopelessness. The findings persisted in a 10 year follow-up study. Similarly, Langer and Rodin (1976, cited in Steptoe & Wardle, 1994) demonstrated that nursing home residents who were given increased perceived control over life in the home enjoyed significantly better health than residents who received the same privileges passively. Indeed the mortality rate of the intervention group was 15% compared to 30% of the

comparison group. This perception of control illustrates the role of personal agency, one of the components of the construct of hope (e.g. Nunn, 1999; Nunn et al., 1996; Snyder, 1994; Snyder et al., 1991).

Elliot and Kurylo (2000) present a case study of hope in the context of an acquired disability. A young woman (aged 16) had been involved in a serious accident that resulted in a severe closed head injury, facial scarring, internal injuries, and severe leg injuries. She survived the trauma but was left with some neurological difficulties and impaired mobility. Elliot and Kurylo (2000) review the young person's adjustment over the first year following the accident from the conceptual perspective of hope. They note the role of beliefs in supporting family resilience immediately following the accident. This provided the family with a sense of meaning and direction as well as buffering them from extreme distress. The family were able to apply problem-focussed coping strategies. Once the young woman's condition had stabilised there was a period when her own goal orientation was dissimilar to that of the rehabilitation specialists. Some of those professionals described this as her 'being in denial', although the family disputed that and while not denying the disability, persisted in refusing to give credence to the suggested implications of the condition. An on-going dilemma was apparent with regard to the amount of tangible support that was provided by the family and other professionals compared to the functional independence the young person wanted or was able to attain. The young woman demonstrated instances of redefining her goals, utilising practical support measures, and reflected on her own interpretation of a sense of meaning. In conclusion, Elliot and Kurylo (2000) endorse the utility of applying the construct of hope to identify the kind of interventions that are likely to be useful to those who face

adjusting to life with a disability.

Nekolaichuk et al. (1999) surveyed 550 people (146 healthy adults, 159 adults with chronic and life-threatening illness, and 206 nurses) using a semantic differential technique to assess the nature of hope rather than the amount of hope. Through a principal components analysis they defined three primary factors of hope (personal spirit, risk, and authentic caring). This model is able to explore the complexity of the subjective meaning of hope, however, it does not explain the extent of the influence of hope on adjustment nor is it predictive of the effectiveness of specific interventions. Those qualities are more apparent in the work of Elliot, Witty, Herrick and Hoffman (1991).

Elliot et al. (1991) investigated the relationships between hope, depression and physical disability using a correlation analysis. The objective of the study was to examine the relationship of hope to the psychological adjustment of people with acquired physical disabilities who varied in the length of time since the onset of the disability. A group of 45 males and 12 females with traumatically acquired SCI involved in rehabilitation programmes at four different centres participated. The average age was 36 years (range 18 years to 83 years). The predictor variables in this study were: (a) the Adult Dispositional Hope Scale (ADHS developed by Snyder et al., 1991), and (b) time since injury. The criterion variables were the Inventory to Diagnose Depression and a subscale of the Sickness Impact Profile (SIP). Correlations were computed among all the variables and multiple regression analyses were performed to examine the relationships between hope, time since injury, and the criterion variables. The first regression analysis indicated that time since onset of injury was not significantly predictive of depression ($F(1, 55) = 1.81, ns$), hope was significantly predictive of lower levels of depression (F_{inc}

(2, 53) = 4.91, $p = .05$) and accounted for 15% of the variance in the depression scores. The interaction of the predictors was not significantly predictive of depression ($F_{inc}(2, 51) = 1.91, ns$). The second regression analysis tested predictions regarding the relationship of hope with psychosocial impairment. The time since injury was not significantly predictive of impairment ($F(1, 55) = .38, ns$), but the level of hope people reported was ($F_{inc}(2, 53) = 5.09, p = .01$) and accounted for 22% of the variance in impairment scores. The interaction term was significantly predictive of impairment ($F_{inc}(2, 51) = 8.04, p = .01$) and accounted for an additional 19% of the variance in the impairment scores. The findings support the views that: (a) hope is predictive of depression and psychosocial impairment among people with acquired physical disabilities, and (b) there is no meaningful association between chronicity and psychological indices of adjustment.

Russinova (1999) reviewed literature on factors involved in psychiatric rehabilitation and claims that hope is “a major factor facilitating the recovery process” (p. 51). Darlington and Bland (1999) support this claim in their investigation of the role of hope with people living with serious mental illness. They conducted in-depth semi-structured interviews with six mental health professionals and six consumers. Five of the mental health workers were female and one male. Five were social workers and one was a psychologist. They were aged between 29 years and 48 years ($M = 38$) and had been working in the field for between 3 and 20 years ($M = 11$ years). Four of the consumers were males and two females. They were aged 34 years to 47 years ($M = 40$). Details of the consumers’ health condition were provided as well as some education history. The interviews averaged about 40 minutes each. The strategies that were identified as

beneficial included: working within the client's frame of reference, focusing on the client's strengths, acknowledging small gains, making links to past gains, being genuine, helping clients to understand their illness, understanding the importance of achievement, and holding on to hope when the client has none. Darlington and Bland (1999) found that the clients "knew all too well the importance of hope" (p. 20) and the practitioners also reported that "having a sense of hope is really, really important" (p. 20) in promoting healthy functioning, a greater sense of control, and personal happiness. The study is of interest in exploring hope and the value of hope in the treatment and recovery process, including the role of significant others. It is also interesting that (not unlike Dodds et al., 1991) the authors note the importance of both client competence and relational elements. This work confirms other studies in the area of mental health. For example, Johnson, Han, Douglas, Johannet and Russell (1998) report that in their study of depression among psychiatric patients "attributions for positive events predict decreases in depressive symptoms through the mediation of decreases in hopelessness" (p. 374). This study endorsed the findings of Needles and Abramson (1990) who suggested that causal attributions and increased hopefulness may contribute to the recovery from depression among patients undergoing antidepressant treatment. Similarly, in a study on hopelessness in depressive behaviour, Kapci (1998) concludes, "the inference of negative characteristics about the self from negative life events coupled with the experience of negative life events contributes to the development of depression through hopelessness" (p. 355). By contrast, Sherwin et al. (1992) report that hope allows an individual to reinterpret their situation into one that can be managed and that a hopeful person may find otherwise stressful encounters as growing experiences that enhance self-perceptions.

The sampled studies and associated literature illustrate the variety of approaches to investigating hope. There can be a number of conceptual and practical approaches often influenced by the objective of the research as, for example, in the Nekolaichuk et al. (1999) examination of the nature of hope compared to the Elliot et al. (1991) study of amounts of hope. While the role of hope has been investigated in a number of health contexts, no studies have specifically done this in relation to acquired hearing loss. The objective of this current study is to investigate (in the context of acquired hearing loss) the relationship to adjustment of individual and disability characteristics (age, sex, age at onset, time since onset, degree of loss, and use of interventions). The literature supports the view that hope (or the lack thereof) may be an individual characteristic that affects adjustment. Therefore some consideration is required of the means of measuring hope.

4.4. Measurement of Hope

As in the case of the measurement of adjustment, some instruments have been used to measure constructs related to hope although they were not specifically designed for that purpose. For example, Beck, Weissman, Lester and Trexler (1974) developed a measure of hopelessness that assesses negative expectancies. By inference there must be an inverse relationship with positive expectancies. However, as Nunn et al. (1996) argue, hopelessness (or a state of being without hope) does not adequately encompass that future expectancies may be positive (hope) or negative (despair). There is no capacity in the Beck et al. (1974) instrument to measure reduced (negative) or positive expectancies. This measure may support findings related to hope but it cannot be adequately presumed to accurately measure that construct.

Scheier and Carver (1985) developed a measure of dispositional optimism that is sometimes used to assess hope. There is a question about the value of some of the items in the measure and criticism of the model (Nunn et al., 1996). The Nowotny Hope Scale (the NHS, Nowotny, 1988) is a measure intended to directly measure the construct but it may be challenged on the basis that it does not distinguish expectations from wishful thinking or discriminate the present from the future. It is judged to have little theoretical and clinical utility (Nunn et al., 1996).

The ADHS (Snyder et al., 1991) is a 12-item self-report inventory intended to assess an individual's dispositional hope. The scale was constructed from six samples of undergraduate students and two samples of individuals receiving psychological treatment (Snyder et al., 1991). It is measured on either a 4-point or 8-point continuum and returns scores on agency and pathways subscales. Sample items from the agency subscale are:

- Item 2 I energetically pursue my goal.
- Item 9 My past experiences have prepared me well for my future.

Examples of the pathways subscale include:

- Item 1 I can think of many ways to get out of a jam.
- Item 4 There are lots of ways around any problem.

Additionally there are some distracters such as:

- Item 5 I am easily downed in an argument.
- Item 11 I usually find myself worrying about something.

Cronbach alphas for the total score of the participants in the Snyder et al. (1991) study ranged from .74 to .84 and test-retest correlations were .80 for periods over 10 weeks.

The ADHS has been subjected to various factor analyses (Lopez et al., 2000; Snyder et

al., 1991) to support the two components. It is highly correlated with several scales of related psychological processes such as optimism, goal expectancy, self-esteem and inversely correlated with hopelessness and depression (Lopez et al., 2000). The ADHS has been used in a variety of settings and has been predictive of coping, well-being and psychological health and is endorsed by proponents of positive psychology (Peterson & Seligman, 2004).

The Domain Specific Hope Scale (DSHS) formulated by Sympson (1999) seeks to identify an individual's level of dispositional hope in relation to six areas of life: (a) social, (b) academic, (c) family, (d) romance/relationships, (e) work/occupation, and (f) leisure activities. The six different life domains are assessed on an 8-point Likert scale. The scale was developed on a sample of 343 college students and although the internal reliability and construct validation are strong there is some work that remains to be done with regard to the temporal reliability of the measure (Lopez et al., 2000). While it is useful to discriminate between different domains of personal hopefulness, this measure appears to be more suited to the general population rather than clinical use as intended by this study. The hesitation about temporal reliability is another reason not to select this instrument.

The Hunter Opinions and Personal Expectations Scale (HOPES) was developed by Nunn et al. (1996) over a period of 12 years. The initial 56-item version was used to measure state and trait characteristics of a medical student sample. It was further developed when applied in a longitudinal study of adolescent psychosocial morbidity (Cubis, Lewin & Dawes, 1989) and revised when used in assessing a post-earthquake community (Carr et al., 1995). The revised version is a 20-item trait measure that was

used in a prospective, longitudinal project. This two-factor trait instrument was subjected to a factor analysis that identified personal hopefulness items as a distinct entity. Correlations of the scale with psychosocial variables such as trait anxiety, neuroticism, locus of control, extraversion, and depression provided strong and consistent relationships. The predictive ability of the instrument was tested on a stratified sample (N = 1089) of a community dealing with the sequelae of an earthquake. The global personal hopefulness was shown to be an enduring characteristic of individuals and had a test-retest correlation of 0.71 over a 64 week period. One feature of the Nunn et al. (1996) study is that it presents a finer-grained analysis of negative affect than other measures of hope. In this study a strong negative correlation between trait anxiety and global personal hopefulness suggests that it is possible to view anxiety as hope under threat; a refinement of the general presumption of a link between hope and depression. Nunn et al. (1996) report that trait measures (which are predictive of psychopathology) are more strongly correlated with personal hopefulness than state measures such as the Beck Depression Inventory. The perspective of hope as a trait is confirmed by current development in the science of positive psychology which classifies hope as one of 24 identifiable character traits, albeit, one that may be subject to change (Peterson & Seligman, 2004).

Of the instruments considered, the ADHS (Snyder et al., 1991) and the HOPES (Nunn et al., 1996) stand out as well supported by research for the purpose of the current study. The work of Snyder (1995, 2000), and Snyder and Taylor (2000) as well as others working in the same conceptual framework (e.g. Elliot et al., 1991; Elliot & Kurylo, 2000; Lopez et al., 2000; Michael et al., 2000) has established a useful model for

addressing hope. There are examples of the application of the ADHS instrument in a range of settings. The HOPES is notable for its focus on clinical application and also for a comprehensive analysis of the construct of hope. The classification of items on the two subscales (hope and despair) into categories of self-worth, support, energy, mastery, planning and meaning presents the possibility of detailed clinical assessment informing specific intervention strategies. This finer analysis of the construct of hope remains compatible with the ADHS and Snyder's (2000) refinement of that model. For example the HOPES component of 'support' is acknowledged in the Snyder (2000) revision. More importantly, the HOPES component of 'meaning' addresses an important factor identified in the literature but which is not directly targeted in the ADHS. Lazarus (1999) challenges the cognitive-mediational conceptualisation represented in Snyder's approach as erroneously equating hope with successful agency. While self-efficacy facilitates hope, Lazarus (1999) considers that individually perceived values, and beliefs influence hope. The HOPES instrument accommodates that dimension. It is validated as measuring the trait of personal hopefulness. Therefore the HOPES scale presents itself as the most suited instrument for the purpose of this study.

4.5. Hope and Adjustment

Life-enhancing adjustment to acquired disability such as hearing loss involves a number of dimensions and will reflect individual factors. Some individual and disability variables may affect the level of adjustment but the extent to which they do does not necessarily nor fully explain the process of adjustment. Hope is an important influence in how people perceive their life (Peterson & Seligman, 2004). The question therefore

arises as to how hope is related to adjustment. The literature indicates that establishing a sense of self-efficacy and future direction combined with generation of acceptable alternatives to a problem and problem-solving skills could be a powerful strategy for restoring a sense of homeostasis (i.e. adjustment) in the face of challenging circumstances. Scioli et al. (1997) state that "trait hope might function as a generalised disposition that facilitates successful adaptation to serious life events" (p. 731). There are indications that different components of hope may be dominant at different times in the individual's adjustment to disability. For example, the agency component "may have palliative effects soon after disability onset, whereas over time, the sense of pathways enables an individual to find meaning and resume social roles in life" (Elliot & Kurylo, 2000, p. 376; Elliot et al., 1991). Nunn et al. (1996) suggest that individuals perceive their future in terms of dimensions of hope and despair. They further observe that "personal hopefulness promises to be an integrative concept drawing together disparate notions from many perspectives" (p. 542). Certainly, clinicians report that hope is a common basis among differing psychotherapies (Snyder & Taylor, 2000); provides a meta-theory to explain the efficacy of Cognitive-Behavioural therapies (Taylor, Feldman, Saunders & Ilardi, 2000); and is a useful framework for the application of Brief Therapies and Narrative Therapy (Michael, Taylor & Cheavens, 2000). Morse and Penrod (1999) maintain that "hope facilitates the passage out of suffering and into the new existence of the reformulated self" (p. 149).

The nature of such a facilitation process is the subject of a study by Jackson, Taylor, Palmatier, Elliot and Elliot (1998). These researchers examined the relation of hope and coping to self-reported functional ability among 63 adventitiously blinded

people, as well as testing mediator and moderator models of hope and coping in predicting adjustment and functional ability. The participants were military veterans participating in an interdisciplinary inpatient rehabilitation programme. They were mostly male (92%) and Caucasian (65%). The average age was 64 years (range 31 years to 82 years). The ADHS (Snyder, 1995; Snyder et al., 1991) was used to assess individual hope and this was compared against scores on the Millon Behavioral Health Inventory (a 150 item true-false questionnaire designed for use with medical patients) and a 13-item self-report questionnaire to assess specific functional capabilities. Hierarchical multiple regression procedures were used to determine the nature of the relationship between the predictor variables (hope and coping) and the criterion variable (functional ability). To test the mediating influence of two coping styles (Inhibited and Sociable/historionic) on the hope-functional ability association the first regression equation was computed on the relationship of hope and functional abilities and found that was significant ($F(1, 56) = 5.94, p = .05; R^2 = .10$). Entering the Inhibited Coping Style scores at the second step did not produce a significant difference ($F_{inc}(1, 55) = .21, ns$). The Inhibited Coping Style did not add to the prediction of functional abilities over and above what could be attributed to hope. When the order of entry was reversed, Inhibited Coping Style scores were significantly predictive of functional abilities ($F(1, 56) = 4.97, p = .05; R^2 = .08$). ADHS scores at the second step on the regression equation were not significantly predictive ($F_{inc}(1, 55) = .25, ns$). The results of this analysis suggest that Inhibited Coping Styles mediated the relationship between hope and functional abilities.

A further regression analysis assessed the possibility that Sociable/historionic Coping Style mediated the hope-functional ability relationship. Entering the

Sociable/historionic Coping Style scores at the second step did not produce a significant difference ($F_{inc}(1, 55) = 1.25, ns$). When the order of entry was reversed, Sociable/historionic Coping Style scores were significantly predictive of functional abilities ($F(1, 56) = 4.06, p = .05; R^2 = .07$). ADHS scores at the second step on the regression equation were not significantly predictive ($F_{inc}(1, 55) = 3.01, ns$). The results of this analysis suggest that both coping styles mediated the relationship between ADHS scores and functional ability.

A further series of analyses were conducted to test for moderating effects of coping style on the hope-functional ability relationship. In the first regression equation ADHS scores and Inhibited Coping Style were entered simultaneously and were significantly predictive of functional ability ($F(2, 55) = 3.8, p = .05; R^2 = .12$). Hope, as measured by the ADHS, had a greater beta weighting (.21) than Inhibited Coping Style (.03). The interaction term that was entered in the second equation did not significantly add to the equation ($F_{inc}(1, 54) = .01, ns$), which indicated that varying levels of Inhibited Coping Style did not moderate the hope-functional ability relationship. In considering the other predictor variable (Sociable/historionic Coping Style) the regression equation showed that when hope and Sociable/historionic Coping Style were entered simultaneously they were significantly predictive of functional ability ($F(2, 55) = 3.6, p = .05; R^2 = .12$). Again, the ADHS score had a greater beta weighting (.21) than Sociable/historionic Coping Style (.03). The interaction term that was entered in the second equation did not significantly add to the equation ($F_{inc}(1, 54) = .08, ns$), which indicated that varying levels of Sociable/historionic Coping Style did not moderate the hope-functional ability relationship.

Jackson et al. (1998) concluded that the results provide support for: (a) the validity of the measures used, (b) the relationship between high hope and sociability and confident coping styles, (c) the relationship between low hope and depressive symptoms, and (d) the relationship between higher hope and higher levels of self-reported ability. In assessing the role of hope and the role of coping variables it was noted that hope (as measured by the ADHS) remained a statistically significant predictor of functional ability when entered simultaneously in the regression equation with the coping variables. Indeed, Jackson et al. (1998) state that “the motivational, goal-directed properties of hope might overshadow the utility of [coping strategies] and any relationship they might have with functional abilities. Higher levels of hope may, in fact, permeate one’s self-reported coping repertoire and adaptive living skills” (p. 183). The results indicate that hope may mediate the relation of coping to functional ability and provide an example of how the relationship between hope and adjustment may be investigated. The procedure of examining moderation and mediation effects will be reviewed in the following chapter.

4.6. Conclusion

Hope is acknowledged as important in health care and there is evidence that increased hope enhances outcomes in physical health, psychological health and rehabilitation (e.g. Darlington & Bland, 1999; Johnson et al., 1998; Nekolaichuk et al., 1999; Russinova, 1999). The construct is considered to include a future orientation, positive expectancy and realism (see also Lazarus, 1999; Nunn et al., 1996; Nunn, 1999; Snyder et al., 1991; Snyder, 1994, 1995, 2000). It includes affective, cognitive and social/environmental elements (e.g. Nekolaichuk & Bruera, 1998). This involves

components of the self-system (e.g. self-worth and self-efficacy), optimism and practical problem solving features within a social context. The construct of hope offers a framework for facilitating constructive, future-oriented adjustment that is tailored to the particular characteristics of the individual concerned. Lopez, Ciarlelli, Coffman, Stone and Wyatt (2000) state that “from a clinician’s perspective, hope is the ‘stuff’ that facilitates change” (p. 58, see also, Morse & Penrod, 1999; Scioli et al., 1997). That change is the restoration of homeostasis or achieving a high level of adjustment. The body of evidence establishes the relevance of hope to adjustment and supports the contention that perceptions of what could be (hope) may influence present being (current level of adjustment). It is noted that the role of hope in relation to individual and disability variables has not been investigated in the context of hearing loss. Research in the area of vision impairment (Jackson et al., 1998) indicates hope may act as a mediator of behaviour. The nature of the relationship between individual variables, disability variables, hope, and adjustment in the context of acquired hearing loss has yet to be investigated and is what provides the focus for this study. Chapter five therefore reviews analytical procedures that are appropriate to the examination of that relationship.

5. Moderation and Mediation

5.1. Introduction

The research interest of this project is the pursuit of increased understanding of the role of hope in adjustment to acquired hearing loss. The literature reviewed demonstrates that a range of variables might be implicated in such adjustment. However, the evidence supports the view that audiological variables may not be the most predictive of adjustment, and other individual and disability variables are not always reliable predictors either. Hope is supported across a variety of contexts as a significant factor in psychological wellbeing and adjustment to challenging conditions. The current study questions the nature and extent of the influence of hope in the relationship between individual and disability variables and adjustment, not the nature of hope as experienced by individuals. To address those questions it is necessary to quantify the relevant variables that exist and then to analyse the relationships among them. Examining the interaction effects among the variables is likely to produce appropriate answers to the questions being asked. As indicated by the example of Jackson et al. (1998) that has been detailed in the previous chapter (from p. 92 on), tests of moderation and mediation effects are suitable forms of analysis.

Assuming that independent variables for different conditions have been adequately measured, it is possible to calculate the extent to which the interaction of those variables influences the level of the dependent variable. If a second independent variable (a moderator) changes the form of the relationship between the first independent variable and the dependent variable then a moderating effect is established (Bobko, 2001; Hair, Anderson, Tatham & Black, 1998). A mediation effect is determined if the

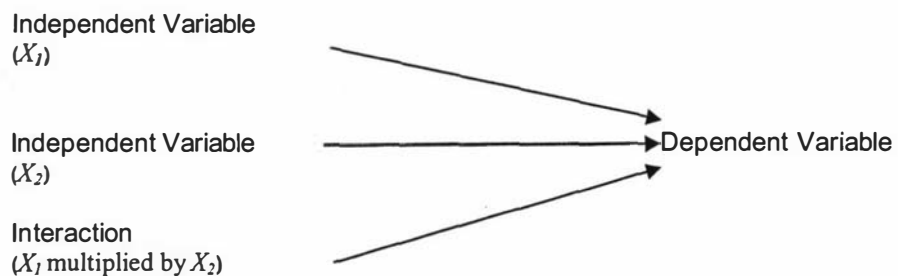
relationship of the first independent variable to the dependent variable is explained by the second independent variable. In other words, the first independent variable does not cause the dependent variable directly, but rather the relationship is determined through the mechanism of the second independent variable (Bobko, 2001). The theoretical basis for testing moderation and/or mediation is detailed in Baron and Kenny (1986) and Holmbeck (1997). Jackson et al. (1998) provide a practical example in their analysis of the moderating and mediating relationships among hope, coping and functional ability in visual impairment. This chapter reviews some literature explicating moderation and mediation effects.

5.2. Moderation

A direct causal relationship is one in which an independent variable, X , is a direct cause of another, or dependent, variable, Y . If a third variable, X_2 , is entered into the equation and the relationship between X and Y is affected in terms of its strength or direction, then X_2 can be regarded as a moderating variable (Baron & Kenny, 1986; Jaccard, Turrisi & Wan, 1990; Rossi, Lipsey & Freeman, 2004). "A variable may function as a moderator to the extent that it interacts with the predictor variable in determining the outcome variable" (Boyer, Hitelman, Knolls, & Kafkalas, 2003, p. 27). Determination of the significance of the moderator effect is achieved by calculating the original, unmoderated X_1 - Y and X_2 - Y relationship through a regression analysis. Then the moderator term (X_1 multiplied by X_2) is calculated. If the change in R^2 is statistically significant, then a significant moderator effect is present (Baron & Kenny, 1986; Bobko,

2001). The incremental effect is assessed in this final step, not the individual variables (Hair et al., 1998). The moderation analysis is presented diagrammatically below:

Figure 1. Model of a moderation test



Holmbeck (1997) states that the main effects may be entered in any order or simultaneously, but that they must be entered before the interaction term. Unlike a mediator (see below), a moderator may precede or simultaneously coexist with Y . Additionally, the role of the moderator is such that a pattern of scores on X_1 and X_2 (for example, one being high and the other low) is associated with the highest scores on Y (Bobko, 2001). In other words, a moderator specifies the conditions under which a given effect occurs (Baron & Kenny, 1986; Holmbeck, 1997). There are possible variations in how a moderator can affect a dependent variable. The relationship could be (a) linear with a gradual change of the effect of the independent variable on the dependent variable as the moderator changes, (b) quadratic where the effect increases or decreases in an exponential manner or (c) a step effect whereby the moderator only takes effect at a critical point (Baron & Kenny, 1986).

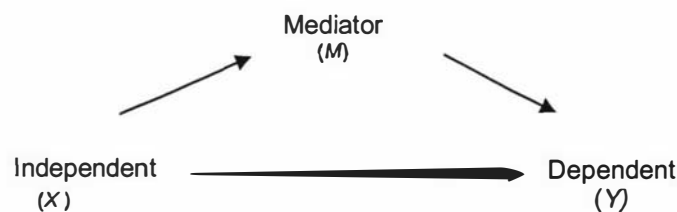
Jackson et al. (1998) recommend reporting beta weights at each block summary to aid the interpretation of the unique contribution of each variable at each step. Examples of studies that have tested for moderation and mediation effects will follow.

5.3. Mediation

Mediation explains 'how' an effect occurs by demonstrating a causal sequence between two variables (Kenny, Kashy & Bolger, 1998; MacKinnon, 2001; Rossi, Lipsey & Freeman, 2004). An independent variable (X) causes the mediating variable (M), which in turn causes the dependent variable (Y). A variable acts as a mediator "to the degree that it accounts for the association between the independent variable and the dependent variable" (Boyer et al., 2003, p. 28). If some, but not all, of the X - Y relationship is explained by the mediator, then a partial mediation has occurred. In that case, some degree of a direct effect of X - Y remains.

There are three main tests of mediation effects: (a) causal step tests, (b) coefficient tests, and (c) product of coefficient tests (MacKinnon, 2001). The most widely accepted is the causal step test described by Baron and Kenny (1986). This test of mediation is illustrated below:

Figure 2. Model of a mediation test



As specified by Baron and Kenny (1986, see also, Kenny, Kashy & Bolger, 1998; MacKinnon, 2001), a mediation effect is tested using the following three steps:

- (1) Determining the effect of the independent variable on the dependent variable by performing a regression analysis.
- (2) Determining the effect of the independent variable on the mediator by performing another regression analysis.
- (3) Determining the effect of the mediator on the dependent variable.

The procedure at step 3 involves using Y as the criterion variable in a regression calculation with X and M as the predictors. The X variable must be controlled in the equation because just correlating M with Y is insufficient evidence that X might in fact cause both. To establish that M completely mediates the X - Y relationship, the effect of X on Y while controlling for M should be zero. If the effect of X on Y is reduced to non-significance but not absolute zero, then a partial mediation is indicated.

The significance of the results of a mediation analysis can be tested using the Sobel (1988) test of significance (Kenny, Kashy & Bolger, 1998). Further testing of the significance of the Sobel test may be achieved by dividing the unstandardized beta coefficients for the indirect effect by the unstandardized beta coefficients for the direct effects to establish the percentage of the relationship attributable to the mediator. MacKinnon (2001) also explains that the t-test of the mediated effect can be calculated by dividing the mediated effect by the standard error of that effect.

There are several issues related to mediation models. Apart from measurement errors, one potential flaw is that of reverse causal effects whereby Y causes M or X . Similarly, X could be the mediator of the M - Y relationship. It is possible to eliminate some reverse causal effects theoretically (Kenny, Kashy & Bolger, 1998). Introducing a

different variable (an instrumental variable) that is known to cause both M and Y separately can provide a means to test both these variables as outcome variables and thereby determine the causal direction (Baron & Kenny, 1986). The influence of other variables may produce a combination of mediation and moderation effects as, for example, in situations where a mediator is stronger for one group (e.g. males compared to females) so that the interaction of the mediator with a variable influences the outcome (Kenny, Kashy & Bolger, 1998).

5.4. Studies Involving Moderation and Mediation

Reference has already been made to two studies that illustrate the analytical procedures under discussion. Using the Snyder et al. (1991) concept of hope, Elliot et al. (1991) examined the influence on adjustment of the interaction effects of (a) the measure of time since injury multiplied by the measure of the agency subscale of hope and (b) the measure of time since injury multiplied by the measure of the pathways subscale of hope. Their results suggested that (a) a sense of agency moderates the self-reported impairment shortly after injury but this relationship fades the longer a person is disabled, and (b) varying levels of pathways, over time, moderate the self-reported impairment. The moderation effect evident from the analysis was particularly useful because while previous studies had demonstrated direct relationships between internal expectancies for control and lower levels of distress, there was a lack of research to link the usefulness of short-term adjustment strategies with successful long-term outcomes. By establishing differing levels and conditions of the independent variables the analysis used by Elliot et al. (1991) provides an example of both the procedure and its practice utility. The second

study previously summarised (Jackson et al., 1998) specified functional ability as the dependent variable and tested mediation and moderation relationships of the independent variables of (a) hope, and (b) basic coping styles. As indicated in the earlier review of this study, Jackson et al. (1998) reported that coping styles mediated the relationship of hope to functional ability. By performing a moderation analysis, the authors found that functional ability was not moderated by varying levels of the coping styles. Contrary to earlier research, the study showed that the relationship between hope and functional ability did not vary with differing levels of coping. Furthermore, the results prompted consideration of the possibility that hope might mediate the relationship of coping to functional ability.

Using a sample of 39 children with Sickle Cell Disease, Lewis and Kliever (1996) hypothesised that the relationship of hope (independent variable) and adjustment (dependent variable) would be either mediated by coping, or that coping would interact with hope to moderate the relationship. The mean age of the children was 11 years (ranged from 7 years to 16 years) and data on the education levels, socioeconomic status, and the nature of the condition and related complications was recorded. Hope was measured by the Children's Hope Scale (CHS) (Snyder et al., 1994), coping was measured by the Children's Coping Strategies Checklist (CCS) (Sandler et al., 1994), and adjustment was measured by the Child Depression Inventory (CDI) (Kovacs, 1981), and the Revised Children's Manifest Anxiety Scale (CMAS-R) (Reynolds & Richmond, 1978). Functional adjustment was assessed using the Structured Pain Interview (SPI) (Gil et al., 1991). Hierarchical regression analyses were used to examine the relations among hope, adjustment, and the individual and disability variables mentioned above.

Following the Baron and Kenny (1986) model, Lewis and Kliewer (1996) performed a mediation analysis and found that after controlling for the effects of coping on adjustment (which explained 9% of the variance in adjustment), the relationship between hope and adjustment was not significantly reduced. This indicated that coping did not mediate that relationship. The moderator analysis found that coping factors interacted with hope to affect the measured anxiety. Hope was negatively related to anxiety when coping strategies were high. Lewis and Kliewer (1996) concluded that it “is important to delineate distinctions between mediator and moderator models because of their differing implications” (p. 37). Moderator effects may identify subgroups that act differently under certain conditions or clarify conditional links among variables. On the other hand, mediator effects provide evidence of why an independent variable has an effect on the dependent variable, which is important for designing interventions. Consistent with the suggestions by MacKinnon (2001) that are noted below regarding mediational chains, Lewis and Kliewer (1996) also remark that although they did not find a mediation effect, it would be plausible that the coping, hope, and adjustment relationships may differ with children’s developmental level, the nature of stressors, different ages, and different medical complications.

Boyer, Hitelman, Knolls and Kafkalas (2003) assessed whether Posttraumatic Stress (PTS) moderated or mediated the relationship between family functioning and functional independence in the context of pediatric spinal cord injuries. The sample consisted of 64 young people (59% male) who had SCI. Their mean age was 17 years (ranged from 11 years to 24 years). The time since injury averaged 12 years (ranged from 4 months to 19 years) and 92% were Caucasian. Twenty six of the participants

lived in the United States and the rest resided in Puerto Rico, Canada, or Eastern Europe. Data on the cause and nature of the condition were collected. The hypotheses were that (a) the severity of PTS would influence the relationship between family functioning and functional independence (moderation model), and (b) family functioning influences the severity of PTS that, in turn, influences the functional independence (mediation). The demographic information included age, date of injury, cause of injury, degree of injury, sex, race, level of education, income, and marital status. Family functioning was measured by the Family Assessment Device (FAD) (Epstein, Baldwin & Bishop, 1983), and PTS by the Posttraumatic Diagnostic Scale (PDS) (Foa, 1995), and the Child PTSD Symptom Scale (Foa et al., 2001). Using the Baron and Kenny (1986) procedure the hypotheses were tested and showed that the interaction term of family functioning and PTS did not account for a significant portion of the variance in functional independence ($R^2_{\text{change}} = .0001$, $F_{\text{change}}(1, 60) = .924$, *ns*): PTS did not act as a moderator. In the mediation analysis, the relationship between family functioning and functional independence was reduced to a non significant level ($\beta = -.146$, $p = .237$) after controlling for the effect of PTS on functional independence. The significance of the mediation effect was tested using Sobel's (1988) equation computing the standard error of the indirect effect and showed that the mediational effect was significant at $p = .03$. The authors concluded that support for the mediation effect suggested that family functioning and PTS should be considered as a related set of risk factors for this population. Interventions would therefore need to address both of those variables and they offered some practical recommendations on that basis. Further suggestions for research developing the relationship of other variables in the mediation model were

suggested, again demonstrating the previously mentioned recommendation by MacKinnon (2001).

While the mediation model outlined above can be helpful in understanding how and why variables may be related, it is wise to heed the comments of Holland (1988) when he reviewed indirect and direct causation. In his reflections, he urged researchers to be mindful of the distinction between the cause of a given effect and the effect of a given cause. The “search for causes follows from an analysis of the measurement of causal effects, and it is not logically prior to this more basic activity” (p. 451). The models reviewed here contribute to that activity.

5.5. Conclusion

Moderation and mediation effects provide a well established framework for examining interactional relationships in the social sciences. The two models described by Baron and Kenny (1986) and supported by subsequent researchers (e.g. Boyer et al., 2003; Elliot et al., 1991; Jackson et al., 1998; Lewis & Kliewer, 1996; MacKinnon, 2001) have been described. The procedures have been applied in a range of health contexts and demonstrate practical and theoretical utility. Determining moderation effects can inform practitioners of the conditions under which certain outcomes may be obtained. Mediation effects can provide understanding of how and why certain outcomes occur.

As indicated throughout this review, the current study seeks to examine the nature and extent of the role of hope in the relationship between individual and disability variables and adjustment. The analyses described in this chapter offer well-established

procedures and a number of precedents in related fields to model the methodology that is best suited to the purpose of this study.

6. Methodology

6.1. Introduction

On the basis of the above review of the literature it is considered that, while individual characteristics (such as age and sex) and disability characteristics (such as age at onset, the degree of loss, the passage of time, and the application of interventions) may be related to adjustment, one's level of personal hopefulness will affect these relationships, and thus influence the degree to which one adjusts to the loss. Hope is therefore examined as: (a) a moderating variable in that it affects the direction and/or strength of the relationship between an independent or predictor variable and a dependent or criterion variable, and (b) a mediating variable in that it explains the relationship between the independent and dependent variables (Baron & Kenny, 1986).

6.1.1. Aim

The purpose of this study is firstly to investigate the relationship to adjustment of age, sex, age at onset, time since onset, degree of loss, and use of interventions (see outline of the selected variables below). Secondly, the current study will examine the role of hope in the relationship between these individual and disability characteristics and adjustment to hearing loss. To achieve that objective it is necessary to examine which (if any) of the individual and disability characteristics are correlated with adjustment. When that is determined it will be possible to assess if hope acts as a moderating or mediating variable in that relationship.

6.1.2. Research Questions

The research issues for this study involve the relationships which exist among individual and disability characteristics, adjustment to acquired severe/profound hearing loss, and hope.

For the purpose of this study the individual and disability characteristics used as independent variables are:

1. *Age.*

Chronological age has been noted to have some implications in the studies referred to. There is considerable evidence that the reported incidence of hearing loss increases with age and the degree of loss is also likely to increase with advancing age. Both of these characteristics could influence adjustment. For the correlation and regression calculations in the current study, the individually reported chronological age was used.

2. *Sex.*

Sex differences are considered in view of the assertion that there are differences between males and females in adjusting to hearing impairment. There is some evidence that females report more complaints (Ringdahl & Grimby, 2000). This is a dichotomous variable.

3. *Age at the onset of hearing loss.*

The age at onset is included because an earlier age at onset could be hypothesised to enhance adjustment to hearing loss as a person accommodates the loss in their development. Because the onset of a hearing loss is commonly progressive an exact age at onset is particularly difficult to determine therefore the self-reported data of the respondents was collapsed into groupings for those under the age of 25 years (adolescents

and early adulthood), those aged 26 years to 35 years (early middle age), 36 years to 50 years (middle age), 51 years to 65 years (later middle age), and over 65 years (older age). These age groupings were assigned dummy variables (1 for those under 25 years to 5 for those over 65 years). It is uncommon for people who are culturally Deaf (i.e. mostly those who were congenitally deaf) to use hearing therapy services in New Zealand as they are more likely to view deafness as a cultural and linguistic difference rather than a disability that requires intervention therapy. The data from the respondents in this study did not indicate that any participants were congenitally deaf (the earliest stated age of onset was late childhood).

4. *Degree of loss.*

The relationship of the degree of loss (commonly taken as the average loss across 500, 1K, 2K and 4K MHz) and adjustment is examined as it may be considered that the greater the loss the more difficult it would be to adjust to. Respondents identified the degree of their hearing loss as moderate (less than 65 dB), severe (between 65 dB and 89 dB), or profound (90 dB or over). Both descriptors and audiological reference points were included in the questionnaire to facilitate reporting. The classifications were assigned dummy variables (1 for moderate loss to 3 for profound loss).

5. *Time since onset.*

It may be hypothesised that the greater the time since the onset of a hearing loss the more likely an individual is to adjust. Like the age at onset, this variable is also influenced by the progressive nature common to acquired hearing loss and therefore difficult to report precisely. For the purpose of statistical calculations the duration of the hearing loss was specified as either: under 1 year, between 1 year to 4 years 11 months,

between 5 years and 9 years 11 months, between 10 years and 19 years 11 months, and over 20 years. Dummy variables were assigned (1 for under 1 year to 5 for over 20 years).

6. Use of technology

If technology restores or improves functioning then it would be expected that the use of technology would promote adjustment. Failure to use technology by those who have a significant hearing loss (or resentment at having to do so) may have some relationship to poor adjustment. This variable was included to address some possible relevant elements as indicated in the Erdman and Demorest (1998a) study (see also, Kerr & Cowie, 1997) and was specified as constituting (a) no use of technology to assist hearing or communication, (b) Assistive Hearing Devices (AHDs, which would include hearing aids as well as devices to amplify telephones, doorbells, radio and television), (c) a cochlear implant (CI), (d) New Zealand Sign Language (NZSL, an alternative or supplement to communication). These classifications were considered to reflect an increasing level of resourcing commensurate with increasing deafness and ranging from none, to less expensive AHDs, to more expensive CIs, and finally to NZSL which presumes the time and resource consuming formal learning of a new language and on-going use of interpreters. The coding assigned to this variable ranged from 0 for no services to 3 for NZSL.

7. Use of rehabilitation services.

It may be hypothesised that the greater intensity of intervention resources that are accessed, the more likely it is that a person will be better adjusted to hearing loss. Involvement in rehabilitation services is implicit in the reviewed studies on adjustment

(e.g. Elliot et al., 2000) and Horowitz and Reinhardt (1998) specifically refer to use of rehabilitation services as one variable that may influence the degree of adjustment (see chapter three). The currently available and commonly used hearing rehabilitation services in New Zealand were listed, namely (a) no current use of services at all (although clearly hearing therapy services had been accessed at some point to be recorded on the HSL database), (b) support groups for hearing impaired people, (c) hearing therapists, (d) medical/audiological services, and (e) use of more than one service option. This classification of service options also indicated the resourcing intensity of the intervention when grouped according to those services that range from none to group oriented (as in a support group), or individual (such as medical/audiological). Since the variability of programmes and services across numerous practitioners invalidated a comparison of the support services, the resourcing intensity (none, group, individual) was selected as a more reliable measure of the services used and this variable was coded from 1 for no current use of services to 3 for individual service use and treated as an ordinal variable.

Although education level has been mentioned in some studies (e.g. Elliot et al., 1991; Erdman & Demorest, 1998a), this was not selected as an independent variable in this study for a number of reasons. The education system and formal qualifications have changed greatly over the past 50 or more years and this renders comparison difficult. Valid definition of education levels is problematic (see Erdman & Demorest, 1998a). Among older people it was common to leave school early (usually for economic reasons) and therefore not attain formal qualifications. Yet many have developed socially productive skills: educational attainment measures would fail to account for such people.

The concept of adjustment has been discussed at length in chapter three. It is consistently reported to include anxiety (or the absence thereof), self-worth, self-efficacy and attitudes or emotions relating to the disability. The Nottingham Adjustment Scale (Dodds et al., 1991) is used in this study to measure adjustment as the dependent variable. The development of the NAS is outlined on page 38-40, further described on pages 63, and 118, and is appended (Appendix 6).

Hope is comprised of several components emphasising personal wishfulness or desire, expectation and future orientation and is measured using the HOPES Scale (Nunn et al., 1996). This measure has been outlined on page 89, described on page 118, and is also appended (Appendix 7). Examination of the relationship of hope to significant individual and disability characteristics and to adjustment may indicate the extent and the nature of that relationship. Therefore the questions guiding this project are:

1. Is there a significant relationship between levels of the following variables: age, sex, age at onset, degree of loss, time since loss, use of technology, and use of services and adjustment to acquired hearing loss?
2. To what extent does hope contribute to the relationships found to be significant between the independent variables named above and adjustment?
3. Does hope have a moderating or mediating role in those relationships found to be significant?

From the literature reviewed it is expected that the results of this study will support the view that hope is a significant variable in influencing adjustment. Whether that role is one of moderation or mediation is to be determined.

6.1.3. Research Hypotheses

The hypotheses for this study are:

Individual and Disability Characteristics and Adjustment

H₁ It is hypothesised that there is a significant relationship between one or more of the independent variables of age, sex, age at onset, degree of loss, time since loss, use of technology, and use of interventions and the dependent variable of adjustment.

H₀ There is no significant relationship between age, sex, age at onset, degree of loss, time since loss, use of technology, and use of interventions and adjustment ($p > .05$).

Hope, Individual and Disability Characteristics and Adjustment

H₁ It is hypothesised that there is a significant relationship between one or more of the independent variables and hope, that hope is significantly related to adjustment, and that hope has a moderating, mediating, or mediating/moderating effect on adjustment in relationship to the identified individual and disability characteristics.

H₀ Hope has no significant effect on the relationship of individual and disability characteristics to adjustment ($p > .05$).

6.2. Procedures

6.2.1. Sample Selection

Three hundred and fifty potential participants were randomly selected from the client database of Hearing Services Limited (HSL). At the time of the study HSL was a division of the New Zealand National Foundation for the Deaf (NFD) and was the provider of aural rehabilitation services nationally. After the fieldwork was completed, the national hearing therapy contract was transferred to the Living Independently For Everyone (LIFE) Trust. The services to clients and the personnel involved remained unchanged. The HSL client database was comprised of approximately 4,200 individuals who had used the services of HSL and who had consented to having their names included on the database. A computer generated random sample of clients was provided to the researcher by the information services that managed the HSL database. The questionnaires were mailed to the randomly selected persons through HSL. The researcher provided the questionnaires together with an information sheet (see Appendix 3) for each person and the HSL administration assigned a number to each of the selected individuals. The questionnaires were returned to the HSL office so that any item likely to identify respondents could be removed from the returned forms and then the questionnaires were mailed to the researcher for analysis. Hearing therapists were provided with a brief description of the study (Appendix 4) both as a courtesy and in case a client contacted them to check on hearing loss levels. The return of 114 questionnaires represents a response rate of 32.6%.

In a multiple regression analysis with a significance level specified at .05, a probability (power) level of .80, and up to ten independent variables, the probability of

detecting R^2 values of 15 percent or greater requires a sample size of 100 (Hair et al., 1998). The same significance and power levels with five independent variables would detect R^2 values of 12 percent or greater. The number of respondents ($N = 114$) for this study satisfies this requirement.

6.2.2. Ethical Issues

The questionnaire was distributed with the explicit consent of HSL and it was intended that this would affirm the support role of hearing therapists and ameliorate any negative impact on a client. Additionally, all hearing therapists were explicitly instructed to refer any clients reporting distress in relation to the questionnaire to the established HSL support network. In case the association with HSL was perceived to infer a clinical status for the questionnaire that could erroneously raise inappropriate expectations among some clients, a written statement that the questionnaire was part of a research project not the HSL clinical services was provided. The letter emphasised that participation was voluntary and there was no means of identifying individual respondents. To further enhance the respondents' privacy the researcher was not directly involved in issuing the questionnaire material. This was particularly important given the possibility of both researcher and participants identifying with sections of the Deaf community (e.g. cochlear implant groups). The separation between the researcher and the participants was also hoped to diminish any misperceptions of power in the relationship (such as the ability to offer services or influence service providers).

The results of the study will be distributed to hearing therapists employed by LIFE Trust so that they are available for the participants.

6.2.3. Participants

The 114 people who agreed to participate in this study were currently, or had been, clients of HSL. Sixty-three were female and fifty-one were male. The mean age of the participants was 67 years (SD = 13.3, range = 19 years to 84 years). Moderate hearing loss (defined as under 65 dB) was the most commonly reported condition of the participants (70%), while 20% reported a severe loss (65-89 dB) and 10% a profound loss (over 90 dB). The sample was overwhelmingly NZ European (92%), with only 7% Maori and 1% Asian. Sixty-four percent of the respondents were married or in a de facto relationship and the remaining 36% were widowed, single, or separated. Seventy-eight of the respondents were reported to be retired. Of those who were not, 9 were in professional employment, 9 in manual employment, 8 unemployed, 7 involved in business, and 3 were clerical workers.

6.2.4. The Questionnaire

An 86-item questionnaire was compiled to gather data on individual and disability characteristics, adjustment, and hope. This questionnaire consisted of (a) individual and disability characteristic questions, (b) the NAS, and (c) the HOPES.

(a) Individual and Disability Characteristics

Data relating to the individual and disability characteristics were collected using an 11-item questionnaire combining forced choice and open-ended response (Appendix 5). This was compiled from the Livneh (2001) model of psychosocial elements in adjustment. It included elements associated with (a) individual characteristics (age, sex),

(b) the disability condition (age at onset, degree of loss, and time since loss), and (c) elements associated with external characteristics likely to influence adjustment (use of technology and use of services). The rationale for selecting these variables has been referred to above.

(b) Nottingham Adjustment Scale (NAS)

This scale is a 55-item self-report assessment of adjustment to an acquired disability comprised of seven subscales (Appendix 6). On the first subscale, item respondents select from a 4-point Likert scale ranging from: 'describes me NOT at all' (assigned a coding of 0), to: 'describes me extremely well' (assigned a coding of 3). On the other six subscales the descriptors range from: 'describes me NOT at all' (coded as 0), to: 'describes me extremely well' (coded as 4). The subscales measure depression, self-esteem, attitudes, locus of control, acceptance, self-efficacy, and attributional style. The reported Cronbach alpha coefficients for the retained items range from 0.72 (locus of control items) to 0.91 (acceptance and self-esteem items). The subscales are all highly intercorrelated ($p = .0001$) except for attributional style that correlates significantly with self-efficacy only. Normative data is reported by Dodds et al. (1991).

(c) Hunter Opinions and Personal Expectations Scale (HOPES)

Nunn et al. (1996) constructed their measure of the trait of hope on the understanding that hope is "that construction of, and response to, the perceived future, in which the desirable is subjectively assessed to be probable" (p. 531). The HOPES instrument (Appendix 7) is a 20-item self-report measure based on a Likert scale ranging

from 0 ('describes me not at all') to 4 ('describes me extremely well'). Factor analyses of the items selected by Nunn et al. (1996) for inclusion in the instrument indicated loadings on two dimensions; hope and despair. These dimensions are negatively correlated (ranging from -0.56 to -0.74) which suggests they have inverse relationship but are not polar opposites. The scale has high internal consistency with reported Cronbach alpha coefficients ranging from 0.87 to 0.92 (Nunn et al., 1996). The HOPES measure is comprised of a Global Personal Hopefulness scale (GPH) that subsumes a hope scale (HS) and a despair scale (DS). The GPH is constituted of elements of hopefulness: self-worth, support, energy, mastery, planning, and meaning. These elements are represented in both the HS and DS subscales.

Important features of the HOPES instrument are that it has been designed on a strong theoretical base with the specific intention of being applied in clinical settings for preventive psychiatry and clinical psychological use (Nunn et al., 1996).

6.3. Analysis

Brief descriptive statistics were computed using the individual and disability characteristics data, the HOPES measure and the NAS.

(a) Individual and Disability Characteristics and Adjustment

A forward stepwise regression was executed to establish the explanatory effect of the relationships among the individual and disability characteristics and the reported levels of adjustment. In this procedure, predictor variables are entered into a regression equation. The variable with the greatest contribution is entered first and additional

predictor variables are then entered or removed on the basis of the additional variance in the dependent variable that they can explain (Hair, Anderson, Tatham & Black, 1998; Mertens, 2005; Rossi, Lipsey & Freeman, 2004). The process terminates when entry or removal of a variable no longer significantly increases R^2 . One important assumption underlying stepwise regression is that some predictor variables do not have a significant explanatory effect and therefore it is beneficial to keep only the statistically significant terms in the regression model. The most predictive regression is where few variables account for a substantial portion of the variability in the dependent variable while controlling for the effect of other variables.

Stepwise regression has provoked considerable debate, particularly relating to automatic computer selection of predictor variables (e.g. Agostinelli, 2002; Babyak, 2004; Blinkhorn, 2004; Hopkins, 2005; Simonoff, 2004; Sribney, 1998; Ulrich, 1997). The criticisms of the procedure invite judicious use rather than rejection of a statistical tool (Rubin, 2005) that can clarify the predictive value of specified variables. In this study, the individual and disability characteristics variables were added to a single regression model in a forward stepwise procedure whereby the variables had to pass specified tolerance criteria. Following the suggestions of Hopkins (2000) and Duke University (2005), the F-to-enter threshold to enter the equation was set at 4.0 (corresponding to a t-statistic equal to 2, a common approximation of significance at the 5% level) and the F-to-remove threshold was set at 3.0.

(b) Extent and Nature of Hope in Relationship to Individual and Disability Characteristics and Adjustment

Chapter five has detailed the moderation and mediation procedures that will be applied in this study. The moderation model hypothesis in this study assumes that the individual and disability characteristic variables will interact with hope to such an extent that they will influence the reported level of adjustment. Support for a moderation model would indicate what levels of individual and disability variables and hope result in optimal adjustment.

The mediational model hypothesis in this study assumes that if hope mediates the relationship between the individual and disability characteristics and adjustment, then such a result would indicate that hope acts as a critical link in the adjustment process. It may demonstrate the importance of treating both the functional nature of hearing loss and the psychosocial elements of hope to optimise adjustment.

7. Results

7.1. Initial Analyses

7.1.1. Individual and Disability Characteristics

Descriptive data of the 114 persons who participated in this study has been provided in chapter six. Additional information about the individual and disability characteristics of the sample is shown in Table 1.

Table 1

Participants' individual and disability characteristics

Sex					
	Female	Male	Total		
	63 (55%)	51 (45%)	114 (100%)		
Degree of Loss					
	Moderate	Severe	Profound		
	76 (70%)	22 (20%)	11 (10%)		
Age at Onset					
	Under 25	26 to 35	36 to 50	51 to 65	Over 65
	17 (15%)	13 (12%)	27 (25%)	32 (30%)	19 (18%)
Time Since Loss (Years)					
	Under 1	1 – 4.11	5 – 9.11	10 – 19.11	20+
	6 (6%)	27 (22%)	12 (11%)	31 (28%)	36 (33%)
Use of Technology					
	None	AHD	CI	NZSL	
	41 (38%)	61 (56%)	2 (2%)	1 (1%)	
Use of Services					
	None	Support Grp	Individual		
	37 (34%)	15 (14%)	56 (52%)		

There were slightly more female participants than males in this study, which would be expected from the age range that was represented.

Of the respondents who indicated the age of onset of hearing loss as under 25 only 35% reported a moderate degree of loss whereas 91% of those with an onset between the ages of 51 and 65 years had a moderate loss and 69 % of those with an onset over the age of 65. Those with an onset under 25 also constituted the largest group of individuals with a profound hearing loss (29%). By contrast none of those with an onset between 51 to 65 years and only 11% of those with an onset over 65 reported a profound loss.

Not surprisingly, the earlier the age at onset the greater the length of loss with 77% of those with an onset under the age of 25 reporting a loss of over 20 years duration. On the other hand, 52% of those aged 51 to 65 years and 53% of those aged over 65 had a loss of up to 10 years duration.

Although all respondents under the age of 25 years or younger reported a moderate loss, between 64% and 73% of the other age groupings reported a moderate loss. With advancing age a severe loss was reported more frequently (14% at 36-50; 17% at 51-65; 25% over 65). However there was a decline over the age groupings in the percentage of those reporting a profound loss (34% at 26-35; 21% at 36-50; 10% at 51-65; 7% over 65).

In the sample used in this study, approximately one third reported a loss of up to 10 years in duration, nearly one third reported a loss of between 10 and 20 years and another third reported a loss over 20 years in duration.

Most of the respondents with a severe or profound hearing loss indicated they

used an AHD (86% and 82% respectively). By comparison, 47% of those with a moderate loss reported using an AHD. Five percent of those with a severe loss and 9% of those with a profound loss used a cochlear implant. Only one of those with a moderate loss and none of those with a severe or profound loss used NZSL.

Although the sample was drawn from the HSL database, the single largest response in regard to use of services was from those who reported not using any intervention service at all (34%). Those who used any form of hearing therapist services (either separately or in conjunction with other services) totalled 37 (34%) and those who used medical/audiological services (either separately or in conjunction with other services) totalled 24 (22%).

For the purpose of analysis the reported use of various services by individuals (N = 108) was collapsed into three groups to reflect the level of resourcing (as explained on p. 112): no services used (N = 37; 34%); support group services used (N = 15; 14%); individual services used (N = 56; 52%).

7.1.2. Adjustment

In this study the mean score for the NAS was 187.5 with a range of 125 to 228 and a standard deviation of 22.16. The mean Cronbach alpha coefficient for the NAS was 0.83 with subscale scores ranging from 0.70 for Locus of Control to 0.90 for Anxiety. The scores on the NAS were inspected for outliers by means of a Normal Probability Plot and were satisfactory. The data for the NAS provided by this sample compared to the published instrument norms indicated some difference in the overall mean score (203.9 for the normalised mean). The difference in these results appears to

be explained by the difference between the Anxiety subtest scores for the NAS norms and the sample used in this study as illustrated in the following table:

Table 2

NAS norms and sample data

Subtest	Statistic	Sample Data	NAS Norms
Anxiety	Mean	17.61	40.96
	SD	5.91	6.91
Self-esteem	Mean	36.72	32.78
	SD	6.43	7.97
Attitude to disability	Mean	25.93	24.49
	SD	6.04	5.77
Locus of control	Mean	16.46	18.02
	SD	3.06	2.36
Acceptance of disability	Mean	37.60	35.82
	SD	6.64	8.00
Self-efficacy	Mean	31.92	32.31
	SD	5.62	6.34
Attribution	Mean	20.41	19.52
	SD	5.06	3.70

It is noted that the normative sample for the NAS consisted of people who were recently visually impaired whereas 72% of the participants in the current study reported they had a hearing loss for six or more years. Therefore a lower Anxiety score and higher Self-esteem, Attitude to disability, Acceptance of disability, and Self-efficacy could be expected from the participants in this study when compared to the normative sample.

The significant correlations that emerged among the individual and disability variables and adjustment (as measured by the NAS) are shown in Table 3.

Table 3

Pearson Product-Moment correlations among individual and disability and adjustment variables

Measures	1	2	3	4	5	6	7
(1) Sex							
(2) Age	0.05						
(3) Degree Loss	0.01	-0.09					
(4) Age at Onset	0.15	0.55*	-0.37*				
(5) Time Since Loss	-0.08	0.36*	0.29*	-0.35*			
(6) Use of Technology	0.25*	0.22*	0.35*	-0.15	0.40*		
(7) Use of Services	-0.09	0.15	0.31*	-0.12	0.26*	0.46*	
(8) Adjustment	-0.14	-0.06	-0.26*	0.20*	-0.21*	0.14	-0.10

N = 105.

*Correlation significant at $p < .05$

There were no significant differences in the mean scores of the sexes for degree of loss, age at onset, time since loss, or use of services. However, an independent samples t-test found there was a significant difference between the mean scores for males ($M = 1.85$, $SD = 1.32$) and females ($M = 2.52$, $SD = 1.50$; $t(105) = -2.40$, $p = .01$) in the use of technology with females reporting significantly higher use of technology.

The age of the participants was strongly and positively correlated with the age at onset ($r = .55$, $n = 105$, $p = .05$) and the coefficient of determination indicated a shared variance of 30%. This is consistent with the increasing incidence of hearing loss with increasing age. The moderate positive correlation of age with the time since loss ($r = .36$, $n = 105$, $p = .05$) produced a coefficient of determination of 13%. Increased age was likely to be associated with a greater length of time since the onset of the hearing loss. The correlation of age with use of technology was small but significant and positive ($r =$

.22, $n = 105$, $p = .05$; coefficient of determination of 5%) which suggests that greater age was associated with greater use of assistive technology.

The degree of loss produced moderate negative correlations with (a) the age at onset ($r = -.37$, $n = 105$, $p = .05$; coefficient of determination of 14%) and (b) adjustment ($r = -.26$, $n = 105$, $p = .05$; coefficient of determination of 7%). This indicates that greater degree of loss was associated with younger age at the onset of the loss and with lower levels of adjustment. Greater degrees of loss were moderately and positively associated with (a) time since onset of hearing loss ($r = .29$, $n = 105$, $p = .05$; coefficient of determination of 8%), (b) the use of technology ($r = .35$, $n = 105$, $p = .05$; coefficient of determination of 12%) and, (c) use of services ($r = .31$, $n = 105$, $p = .05$; coefficient of determination of 10%). This suggests that greater degree of loss was associated with longer periods of hearing loss, more use of technology and more use of services.

The time since loss was also moderately negatively associated with the age at onset ($r = -.35$, $n = 105$, $p = .05$; coefficient of determination of 12%) indicating that greater duration of hearing loss was related to earlier age of onset. Use of technology was moderately positively associated with time since loss ($r = .40$, $n = 105$, $p = .05$; coefficient of determination of 16%).

In addition to a positive association with degree of loss, the use of services was also positively and moderately associated with time since loss ($r = .26$, $n = 105$, $p = .05$; coefficient of determination of 7%) and use of technology ($r = .46$, $n = 105$, $p = .05$; coefficient of determination of 21%).

Adjustment was moderately and negatively associated with the degree of loss ($r = -.26$, $n = 105$, $p = .05$; coefficient of determination of 7%) and with the time since loss ($r =$

= -.21, $n = 105$, $p = .05$; coefficient of determination of 4%). The greater the loss and the longer duration of the loss had a negative relationship with the level of adjustment. However, the age at onset had a moderate positive association with adjustment ($r = .20$, $n = 105$, $p = .05$; coefficient of determination of 4%) which indicates that the later the onset the greater the level of adjustment.

The correlation data only describe the relationship between variables in terms of the strength and direction of the relationship. To understand how well any variables are predictive of a dependent variable it can be helpful to perform regression analyses.

7.1.3. Stepwise Regression Analyses to Predict Adjustment

The individual and disability characteristics listed above were entered in a forward stepwise regression equation to assess their ability to account for the reported level of adjustment as measured by the NAS. The entry criteria outlined in the analysis description on page 120 were applied to the specified individual and disability variables. Only the degree of loss met the entry criteria (F value of 4 to enter the calculation) and was significantly predictive of adjustment: $F(1, 93) = 6.89$, $p = .01$, $\beta = -.26$, $R^2 = .07$. All the other individual and disability variables failed to meet the specified criteria as shown by the summary data in Table 4 below. It is noted that the degree of loss variable explained only 7% of the variance in adjustment.

Table 4

Stepwise regression of individual and disability variables to predict adjustment.

Variable	Beta	F	P	R ²
Sex	-0.14	2.06	.16	.02
Age	-0.08	0.65	.42	.006
Degree of loss	-.26	6.89	.01*	.07
Age at onset	-0.11	1.31	.26	.01
Time since loss	-0.13	1.99	.16	.02
Technology used	0.05	0.27	.60	.004
Services used	-0.02	0.04	.83	.001

*Significant at $p = .05$

The relationship between the degree of loss and the subscales of the NAS was examined to investigate which components of adjustment (as measured by the NAS) were significantly related to the degree of loss. As evident in Table 5 below, anxiety appeared to have a small positive correlation with the degree of loss ($r = .20$, $n = 105$, $p = .05$) and the coefficient of determination indicated a shared variance of 4%. However, the other subtests of the NAS instrument had small to moderate negative correlations with the degree of loss and the self-esteem ($r = -.30$), acceptance ($r = -.34$) and attribution ($r = -.25$) scales were statistically significant. Anxiety had moderate to strong negative correlations with the other NAS subtests with the coefficient of determination ranging from 45% for self-esteem to 14% for attitude, 17% for locus of control, 18% for acceptance, 9% for self-efficacy and 8% for attribution. All the other subtests had moderate to strong positive correlations with each other. These data indicate that while most of the NAS subtests have a negative association with the degree of hearing loss,

anxiety is significantly and positively associated with the degree of loss. The correlations of NAS subscales with the degree of loss are summarised in the following table:

Table 5

Pearson Product-Moment correlations among NAS subscales and degree of loss variables

Measures	1	2	3	4	5	6	7
(1) Degree of loss							
(2) Anxiety	0.20*						
(3) Self-esteem	-0.30*	-0.67*					
(4) Attitude	-0.16	-0.38*	0.43*				
(5) Locus of control	-0.07	-0.41*	0.54*	0.46*			
(6) Acceptance	-0.34*	-0.42*	0.58*	0.58*	0.58*		
(7) Self-efficacy	-0.08	-0.30*	0.46*	0.60*	0.49*	0.56*	
(8) Attribution	-0.25*	-0.28*	0.45*	0.39*	0.40*	0.48*	0.37*

N = 105.

*Correlation significant at $p < .05$

When a regression analysis was executed (using the same criteria as outlined on p. 120) with the degree of loss as the predictor variable and the NAS subtests as the dependent variables the only significant relationship was between the degree of loss and anxiety ($F(1, 101) = 4.03$, $p = .05$, $\beta = .20$, $R^2 = .04$). The predictive ability of degree of loss was not statistically significant for the other NAS subtests.

In the conceptualisation of Dodds et al. (1994) described previously (pp. 38-40), Internal Self-worth is a linear combination of anxiety and self-esteem and is also directly affected by attributions. Acceptance is strongly related to the latent factor of Self as Agent but only weakly to the other latent factor of Internal Self-worth. Therefore these

results suggest that the degree of loss most significantly affects adjustment by influencing the latent factor of Internal Self-worth through the relationship with anxiety.

To address the second research question it was necessary to examine the relationship of hope and adjustment.

7.1.4. Hope

Measurement of Hope

The sample scores on the HOPES scale provided data very similar to the published norms for the instrument as evident in Table 6.

Table 6

HOPES norms and sample data

Subtest	Statistic	Sample Data	HOPES Norms
Hopefulness	Mean	28.56	26.58
	SD	7.44	7.38
Despair	Mean	10.82	10.50
	SD	7.77	8.07
Global Personal Hopefulness (GPH)	Mean	57.29	56.07
	SD	12.26	12.53

The Cronbach alpha coefficients for the sample data using the HOPES instrument were 0.91 for the Hopefulness subscale and 0.89 for the Despair subscale. The scores of the HOPES measure on a Normal Probability Plot were satisfactory with no outliers. The results from the sample in this study were similar to the normative sample.

Hope and Adjustment

Hope, as measured by the GPH scores, correlated positively with adjustment, as measured by the total NAS score ($r = .67$, $n = 93$, $p = .05$, coefficient of determination 45%). However, the high correlation of hope and adjustment falls below the threshold indicating multicollinearity (.70) suggested by Tabachnick and Fidell (1996).

The correlation between GPH and the NAS subscales is presented in below:

Table 7

Pearson Product-Moment Correlations between GPH and NAS subscales

Measures	1	2	3	4	5	6	7
(1) GPH							
(2) Anxiety	-0.56*						
(3) Self-esteem	0.71*	-0.67*					
(4) Attitude	0.44*	-0.42*	0.44*				
(5) Locus of control	0.55*	-0.47*	0.59*	0.45*			
(6) Acceptance	0.64*	-0.49*	0.63*	0.54*	0.57*		
(7) Self-efficacy	0.50*	-0.34*	0.46*	0.59*	0.48*	0.54*	
(8) Attribution	0.39*	-0.32*	0.43*	0.35*	0.39*	0.46*	0.33*

N = 93. GPH= Global Personal Hopefulness.

* Significant at $p = .05$

Given the negative relationship between degree of loss and adjustment and the positive relationship between the hope and the adjustment, it is not surprising that some of these correlations resemble an inverse of those presented in Table 5. Anxiety is negatively and strongly associated with GPH ($r = -.56$, $n = 93$, $p = .05$; coefficient of determination of 31%) and has moderate to strong negative correlations with the other NAS subtests.

The components of the HOPES subscales were correlated with the total NAS score (see Table 8 below) and the Hopefulness subscale was found to have a strong positive correlation ($r = .62$, $n = 93$, $p = .05$) with adjustment. The coefficient of determination accounts for 38% of the variance. The Despair subscale had a moderate negative correlation ($r = -.44$, $n = 93$, $p = .05$; coefficient of determination of 19%). As stated by Nunn et al, (1996), the Hopefulness and Despair subscales are sufficiently negatively correlated to indicate they are the inverse of each other, but not sufficiently so to suggest they are polar opposites.

Table 8

Pearson Product-Moment correlations between NAS, GPH and HOPES subscales

Measures	1	2	3
(1) NAS			
(2) GPH	.67 *		
(3) Hopefulness	.62 *	.79 *	
(4) Despair	-.44 *	-.82 *	-.29 *

N = 93. NAS=Nottingham Adjustment Scale; GPH=Global Personal Hopefulness.

* Correlation significant at $p < .05$

The HOPES components were examined in more detail (see Table 9 below) and it was evident that the NAS correlated strongly and positively with the Hopefulness subscale dimensions of Mastery ($r = .64$, $n = 93$, $p = .05$, coefficient of determination 41%) and Self-worth ($r = .61$, $n = 93$, $p = .05$, coefficient of determination 37%). The hopefulness dimensions of Energy ($r = .50$, $n = 93$, $p = .05$, coefficient of determination 25%), Planning ($r = .48$, $n = 93$, $p = .05$, coefficient of determination 23%), Support ($r =$

.42, $n = 93$, $p = .05$, coefficient of determination 18%) and Meaning ($r = .38$, $n = 93$, $p = .05$, coefficient of determination 14%) were also relatively strongly correlated with the NAS. The Hopefulness subscales had the strongest correlations with adjustment, particularly those of mastery, self-worth, and energy. It is noted that different components have more influence when considering the Despair subscale. For example, in the Despair subscale Meaning ($r = -.42$, $n = 93$, $p = .05$, coefficient of determination 18%), Energy ($r = -.40$, $n = 93$, $p = .05$, coefficient of determination 16%) and Support ($r = -.39$, $n = 93$, $p = .05$, coefficient of determination 15%) were the most highly correlated dimensions.

Table 9

*Pearson Product-Moment Correlations between NAS and dimensions of HOPES**subscales*

Measures	1	2	3	4	5	6	7	8	9	10	11	12
(1) NAS												
(2) HPlan	.48*											
(3) HSW	.61*	.74*										
(4) HMean	.38*	.47*	.61*									
(5) HMasty	.64*	.68*	.77*	.44*								
(6) HEnergy	.50*	.62*	.74*	.57*	.62*							
(7) HSuppt	.42*	.49*	.62*	.43*	.66*	.54*						
(8) DPlan	-.32*	-.14	-.12	-.06	-.06	-.10	-.07					
(9) DSW	-.36*	-.14	-.25*	-.07	-.17	-.26*	-.17	.49*				
(10) DMean	-.42*	-.29*	-.45*	-.28*	-.30*	-.37*	-.26*	.49*	.63*			
(11) DMasty	-.33*	-.23*	-.30*	-.05	-.23*	-.23*	-.16	.46*	.62*	.58*		
(12) DEnergy	-.40*	-.18	-.23*	-.16	-.23*	-.23*	-.18	.66*	.64*	.68*	.58*	
(13) DSuppt	-.39*	-.15	-.23*	-.19	-.15	-.24*	-.05	.51*	.56*	.58*	.47*	.65*

N = 93.

* Significant at $p < .05$

NAS= Nottingham Adjustment Scale; HPlan=Hopefulness planning; HSW=Hopefulness self-worth; HMean=Hopefulness meaning; HMasty=Hopefulness mastery; HEnergy= Hopefulness energy; HSuppt=Hopefulness support; DPlan=Despair planning; DSW=Despair self-worth; DMean=Despair meaning; DMasty=Despair mastery; DEnergy= Despair energy; DSuppt=Despair support.

The nature of the role of hope, as stated in the third research question, necessitated examination of the moderation and mediation possibilities.

7.2. Moderation and Mediation Analyses

The significance of the relationship between degree of loss and adjustment has been established by the stepwise regression above ($F(1, 93) = 6.89, p = .01, R^2 = .07$). The multicollinearity of the independent variables (degree of loss and hope) were assessed by examining the tolerance values. The tolerance value (or the amount of variability of an independent variable not explained by another independent variable) is determined by using an independent variable as a dependent variable and regressing it against the remaining independent variables (Hair et al., 1998). This calculation produced a very high value (0.95) which established that the independent variables were not affected by collinearity or the degree of association between the specified variables that may reduce the predictive power of each variable by the extent of that association.

The summary statistics for degree of loss, hope (as derived from the HOPES measure) and adjustment (as derived from the NAS) are presented below:

Table 10

Summary statistics of loss, hope and adjustment scores

	N	M	SD	Min	M x
De ree of loss	109	1.40	0.67	1.00	3.00
Hope	102	57.29	12.26	23.00	80.00
Adjustment	101	187.50	22.16	125.00	228.00

Inspection of the Pearson correlations (presented in Table 11) that exist among

loss, hope and adjustment scores indicated significant relationships.

Table 11

Correlations between loss, hope, and adjustment

	Degree of loss	Hope	Adjustment
Degree of loss			
Hope	-.21*		
Adjustment	-.26**	.67***	

N = 92

* Correlation significant at $p = .05$
 ** Correlation significant at $p = .01$
 *** Correlation significant at $p = .0001$

While the relationship between the degree of loss and adjustment was significant ($r = -.26$, $n = 92$, $p = .01$) the coefficient of determination was only 7%. By contrast, hope was positively and significantly associated with adjustment. The extent of the relationship was substantial and the strong correlation between hope and adjustment indicated that knowing the hope score ($r = .67$, $n = 93$, $p = .0001$) explains 45% of adjustment (or vice versa). The nature of that association became evident from the moderation and mediation analyses.

7.2.1. Hope as a Moderator

Regression analyses (as outlined in chapter five) were conducted to test the moderating role of hope and the details are shown in Table 12.

Table 12

Test of moderation: Degree of loss, hope and adjustment

statistic	DF	F	p	R ²	SE	Beta	P	B
Block 1 (deg. of loss and hope)	2, 89	36.76	.0001	.45	15.96	Loss -.13	Loss .10	Loss -4.06
						Hope .63	Hope .0001	Hope 1.09
Block 2 (deg. of loss, hope, and interaction)	3, 88	26.45	.0001	.47	15.72	Loss -.75	Loss .03	Loss -22.75
						Hope .34	Hope .05	Hope .58
						LxH .64	LxH .06	LxH .35

DF = degrees of freedom, B = unstandardized coefficient, LxH = Loss X Hope interaction term.

In the first block of the regression equation, degree of loss and the hope scores were entered simultaneously. This block was significantly predictive of adjustment ($F(2, 89) = 36.76, p = .0001, R^2 = .45$). Hope had a greater beta weighting (.63, $p = .0001$) than degree of loss (-.13, $p = .100$) in the prediction of the criterion variable (adjustment). When the interaction term was entered in the second block the results indicated that the interaction between loss and hope ($p = .06$) did not account for a significant portion of the variance in adjustment beyond that which could be accounted for by loss and hope independently ($p = .03$ and $p = .05$ respectively). As stated by Hair et al. (1998), a significant change in R^2 determines whether a moderator effect is significant. In this calculation it was not. Expressed in terms of a percentage, the interaction model accounted for 47% of the variance compared to the total of 45% that could be accounted for by the independent variables separately. The beta weighting of the degree of loss was the greater (-.75, $p = .03$). The interaction term and hope beta weightings (.64 and .34 respectively) were not significant.

To test the possibility of a quadratic moderation effect, further regression

procedures outlined in Baron and Kenny (1986) were carried out. Adjustment was regressed on loss, hope, the interaction effect of loss and hope, the hope score squared, and the interaction effect score squared. If the function of the moderation effect is quadratic then the effect of the independent variable should be greatest for those who score highly on the moderator. According to Baron and Kenny (1986), the test of quadratic moderation is provided by the test of XZ^2 , where X is the independent variable and Z is the moderator. In this study the XZ^2 variable is therefore the square of the interaction effect of degree of loss and hope (referred to in Table 13 as LxH^2). The data in the second block of this regression calculation is shown in the following table:

Table 13

Test of quadratic moderation: Degree of loss, hope scores and adjustment

statistic	DF	F	p	R ²	SE	Beta	p	B			
Block 2 (deg. of loss and hope)	5, 87	36.78	.0001	.48	17.45	Loss	-.75	Loss	.03	Loss	-22.90
						Hope	.36	Hope	.05	Hope	.62
						LxH	.66	LxH	.11	LxH	.36
						Hope ²	-.06	Hope ²	-.06	Hope ²	-.004
						LxH ²	.002	LxH ²	.99	LxH ²	.0001

DF = degrees of freedom, B = unstandardized coefficient, LxH = Loss X Hope interaction term, LxH² = Loss X Hope interaction term squared.

These results indicate that the XZ^2 score was not statistically significant ($p = .99$) and did not provide evidence of a quadratic moderation effect. In other words, the relationship between the independent variables (loss and hope) and the dependent variable (adjustment) did not change with an accelerating or decelerating effect. What

relationship did exist was more likely to approximate a linear relationship.

These analyses suggest that while hope had some relationship with degree of loss and adjustment, the nature of that relationship was not one of moderation; the interaction term was not statistically significant and the relationship of loss to adjustment was not significantly affected by varying degrees of hope. Therefore the second hypothesis of this study, that hope functions as an intervening or process variable that explains the relationship between degree of loss and adjustment was investigated.

7.2.2. Hope as a Mediator

The summary of the test of mediation is presented in the following table:

Table 14

Test of mediation: Degree of loss, hope and adjustment

Statistic	DF	F	p	R ²	SE	Beta	B	Std err of B
Block 1 (deg. of loss and adjustment)	1, 98	7.30	.008	.07	21.39	Loss -.26	Loss -8.50	Loss 3.15
Block 2 (deg. of loss and hope)	1, 96	4.22	.043	.04	12.02	Loss -.21	Loss -3.65	Loss 1.78
Block 3 (deg. of loss and hope as predictors; adjustment as dep. variable)	2, 89	36.76	Loss .100 Hope .0001	.45	15.96	Loss -0.13 Hope 0.63	Loss -4.06 Hope 1.09	Loss 2.44 Hope 0.14

DF = degrees of freedom, B = unstandardized coefficient

At the first step of the mediation test, degree of loss was significantly predictive of adjustment ($F(1, 98) = 7.30, p = .008, R^2 = .07$). At the second step of the equation,

hope was treated as if it was an outcome variable and the results demonstrated it was significantly affected by degree of loss ($F(1, 96) = 4.22, p = .04, R^2 = .03$). When degree of loss and hope were entered simultaneously at the third step with adjustment as the outcome variable a significant result was produced ($F(2, 89) = 36.76, p = .0001, R^2 = .45$). The three regression equations indicated that the relationship between degree of loss and adjustment became non-significant but the mediator (hope) relationship to adjustment was significant. The standardised beta weightings shown in Table 12 were $-.13$ ($p = .10$) for degree of loss and $.63$ ($p = .0001$) for hope.

These results indicated that hope reduced the relationship between the predictor (degree of loss) and criterion (adjustment) variables. The pathway between these two variables at the first step was significant ($p = .008$) but was no longer statistically significant when hope was introduced as a mediator ($p = .10$). Although the pathway between hope and adjustment was significant ($p = .0001$), the pathway between degree of loss and adjustment was not reduced to absolute zero.

The Sobel test (Sobel, 1988) and the Goodman (1) test (Baron & Kenny, 1986; Kenny, Kashy & Bolger, 1998) of the significance of the mediation effect were used to assess the standard error of the indirect effect. Because mediation is deemed to have occurred when the significance of the direct effect drops to non-significance it is possible that both false-negatives and false-positives may result (Holmbeck, 2002). In the former instance, an initial total effect just below the $p = .05$ threshold could drop to just over the threshold and thereby suggest a significant mediation had occurred. The Sobel and Goodman (1) tests would be likely to indicate this was a false-positive. Similarly, if the total effect was substantially under the $p = .05$ threshold (say $p = .0001$) and remained

under that threshold (say $p = .04$) after accounting for the mediator it could be erroneously argued that no significant mediation had occurred. The procedure for this calculation is described by MacKinnon, Warsi and Dwyer (1995) and Preacher and Leonardelli (2001) as well as being recommended by Baron and Kenny (1986). The calculations for these two tests require the unstandardized regression coefficient for the association between the independent variable and the mediator referred to as path a (i.e. as shown in Table 14 as -3.65) and the standard error of a referred to as s_a (shown in Table 14 as 1.78). Similarly, the unstandardized regression coefficient for the association between the mediator and the dependent variable (when the independent variable is also a predictor of the dependent variable) provides a measure of path b (i.e. 1.09, as shown in Table 14) and s_b is the standard error of b (i.e. 0.14). The z value for the Sobel test is calculated using the following equation:

$$z = a*b/\text{SQRT}(b^2*s_a^2 + a^2*s_b^2)$$

Baron and Kenny (1986) and Preacher and Leonardelli (2001) recommend using the Goodman (1) test as it does not make the assumption that the product of s_a and s_b is 'vanishingly small'. The equation for the Goodman (1) test is:

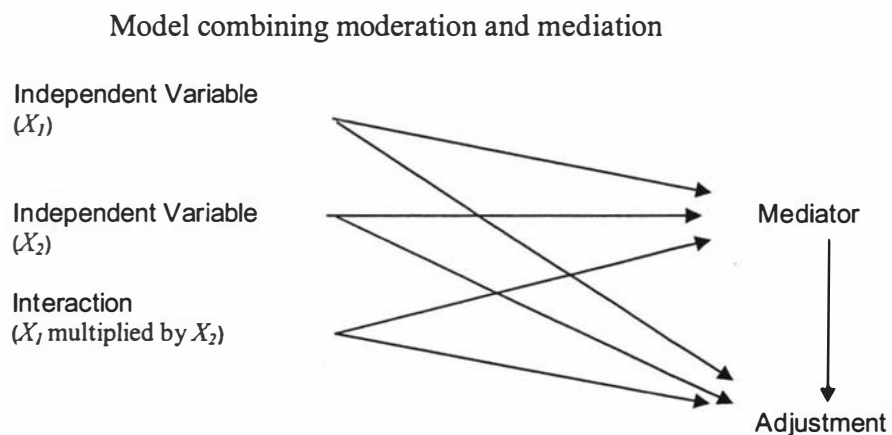
$$z = a*b/\text{SQRT}(b^2*s_a^2 + a^2*s_b^2 - s_a^2*s_b^2)$$

Carrying out the stated calculations for the Sobel test produced $z = -1.99$ indicating that the mediational effect was significant at $p = 0.046$. The Goodman (1) test calculation produced $z = -1.97$ which is significant at $p = 0.047$. On the basis of these two tests, it can be concluded that a significant mediation effect had occurred.

The possibility of hope acting as a mediating moderator or a moderating mediator

was considered. In mediated moderation the interactive effect of two independent variables on a dependent variable (adjustment) would be altered by the effect of a mediational process. In the moderated mediation model the variable of interest (hope) would act as a mediator that was stronger for one group than for another (e.g. sex or age groupings). The inclusion of additional significant individual or disability variables is necessary to adequately test these possibilities. A model such as that shown in Figure 3 (see Baron & Kenny, 1986) may achieve that objective but was not possible in this study due to the limitations of the number of independent variables (too few met the threshold for inclusion in these analyses).

Figure 3.



From these current results it may be concluded that although hope does not significantly influence the strength or direction of the relationship between the degree of hearing loss and the level of adjustment (it does not provide a moderating effect) it does have a partial mediating effect on that relationship. The evidence supports the view that a pathway exists by which the degree of loss negatively affects the level of hope and this in

turn affects the level of adjustment. The perception of one's future is confirmed as a mediator of present adjustment for people with an acquired hearing loss.

8. Discussion

The current study sought to determine the extent of the relationship between individual and disability characteristics and adjustment to an acquired hearing loss and the role that hope played in that relationship. Although the correlation with adjustment was found to be significant for the variables of: age at onset, time since onset, and the degree of loss only the latter variable proved statistically significant in the stepwise regression. The negative relationship between degree of loss and adjustment indicated that the greater the degree of loss experienced, the more likely it was that an individual would encounter difficulties in adjusting to the loss (e.g. reporting higher levels of anxiety, lower self-esteem, and lower self-efficacy). This confirmed the perspective reported in the studies of Erdman and Demorest (1998a) and Kerr and Cowie (1997) that found the degree of loss was supported as one variable in adjustment. But, consistent with the observations of several studies (e.g. Erdman & Demorest, 1998a; Herth, 1998; Kerr & Cowie, 1997; Knutson & Lansing, 1990), the magnitude of the relationship between degree of loss and adjustment was not great. Degree of loss by itself did not fully account for adjustment and is likely to be part of a set of dynamic psychological variables that influence adjustment.

The major finding in this study relates to the nature and extent of the role of hope in the relationship between the degree of loss and adjustment. The results support the emphatic statements relating to the role of hope in health contexts. From a qualitative perspective, Morse and Penrod (1999) state that "hope facilitates the passage out of suffering" (p. 149), while Nunn (1999) uses a quantitative approach to conclude that hope is of "central importance in mind-body interactions" (p. 152). While the influence of

hope was evident in the moderation model, the interaction effect did not affect the strength or direction of the relationship between degree of loss and adjustment to a statistically significant extent. This result may reflect an inherent tension between incompatible elements in acquired hearing loss. On one hand there may be a tendency for those with a moderate loss particularly to disguise, not readily acknowledge, or pay little regard to their hearing loss (e.g. Hallberg & Barrenas, 1993) and on the other hand there may be psychological discomfort with even a moderate degree of loss (e.g. Kerr & Cowie, 1997). If this is the case, then perhaps hope moderates other variables (such as problem solving strategies, socioeconomic status, or attitudes towards hearing aids) that could be involved in the relationship between degree of loss and adjustment and this possibility invites further study within the framework of a combined moderation and mediation model as illustrated in Figure 3 of chapter seven (p. 142).

A mediator “falls in the causal pathway between the [independent and dependent] variables” (Holmbeck, 1997, p. 600); therefore the supported mediational model indicated that the trait of hope served as a mechanism by which the degree of loss affected adjustment. The particular significance of the data from this study was that they identify hope established a causal pathway between degree of loss and adjustment. The evidence supports the view that hearing loss negatively affects individual perceptions of what could be (hope) and in turn this affects the level of adjustment to what exists in the present. The possibility of reverse causality in this study can be theoretically dismissed. The causal pathway from degree of loss (disability variable) through hope (psychological variable) to adjustment is logically consistent. A causal pathway from adjustment through hope to the disability variable of the degree of loss is not. Hope was the means

by which adjustment to a degree of hearing loss occurred. The finding that the degree of loss had a negative relationship with hope confirms the assertion of Jones et al. (1987) that individuals facing hearing loss may become pessimistic because they can no longer become what they once hoped to become. An acquired hearing loss is likely to have a substantial psychological impact on the people affected (e.g. Ashley, 1992; Herth, 1998; Luterman, 2001; Schlesinger, 1985) as they encounter a forced revision of fundamental identity assumptions (Hallberg et al., 2000).

The extent of the mediating role of hope evident in this study was substantial. The R^2 statistic indicates approximately 45% of the relationship between degree of loss and adjustment was accounted for by hope. This suggests that hope must be regarded as probably the principal component in the promotion of adjustment to hearing loss. The size of the effect invites consideration of methodological issues such as multicollinearity, which could also indicate possible tautological concerns. This methodological issue will be addressed below. In considering the size of the effect of hope, it needs to be noted that the majority of the participants in this study (56%) were aged over 65 years. Despite this majority facing a limited future, personal perception of the future (hope) still presents as a robust determinant of adjustment. The causal nature and the strength of these findings as well as the evidence from other fields (e.g. Curry & Snyder, 2000) indicate the desirability for dimensions of hope to be deliberately and systematically structured into hearing rehabilitation programmes and evaluation measures. The evidence in the literature and from this study suggests that psychological issues are likely to be important in the adjustment to hearing loss. Support of psychological concerns needs to at least match the audiological support.

A distinctive feature of the Nunn (1999) conceptualisation of hope is the inclusion of despair. Nunn (1999) asserts that hope does not preclude realism through a denial of vulnerability or wishful optimism. Hopelessness is commonly taken to infer negative expectations rather than an absence of positive expectations. Assigning negative expectations to the term 'despair' helps to discriminate between the varying levels of positive or negative expectations individuals may possess. It is possible that despair and hope may co-exist, be influenced by different events, or have different experiential objectives. The results of this study indicate that different features, specifically, self-efficacy and personal meaning may influence hope and despair dimensions respectively.

The uncontrollable nature of at least some aspects of an acquired hearing loss is likely to present a severe challenge to an individual's sense of mastery. Rutman and Boisseau (1995), Luterman (1999) and Hallberg et al. (2000) all comment on the challenge hearing loss presents to a person's sense of identity. This is consistent with the understanding that the development of self-identity as a person with a hearing loss may be a process that represents how the individual reflects on their interaction history and provides a situationally responsive frame of interpretation (Ohna, 2004). The hearing loss may generate doubts and anxiety about the ability to perform a range of functions and consequently have an impact on the individual's perception of their roles and competencies. The subscale of hopefulness was found to be highly correlated with mastery (40%) in this study. As established by Bandura (1989), self-efficacy beliefs are significant in enabling people to function in stressing situations. This is supported by, for example, the study of Marks (2001) that suggests that self-efficacy is a potent predictor of the overall health status of people with arthritis. The evidence of this study indicates

that the perceived ability of an individual to influence events was a major contributor to an expectation of positive future events (and in turn, adjustment).

Whereas a sense of mastery is substantially involved in developing personal hopefulness, creating and/or maintaining a sense of meaning is the most influential element in dealing with the negative expectations or despair. For example, Nekolaichuk et al., (1999) consider meaning is a core theme in hope. Lazarus (1999) maintains that hope must include dimensions beyond cognitive psychology because we can hope even when helpless by ascribing meaningfulness to the given situation despite the external factors. Perhaps this helps to explain why the majority of aged participants in this study who are more likely to confront declining mastery over their environment were still able to confirm a strong relationship between adjustment and hope. Elliot et al. (2000) conclude that subjective perceptions are associated with adjustment and distress. This is consistent with the view of Wortman et al. (1994) that the impact of a loss is determined by people's ability to incorporate it in their perspective of the world. Hetu (1996) recommended that more attention needs to be given to the meaning deaf people ascribe to hearing loss. The practical ramifications of investigating personal meaning in relation to hearing impairment are apparent in the analysis of Elliot (1999). In that study the beliefs and expectancies that comprise an individual's problem orientation are significantly predictive of disability acceptance (and lower distress). Moreover, the lower the levels of distress, the more likely problem-solving skills will be effectively applied.

The implication of these findings is that if the level of an individual's stable and general traits including the trait of hope is modifiable, as claimed by Peterson and Seligman (2004) in their authoritative current classification of character strengths and

virtues, then it may be possible to influence the levels of an individual's state of hope in hearing rehabilitation programmes to maximise effectiveness in adjustment to hearing loss. Peterson and Seligman (2004) identify hope as one of 24 specific traits or, more simply, an individual difference that is stable and general "but also shaped by the individual's setting and thus capable of change" (Peterson & Seligman, 2004, p. 10; see also, Peterson & Seligman (2003) for a study in the malleability of character strengths including hope). This view is supported by the current work of Irving et al. (2004) who identify different contributions of hope components during psychotherapy that may be modified (see also, Snyder et al., 2000). The evidence from other applications of hope indicates that trait levels of hope can indeed be enhanced through structured programming addressing hope components (e.g. Curry & Snyder, 2000; Lopez, Floyd, Ulven & Snyder, 2000; McDermott & Hastings, 2000; Peterson, 2000; Peterson & Steen, 2002; Seligman, 2000). For example, Curry and Snyder (2000) report positive outcomes in academic and sports performances following such an approach. Additionally, the changes they found were maintained at one year post training. Lopez, et al. (2000) outline narrative, solution-focussed and cognitive-behavioural strategies that can be used to instil and increase hope. These include hope finding (including various forms of assessment and profile development), hope bonding (the formation of a hopeful therapeutic alliance), hope enhancement (identifying strengths and increasing proficiencies), and hope reminding (engaging hopeful cognitions as well as recognising barriers). Russinova (1999) also provides an array of strategies designed to enhance hope. Such research provides encouragement to investigate the application of similar approaches to hearing rehabilitation as hope enhancing therapeutic or systemic responses

could increase the capacity of people to bear change (Galbally, 2000). Merely applying strategies such as a technological intervention (as in fitting a hearing aid), teaching hearing strategies, or allowing time to take effect, by themselves may have limited results unless they contribute to increasing the individual's sense of hope. A deliberate application of strategies to enhance personal hopefulness in conjunction with use of technology, hearing strategies, peer support networks, and time may be more likely to produce higher levels of adjustment. The essential question that needs to be addressed in the hearing rehabilitation process is 'does this intervention increase the client's level of hopefulness?' rather than 'does this intervention increase the client's ability to hear?'

Other findings from this study indicate that the degree of loss was most highly correlated (negatively) with acceptance. However, the regression analyses involving degree of loss and the subscales of the NAS found the degree of loss was predictive, in statistically significant terms, of anxiety only. This is consistent with the mediation analysis, which demonstrates that the degree of the hearing loss negatively affects individual perceptions (see p. 144-145). Anxiety is one of the core components of the latent factor in adjustment of 'internal self-worth' (see Dodds et al., 1994). The effect of the degree of loss on self-worth is illustrated by the description in chapter one of Beethoven's evident anxiety and supported by the data reporting the incidence of depression and related mental health conditions (e.g. Herth, 1998; McKenna, 1993; Perry, 1996; Rutman & Boisseau, 1995; Thomas, 1988). As mentioned in chapter seven, acceptance was strongly related to the other latent factor in adjustment of 'self as agent'. This is consistent with the literature on those with acquired hearing loss, which repeatedly notes the negative impact on the individual's perception of self-agency as

evident in constraints on their social interaction and participation (e.g. Ashley, 1985; Erdman & Demorest, 1998a; Jones et al., 1987; Kerr & Cowie, 1997; Perry, 1996). In Dodds et al. (1994) analysis, the relationship between acceptance and 'self as agent' indicates that while procedures such as counselling may not lead directly to improvements in self-worth, "they may change motivational factors that then increase the likelihood that the individual will act in ways that bring about successful outcomes. It is these motivational factors, rather than the mere entertainment of positive views about the self, that produce improvements in self-worth" (p. 493). While the evidence from this study demonstrated that the degree of loss substantially affects adjustment through the effect on anxiety, it is possible that this could be changed by addressing motivational factors (particularly, hope; see pp. 149-150).

Although Livneh (2001) identified time since loss as a significant contributor to adjustment, that was not supported in this study. Although time since loss was negatively correlated (-0.21) with adjustment it was not found to be significantly predictive in the regression analysis. This finding may reflect limitations of the sample of the current study (e.g. fewer individuals in the early range of time since onset), but there were some indications that this variable could be examined further since the difference between the normative sample and the participants in this study in the mean scores on the NAS did suggest that the level of anxiety may decrease over time. However, the results do confirm the view of Goodheart and Lansing (1997) that adjustment to a disability may not necessarily occur with the passage of time, but is more likely to be influenced by intrapersonal characteristics. The expectation that 'time will heal things' may be simplistic and/or erroneous for people with hearing impairment. In the context of this

study, the passage of time may in fact exacerbate the difficulty in adjusting to hearing loss as the degree of loss is likely to increase over time (as evident in this study, Herth, 1998, and the epidemiological studies of Mitchell, 2002, or Stika, 1997). A considerable quantity of literature reports the propensity of people with acquired hearing loss to withdraw from social connections and to maintain denial of the loss for a long time (e.g. Hallberg & Barrenas, 1993; Hallberg et al., 2000; Hetu, 1996; Hetu et al., 1990; Kyle & Wood, 1983; Luterman, 1999; Rutman & Boisseau, 1995). This evidence endorses the criticism made by Kendall and Buys (1998) of a 'stages' model of adjustment. The implication in such models is that the individual may passively allow the rehabilitation process to occur over time. Conceptualising adjustment as a search for meaning, a need for a sense of mastery, and an effort to protect and enhance self-identity (which is suggested by Kendall & Buys, 1998, and is compatible with hope) promotes the role of the affected individuals as active participants in the rehabilitation process who are able to take constructive, concrete action to accommodate the disability or condition in their life. This is consistent with the biopsychosocial emphasis of the ICF in considering the individual's context and working to enfranchise disabled people by inviting participation. Additionally, perceiving the individual as capable of taking an active role promotes the development of systems that will enable people to bear change and mortality as recommended in Galbally's (2000) attack on irrational 'healthism'.

As expected, the individual and disability variables did not fully explain adjustment. While there is a need for further refinement of some of these variables and the possible exploration of other well-defined individual and disability variables (such as social support and perhaps educational levels or cognitive functioning), the inability of

these variables to account for adjustment necessitates consideration of other contributing factors (e.g. Erdman & Demorest, 1998a; Kerr & Cowie, 1997; Knutson & Lansing, 1990; McMillen et al., 1997; Tedeschi & Calhoun, 1995). The psychosocial elements reflected in the hope construct were (in this study) much more predictive of adjustment levels than the degree of loss alone. This confirms the findings of recent research in the context of deafness by Erlandsson and Hallberg (2000), Hetu (1996), and Kerr and Cowie (1997). It supports the view of Scioli et al. (1997) that the trait of hope functions as a generalised disposition that facilitates successful adaptation to life challenges. The earlier view of Thomas (1988), that adjustment to hearing loss is a psychological process continues to be validated.

8.1. Limitations

While the sample was representative of those who accessed the services of HSL it was not representative of the national demographic statistics. Indigenous minorities were not well represented. The implications of the influence of a collectivist culture demands investigation of indigenous cultures that may present differing experiences of hope. The sample in this study, users of HSL services, may not fully represent the population with hearing loss. Given the propensity of hearing impaired people to deny or minimise their deafness, it is likely that only a minority of the hearing impaired population would proactively seek out the therapy services of HSL.

Although the results in this study satisfied the specifications for multicollinearity (Tabachnick & Fidell, 1996), it is noted that the correlations among hope and adjustment are considerable and this indicates caution is needed in interpreting the results. The

possibility that hope might be embedded in adjustment suggests that it may be useful to investigate the relationships between the variables to confirm/disconfirm the reliability of these results. Baron and Kenny (1986) state that because of the internal, psychological nature of a mediating variable, it is likely to be measured with error. The error typically tends to produce an underestimation of the effect of the mediator and an overestimation of the effect of the independent variable. Given that logic, it may be that the mediating role of hope is actually understated, or that the effect of the degree of loss is overstated.

A second methodological consideration is the possibility of bias in the result due to reverse causal effects. As indicated above, it is not logical to suggest that the psychological variable of hope causes a disability or a given degree of hearing loss. In the case of hope and adjustment reverse causality appears to be theoretically dubious: attaining a sense of a desirable and achievable future incorporating a disability, logically is more likely to induce an acceptance of a present disability, in other words the causal pathway is from hope to adjustment. This logic is certainly consistent with the published work of those who are personally affected by hearing loss (e.g. Ashley, 1992; Jones et al., 1987; Perry, 1996) or have worked in the field for decades (e.g. Harvey, 2003; Luterman, 2001). However, treating both hope and adjustment as outcome variables (see Figure 3 in chapter seven) could test this.

Contrary to the hypothesis put forth in this study, none of the other individual and disability variables were found to significantly contribute to adjustment. Although the use of technology and support services could logically be expected to promote adjustment (e.g. Erdman & Demorest, 1998a; Kerr & Cowie, 1997; Livneh, 2001), the results did not support this hypothesis. On reflection, it is considered that the way some of the

individual and disability characteristics were operationalised in this study was inadequate. The intervention data were open to confounding variables relating to the nature, intensity and appropriateness of the interventions as well as the varied expertise of those involved. The use of technology needs to be examined in more detail. The composite 'assistive hearing devices' variable did not sufficiently discriminate the behaviours and/or cognitions that may be associated with, for example, 'In The Ear' hearing aids as opposed to high power 'Behind The Ear' aids. There are also likely to be differences between those who may have an amplified telephone but no aids and those who have high-powered aids but are unable to use a telephone. Further consideration of the relationship of more detailed technology options and adjustment is desirable. Similarly, the use of services variable in this study lacked discriminative power. The absence of consistent and robust intervention procedures across the sample may be indicative of the existing treatments available to hearing impaired people, but did not provide robust data. Measurement and comparison of interventions requires more stringent control of the intervention procedures.

8.2. *Suggestions for Future Research*

Given that the sample in the current study may not be fully representative of the national demographic statistics alternative approaches to investigating acquired hearing loss may be useful. Undertaking research in collaboration with provider organisations servicing specific cultural and ethnic groupings may generate different data. Similarly, a sample from audiological clinics may present different demographic patterns as it might include individuals who were forced by circumstances (declining hearing) to seek

audiological support. The survey data from Stephens et al. (2001) tend to indicate that hearing impaired individuals do not pursue hearing support services. Assuming that those individuals with a hearing impairment who do not identify themselves as having a hearing loss, nor seek support, are likely to struggle with accommodating hearing impairment within their perception of the future, it is evident that capturing data from them is highly desirable. Alternative methodologies may be necessary to achieve this objective, especially where cultural contexts are a significant factor.

The results of this study show a number of strong correlations among the variables involved and some caution is needed in interpreting them. A recommended method to address the possibility of unreliability is to have multiple indicators of the construct and estimate the mediation paths by structural equation modelling (Baron & Kenny, 1986). Peterson and Vaidya (2001) have provided one example of using structural equation modelling to test for mediation in their examination of the role of expectancy in the relationship between explanatory style and depression. A more complex model could also clarify the relationships among the variables. Introducing different variables (instrumental variables) known to separately cause one outcome variable but not the other may then be used to estimate the reverse causal effect (Smith, 1982, cited in Baron & Kenny, 1986). The influence of other variables could be investigated through the action recommended by MacKinnon (2001) who states that “most mediating variables are actually part of a longer theoretical mediational chain” (p. 9506) and therefore the single mediation model could be expanded to include a more complex model of multiple mediators. Mediating variables may be identified through meta-analyses across multiple situations and through various methodologies (Cook et al.,

1992). The current single mediation model of this study could be expanded to investigate multiple mediators, moderators, or mediating moderators. Relevant variables could include problem solving strategies, socioeconomic status, attitudes towards hearing aids, or more refined versions of some of the variables used in this study that had evident limitations. Additionally, an expanded model of such a chain may address other methodological concerns such as multicollinearity.

The differing influences of hopefulness and despair could be investigated further. The fact that meaning was the principal factor in the despair subscale in this study endorses the importance of pursuing this topic in greater depth. It may be that, just as mastery implicates behavioural dimensions in the hopefulness subscale, meaning may represent an individual's quest for mastery when behavioural dimensions are severely challenged and despair threatens. Antonovsky (1987) maintains that meaningfulness is the primary component of the sense of coherence construct that is purported to assess an individual's resiliency to stress. The protective potential of personal meaning invites further study.

There are a number of issues that invite further investigation of the implications of hope among variables relating to adjustment. Peterson and Seligman (2004) comment "mediators of hope/optimism – outcome links have been relatively neglected by researchers. Our suspicion ... is that mundane behaviour is the most typical and robust mediator ..., but this possibility is very difficult to test definitively because given constructs may shift from outcome to mediator and even to predisposing factor or moderator, depending on the time perspective embodied in the research design" (p. 577). Social support is an important feature of hope and has been highlighted in a number of

studies of hearing impaired people (e.g. Hetu & Getty, 1993; Hetu et al., 1994; Hallberg & Barrenas, 1993) although how this could be precisely operationalized is a difficulty. In addition to investigating collective cultures, it may also be illuminating to research the nuclear familial relationships: the impact and influence of the significant other, the perspective of children witnessing a parent's hearing loss, and the meanings of deafness acquired and held by family members. Although there is some literature relating to the meaning people ascribe to hearing impairment (e.g. Kent et al., 2001) further qualitative studies may provide increased understanding of the heterogeneity of the experience of hearing loss. These issues as well as other variables mentioned above could be considered in a longer theoretical chain (MacKinnon, 2001) that could be investigated around hope and acquired hearing loss.

Assessment of the impact of different interventions on adjustment requires additional research. Indeed, one possibility is the investigation of hope-enhancing strategies as an intervention. Control of the implementation of such strategies and precision of data gathering to monitor the outcomes would be essential to determine the efficacy of the intervention (see Curry & Snyder, 2000; Irving et al., 2004; Lopez, Floyd, Ulven & Snyder, 2000; McDermott & Hastings, 2000; Peterson, 2000; Peterson & Steen, 2002; Russinova, 1999; Seligman, 2000).

8.3. Conclusion

While there are limitations in this study, the results do provide strong support for the mediating role of the trait of hope in the relationship between the degree of hearing loss and adjustment. The particular value of this study is that (limitations

notwithstanding) it contributes to the understanding of the nature and extent of hope in that relationship. People experiencing an acquired hearing loss are likely to confront the necessity to accommodate this 'forced fate' within an acceptable schema. What is commonly perceived as an unacceptable way of being upsets the individual sense of homeostasis. The evidence offered by this study demonstrates that the level of adjustment is influenced through the effect of the degree of hearing loss on personal hopefulness. The negative impact of hearing loss on the perceived possibility of attaining a desirable way of being threatens the sense of homeostasis. Establishing the robust nature of this causal pathway provides quantitative evidence that psychosocial factors, specifically the trait of hope, play key roles in adjustment. This evidence is suggestive of further research to investigate the implications and application of interventions that may modify an existing state of hope. It also indicates the necessity of practitioners to consider psychosocial elements in hearing rehabilitation programmes because among those who have an acquired hearing loss, hope mediates adjustment.

9. References

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10.1. Appendix 1

Ethics Approval and NFD Endorsement

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NFD Endorsement.....	184

Massey University Human Ethics Committee: Palmerston North (MUHEC: PN)
Room 2.02, Main Building, Turitea Telephone: 64 6 350 5249
<http://www.massey.ac.nz/~muhec> Fax: 64 6 350 5622
Email: S.V.Rumball@massey.ac.nz



Private Bag 11 222
Palmerston North,
New Zealand
Telephone: 64 6 350 9099

5 June 2001

Mr Bruce Kent
13 Hakea Place
Manurewa
AUCKLAND

Dear Bruce

**Re: MUHEC: PN Protocol – 01/29
The role of hope in adjustment to acquired hearing loss**

Thank you for your letter dated 21 May 2001 and the amended protocol.

The amendments you have made and explanations you have given now meet the requirements of the Massey University Human Ethics Committee and the ethics of your protocol are approved.

Any departure from the approved protocol will require the researcher to return this project to the Massey University Human Ethics Committee for further consideration and approval.

A reminder to include the following statement on all public documents "This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 01/29".

Please note that the School of Health Sciences' departmental letterhead should be used instead of the general Massey letterhead.

Yours sincerely

A handwritten signature in cursive script that reads 'Sylvia Rumball'.

Professor Sylvia V Rumball, Chair
Massey University Human Ethics Committee: Palmerston North

cc Professor Steve J La Grow
Health Sciences
TURITEA

Massey University Human Ethics Committee
Accredited by the Health Research Council

Te Kōwhiri ki Pūrehuroa

Inception to Infinity: Massey University's commitment to learning as a life-long journey



7 December 2000

Professor S. LaGrow
Health Science Faculty
Massey University
Private Bag 11 222
PALMERSTON NORTH

Dear Professor LaGrow

I was pleased to meet you when I visited Massey University a few weeks ago, having just had discussions with Bruce Kent regarding his proposed doctoral research study.

As Bruce will be using a random sample from our database for his study I met with him to discuss the study and his methodology. His project and methodology have been approved by us as appropriate and acceptable and we have also indicated to Bruce that, budget allowing, we may be able to assist him next year with some funding for an interim report.

I would appreciate it if you would forward a copy of this letter to the Massey University Doctoral Research Ethics Committee.

Regards

Jessica Lissaman
Therapist Manager
NFD Hearing Services Ltd

Cc: Murray Upton – CEO
Bruce Kent (Clinical Psychologist)

10.2. Appendix 2

Approaches to Adjustment

Some Studies in Adjustment

Author	Context and Methodology	Sample	Measures	Results	Conclusion
Bibby et al. (1996)	Hearing Impairment Survey	58 members of Canadian Hard of Hearing Association, 40 female, 18 male, age 32 to 88, 65% aged 67 and over. Onset of loss 5 to 80 years, 60% report moderate to severe loss, 96% use assistive hearing device.	Open-ended self report.	Issues of adjustment identified as: diagnosis, discovering hearing loss, dealing with physical and behavioural consequences, working hard to listen, accepting what is, hearing people's reaction. Issues of communication. Coping strategies needed.	Adjusting to hearing loss is a process taking time and requiring change. Loss not just of hearing, but also the taken-for-granted sense of self, belonging, and 'normal' life style. Adjustment requires knowledge, skills and attitude change.
Conrad & Overbury (1998)	Visual Impairment Experimental study of perceptual training and adjustment	49 adults with low vision, average age 70 years and 50 fully sighted adult average age 70 years.	Vision tests Activities questionnaire Beliefs questionnaire Expectations questionnaire Self report on visual functioning questionnaire.	Perceptual training improved performance on perceptual tasks. Identified negative cognitive-affective changes resulting from vision loss. Beliefs about and attitudes towards low vision the most likely variable to change with intervention.	Changes in normal activity levels, beliefs and misconceptions about vision loss, self-evaluation of visual abilities, and expectations for future functioning considered to be related to successful adjustment.
Elliot (1999)	Spinal Cord Injury Correlational study of social problem-solving abilities and adjustment.	186 people (140 male, 46 female) with recent SCI (M = 6.1 weeks). Average age 31.83 years, 123 Caucasian, 63 African American.	IDD for depressive behaviour Social Problem Solving Inventory Acceptance of Disability Scale Career Factors Inventory	Greater negative problem orientation predictive of all measures.	Problem-solving orientation relates to self-reported levels of adjustment.
Elliot & Richards (1999)	Spinal Cord Injury Correlational study of adjustment to traumatically acquired SCI.	40 people (72% male), mostly Caucasian (78%) with average age of 29.5 years. All admitted to an inpatient rehabilitation programme.	Unrealistic beliefs questionnaire MMPI scales for Denial, Defensiveness, and Hostility Handicap Problems Inventory BDI for depression Social activities questionnaire	No association between unrealistic beliefs of recovery and subsequent adjustment. Specific beliefs were associated with higher distress after 1 year. Denial of negative	Acceptance of disability a dynamic process of coming to terms with hopes for the future and condition realities. A generalised factor may underlie distress associated with disability and indicate individual characteristics.

				information associated with less distress, less hostility, fewer problems.	Specific beliefs about implications of condition and ongoing characteristics of individual influence adjustment.
Erlandsson & Halberg (2000)	Hearing Impairment Regression analysis to test predictors of quality of life of tinnitus patients.	163 patients, 80 male, 83 female of audiological clinic in Goteborg. Average age 57 and 60 years respectively. Heterogeneous hearing difficulties.	Tinnitus Severity Grading Scale Tinnitus Handicap/Support Scale Demographic data	Six of 13 variables were significant regressors and explained 65% of variance. Variables were: impaired concentration, feeling depressed, perceived negative attitudes, hypersensitivity to sounds, average hearing level, tinnitus duration.	Since psychological variables explained 61% of variance in quality of life and audiological variables 4% due attention must be given to the role of psychological factors.
Gallagher & MacLachlan (1999)	Prosthetic Limbs Multiple analyses of variance to assess the differences of coping strategies across sex and condition variables. Correlational analysis of relationships among coping strategies, age, time with prostheis	44 people, 20 female, 24 male with average age of 53.47 years (range 20 to 83 years). Time with prosthesis averaged 118.74 months. Data on condition and causes.	Coping Strategy Indicator General Health Questionnaire Pain questionnaire Individual and Disability-related questionnaire.	Adjustment factors did not vary significantly between the coping strategies after controlling for age, sex, cause, site of amputation, time with prosthesis. Traumatic cause of amputation related to avoidance coping strategies. Avoidance related to less support seeking and greater pain.	Problem-solving strategies more used when people believe the situation is changeable. Crucial element appears to be concentration of attention on future function rather than past loss.

Hallberg et al. (2000)	Hearing Impairment Grounded Theory study of coping with post-lingual sever-profound hearing impairment.	17 severe-profoundly hearing impaired adults (11 female, 6 male). Average age 46 years, hearing loss greater than 70 dB, all hearing impaired from early childhood and all had hearing aids.	In-depth interviews about 1 hour in length using open ended questions.	Core theme identified was 'Finding flow and entering a positive circle' (subsumes coaching, belonging to two worlds, self-efficacy, hardiness, coping strategies).	The hearing impaired participants were always striving to be competent and capable which may contribute to psychological stress for those with hearing impairment. Reports of 'being hardy' indicating self-efficacy and affective coping. This appears to relate to cognitive appraisal.
Karlsson (1998)	Visual Impairment Correlational study of self-reported distress with various degrees of visual impairment.	218 Icelanders aged between 18 years and 97 years. All with low vision or blind.	Researcher constructed questionnaire	Self-reports of psychological distress and perceptions of unhappiness vary significantly according to the degree of vision impairment.	Those who attribute ill health to visual impairment (or other impairments) more likely to report distress and depression. This may be related to a cognitive or attributional style. Such individuals are likely to feel helpless and find it difficult to adapt to new circumstances.
Thoren-Jonsson (2001)	Poliomyelitis Grounded Theory study of process of adaption to poliomyelitis sequelae	22 people with reduced mobility and/or physical independence. Average age was 53 and time since onset ranged from 35 to 61 years.	In-depth interviews ranging between 2 and 6 hours each. Follow-up interviews 4 – 5 years later.	Core category of 'coming to a changed approach' to affected capabilities includes two processes: (a) realisation and reorganisation, and (b) behaviours in daily living activities.	Flexibility in choosing strategies enhances participation in daily occupations. This promoted by cognitive, affective, and behavioural dimensions.
Rapp et al. (1997)	Psoriasis Correlational and regression analysis to investigate the impact of psoriasis in biopsychosocial dimensions.	317 psoriasis patients (57% female), average age 49 years, most Caucasian (92%) and suffered psoriasis for an average of 14 years.	Self-Administered Psoriasis Area and Severity Index. Psoriasis Disability Scale. Brief Symptom Inventory.	A significant number of psoriatic patients report suicidal ideation and other indicators of psychological distress. The condition interferes with a wide range of activities. The negative response from others is significant.	Psychological interventions to increase perceived control are likely to be affective. Chronic strain is associated with functional disabilities, psychological distress, and disease-related stressors. Chronic strain is more a function of the impact of the condition than the acute severity of the condition.

10.3. Appendix 3

Questionnaire Information

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Private Bag 11 222
Palmerston North,
New Zealand
Telephone: 64 6 356 9099

Hearing Impaired Adjustment Survey

9 June 2001

P.O. Box 76-620
MANUKAU CITY

Dear Recipient

The following survey on adjustment to hearing loss comes to you through the National Foundation for the Deaf (NFD) Hearing Services Limited (HSL). You have been randomly selected from the HSL client database. The survey is confidential and the number on the enclosed return envelope is only for HSL staff to check that surveys have been returned. HSL do not open any of the returned envelopes, they only pass them to the researcher who has no means of identifying individuals. You may check these details by contacting:

Jessica Lissaman
Therapist Manager
NFD Hearing Services Limited
PO Box 5593
AUCKLAND 1036

Phone/TTY (09) 307 2922
Fax (09) 307 2923

Your participation or non-participation will not have any affect on current or future treatment or services. The following information gives more details of the project.

Yours sincerely

A handwritten signature in cursive script that reads 'Bruce Kent'.

Bruce Kent

Dear Recipient

This questionnaire on adjustment to hearing loss comes to you through NFD Hearing Services Limited (HSL). You have been randomly selected from the HSL client database. The questionnaire is confidential and the number on the enclosed return envelope is only for HSL staff to check that questionnaires have been returned. HSL do not open any of the returned envelopes, they only pass them to the researcher who has no means of identifying individuals. You may check these details by contacting:

Jessica Lissaman
Therapist Manager
NFD Hearing Services Limited
PO Box 5593
AUCKLAND 1036

Phone/TTY (09) 307 2922
Fax (09) 307 2923

The following questionnaire forms part of a Doctoral research project with the Health Science Faculty of Massey University. The project seeks to investigate the impact of acquired hearing loss and how people adjust to it. The information you provide will be very helpful in extending our understanding of what it means to adjust to hearing loss and may assist in the development of Hearing therapy practice.

Your participation is entirely voluntary and you may withdraw at any time. The information gathered will be anonymous and will not identify any individual. The data will be reported only in statistical form. You may contact the supervisors of this project at the addresses given below. A copy of the final results will be available through your Hearing Therapist. Your participation is appreciated.

Researcher

Bruce Kent
(Registered Psychologist and Doctoral candidate)
P.O. Box 76-620
MANUKAU CITY

Supervisors

Prof S. La Grow
School of Health Sciences
Massey University
P.O. Box 170
PALMERSTON NORTH

Dr A. Hogan
Liverpool Health Service
PO Box 7103
Liverpool
BC NSW 1871
AUSTRALIA

Notes To Help You

Overview

There are three parts to this questionnaire:

1. Client Data

This asks for some basic information about you so that we can match trends in life circumstances and adjustment to hearing loss.

2. HOPES Scale

This part of the questionnaire asks about your views of life generally. There are no right/wrong answers. The responses are simply how you feel about things at the moment.

3. Nottingham Adjustment Scale (NAS)

The NAS is a way of assessing the different parts of adjustment to hearing loss. It asks questions covering seven different areas (they are labelled A – G).

Please complete ALL parts of the questionnaire.

Client Data

On most of the items in this section you simply tick the parts that best fit you.

Other Medical Conditions

This section is included for you to note (briefly) any significant condition you may currently have e.g. heart condition; vision loss; Parkinsons. You also may wish to note if you are facing the loss of a close relative.

Degree of Loss

This is where you are required to record how much of your hearing is lost. You may have a reasonable idea and be able to tick either *moderate*, *severe* or *profound*. You may have an audiogram that shows the level of decibel loss. You may want to contact your Hearing Therapist to check your loss.

Supportive Technology

This is to note what things you use to help you deal with communication difficulties. *Assistive Hearing Device* means any item that you have to amplify or improve hearing such as hearing aid(s); amplifiers; fittings to the phone/TV; FM systems.

HOPES and NAS Forms

Possible Issues

Issue	Recommendation
1. You refuse to do questionnaire.	1. Researcher respects your choice.

2. You don't understand questionnaire.	2. Ask a friend to help you but if confusion persists you do not have to continue.
3. You are unsure of a question.	3. All questions are concerned with current functioning – i.e. in the last month to six weeks. The desired response is likely to be the usual/predominant feeling in general terms. Another guide is to use the most immediate response – the longer you ruminate the more possibilities are considered – the better response is probably the one that came first.
4. You omit a question(s).	4. You may do so. Continue the questionnaire.
5. You ask for help in answering.	5. You may have a friend help you but they must <u>not</u> tell you what you should answer.
6. You put name on questionnaire.	6. Delete or black out any identifier.
7. You feel upset at a question.	7. Stop the questionnaire, and remember you can choose to continue or finish at that point.
8. You take a long time.	8. There is no time limit on the subjects (see 3 above also).
9. You refer questions to a support person.	9. The questionnaire is intended to collect the responses of the hearing impaired person only. A friend may help you but <u>your</u> thoughts and feelings are wanted.

Your Rights

The people who agree to participate in the questionnaire do so voluntarily. There is no compulsion to be involved nor is participation related to your need for support services. The research project is not sponsored by any clinic or health organisation – it is independent of any treatment programme you may be involved in. You may decline to respond.

The data is anonymous. No identification of you is included in the questionnaire. The researcher does not have direct contact with any of the participants. HSL are only involved to issue the forms, responds to any check on the authenticity of the research and to return the forms to the researcher – no record of participation is kept.

The data from the questionnaires do not identify an individual in any manner. The data will be used in statistical analysis only and will be reported in that form. Once the data analysis is completed all questionnaire forms will be destroyed.

Any detailed queries may be directed to either the researcher (through HSL) or the supervisors.

The results of the research will be distributed to HSL and may be accessed through your Hearing Therapist. People who complete the questionnaires may therefore access the results without needing direct contact with the researcher. It is anticipated that the results will also be published in an appropriate forum (magazine or Journal).

The information from the questionnaire will be used in the statistical analysis of the factors involved in adjusting to acquired deafness. This is likely to provide additional insight into how the psychosocial needs of hearing impaired people may be assessed and best provided for.

Your completion and return of the anonymous questionnaire will be taken as acknowledgement that you have read the information and consent to participate.

Your participation is valued and helpful. Thank you.

10.4. Appendix 4

Hearing Therapists' Information

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Private Bag 11 222,
Palmerston North,
New Zealand
Telephone: 64 6 356 9099

For Hearing Therapists Information

9 June 2001

P.O. Box 76-620
MANUKAU CITY

Dear Hearing Therapist

Research Project on Adjustment to Hearing Loss

Enclosed is information relating to a research project that has been approved by NFD and HSL management. A number of randomly selected clients from the HSL database will receive the Survey Information Sheet and survey forms that examine psychosocial aspects of hearing rehabilitation. Copies of these materials are enclosed for your information should any of your clients discuss this study with you. Additionally, some background information is included to provide you with more understanding of the rationale and procedures as well as how you should respond as a Hearing Therapist to any queries about the study.

As a Hearing Therapist you are not directly involved in this research. The enclosed material is sent to you for professional/collegial information only since HSL clients are involved. Subsequent reports will be distributed to HSL so that clients may have access to the results.

Should you have any concerns about the authorisation of this study you may contact Jessica Lissaman or Murray Upton.

I am willing to respond to any questions about the project itself.

Yours sincerely

A handwritten signature in cursive script that reads "Bruce Kent".

Bruce Kent

Enclosures: Hearing Therapist Information
 Survey Information Sheet
 Client Data Form
 Nottingham Adjustment Scale
 HOPES Scale

Te Kōwhiri ki Pūrehuroa

Inception to Infinity: Massey University's commitment to learning as a life-long journey

Research Project on Adjustment to Hearing Loss

Researcher

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Background For Project

Approximately 420,000 to 450,000 people (about 13% of the New Zealand population) experience hearing loss (Upton, 1998). The stigma of deafness is a significant factor in avoiding or declining intervention (e.g. Blood, 1997) and people may self-select themselves out of the "disabled" population because of the social stigma (Pfeiffer, 1999). This project seeks to identify and analyse the psychological factors that support adjustment to acquired deafness in order to enhance rehabilitation of those affected.

Object of the Research

This project focuses on an area of rehabilitation of deafened people that is undeveloped. It is developing practical clinical strategies and instruments likely to support existing services. By surveying a sample of people who have a significant hearing loss we aim to identify those psychosocial aspects of adjusting to a disability that are most common as well as those which are most helpful in assisting a person to adjust. Once these aspects are identified we can then proceed to more efficiently targeting counselling support strategies. Therefore this project provides an essential foundation for further development of practical assistance for people with substantial hearing loss.

The Questionnaire Used

The personal data is necessary to assess the extent to which individual factors influence adjustment. The factors selected have been found to be relevant in other research studies. The HOPES scale is a short assessment that was designed to measure how people view their future in the light of a current disability. The items of this scale can be analysed to indicate specific psychological needs. It is likely that some of these specific areas are closely related to the ability of a person to satisfactorily adjust to an acquired disability.

The Nottingham Adjustment Scale (NAS) is a longer assessment of factors known to be involved in adjustment to disability. It covers a range of different areas to establish a broad picture of the current needs of a person coping with adjustment.

Both of the measures (HOPES and NAS) have been constructed on the basis of research and they have both been developed specifically for people encountering disabilities. There are published articles supporting the validity of both assessments and they have been applied in various clinical settings.

Subjects' Rights

The people who agree to participate in the project do so voluntarily. There is no compulsion to be involved nor should participation be implied as related to their need for support services. The research project is not sponsored by any clinic or health organisation – it is independent of any treatment programme the participants may be involved in. The participants may withdraw at any point.

The data is anonymous. No identification of the participants is included in the questionnaire. The researcher does not have direct contact with any of the subjects.

The data from the questionnaires do not identify an individual in any manner. The data will be used in statistical analysis only and will be reported in that form. Once the data analysis is completed all questionnaire forms will be destroyed.

The participants are entitled to be informed of the nature and purpose of the research. Any detailed queries may be directed to either the researcher or the supervisors (via HSL).

It is anticipated that the results will also be published in an appropriate forum (magazine or Journal). If preferred, the results may be requested directly from the researcher (via HSL).

The information from the questionnaire will be used in the statistical analysis of the factors involved in adjusting to acquired deafness. This is likely to provide additional insight into how the psychosocial needs of hearing impaired people may be assessed and best provided for.

Hearing Therapists' Role

You do not have any direct involvement in the project. This information is provided so that you are aware that the project is being undertaken in the event that a client should comment on it to you.

There may be a few clients who ask their Hearing Therapist for confirmation of their hearing levels so that they can respond to one item of requested client data.

You are being provided with copies of the forms sent to randomly selected clients on the HSL client database (i.e. clients who have agreed to allow data use) so that you are familiar with what some clients are involved with. It is NOT the Hearing Therapist's role to complete these forms for the client.

The copies of the assessment instruments are distributed to Hearing Therapists for information only. **Use of the assessments with any persons is neither authorised, recommended nor implied.** Any unsanctioned use of the assessments is likely to infringe various authors' rights, may cause distress through misapplication and is contrary to ethical practice.

References:

- Blood, I.M. (1997). The hearing aid effect: Challenges for counseling. *Journal of Rehabilitation*, 63 (4), 59-63.
- Upton, M. (1998). Chief executive National Foundation for the Deaf report. *Communicate*, 8 (1).
- Pfeiffer, D. (1999). The problem of disability definition: again. *Disability and Rehabilitation*, 21 (8), 392-395.

10.5. Appendix 5

Client Data

Client Data

Please note that this information is anonymous and will not identify the respondent. It will be used for statistical purposes only.

Tick the boxes below that apply to you.

	Male	Female				
Sex	<input type="radio"/>	<input type="radio"/>				
	Maori	Caucasian	Polynesian	Asian	Other	
Ethnicity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
AgeYears					
	Single	Married	Widowed	De Facto	Separated	
Marital status	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	Business	Manual	Clerical	Profession	Retired	Unemployd
Occupation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other Medical Conditions						
	Moderate (<65dB)	Severe (65-89dB)	Profound (90dB>)			
Degree of Loss (better ear)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>			
	Under 25	26-35	36-50	51-65	Over 65	
Age at onset of Loss	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
	<1 year	1-4.11 yrs	5-9.11 yrs	10-19.11 yrs	20> yrs	
Length of Loss	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	

	Assistive Hearing Device (incl hearing aid/s)	C.I.	NZSL	None
Supportive Technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Hearing Therapist	Medical/Audiological Consultant	Counsellor	Support Group	None
Current main use of services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please continue by completing the following two surveys.

10.6. Appendix 6

Nottingham Adjustment Scale (NAS)

A.**Instructions**

Please read each statement below and indicate *How Well* the statement describes your general feelings in the last few weeks by choosing one of the alternatives from the scale (N-M) and tick the appropriate box on the right.

		Describes Me			
		N			
			Not at all		
		n	No more than usual		
		m	Rather more than usual		
		M	Much more than usual		
		N	n	m	M
1.	Have you recently been feeling run down and out of sorts?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Have you recently felt that you are ill?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Have you recently felt constantly under strain?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4.	Have you recently found everything getting on top of you?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5.	Have you recently been feeling nervous or strung up all the time?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Have you recently been thinking of yourself as a worthless person?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.	Have you recently felt that life is entirely hopeless?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8.	Have you recently felt that life is not worth living?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9.	Have you recently thought of the possibility of doing away with yourself?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Have you recently found at times you couldn't do anything because your nerves were so bad?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.	Have you recently found yourself wishing that you were dead and away from it all?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12.	Have you recently found that the idea of taking your life kept coming into mind?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

B.**Instructions**

Please read each statement below and indicate *How Well* the statement describes your general feelings in the last few weeks by choosing one of the alternatives from the scale (A-D) and tick the appropriate box on the right.

Describes Me

A Strongly agree
a Agree
• Don't know
d Disagree
D Strongly disagree

- | | A | a | • | d | D |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. On the whole, I am satisfied with myself. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. At times I think I am no good at all. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. I am able to do things as well as most other people. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. I certainly feel useless at times. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. I feel that I do not have much to be proud of. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. I feel that I am a person of worth; at least on an equal plane with others. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. I wish I could have more respect for myself. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. All in all, I'm inclined to feel that I'm a failure. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. I take a positive attitude towards myself | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

C.**Instructions**

Please read each statement below and indicate *How Well* the statement describes your general feelings in the last few weeks by choosing one of the alternatives from the scale (A-D) and tick the appropriate box on the right.

Describes Me

A Strongly agree
a Agree
***** Don't know
d Disagree
D Strongly disagree

- | | A | a | * | d | D |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Hearing impaired people are used to failing at most things they do. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Most hearing impaired people are constantly worried about what might happen to them. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Most hearing impaired people keep a lot of things to themselves. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Most hearing impaired people feel that they are worthless. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Hearing impaired people are generally more easily upset than hearing people. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Most hearing impaired people are dissatisfied with themselves. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Most hearing impaired people believe that hearing loss is the worst thing that could happen to them. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

D.

- | | A | a | * | d | D |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. It's what I can do to help myself that's really going to make all the difference. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. It's up to me to make sure I make the best of my future in these circumstances. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. My own contribution to my rehabilitation doesn't amount to much. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. I have little or no control over my progress from now on. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Instructions

Please read each statement below and indicate *How Well* the statement describes your general feelings in the last few weeks by choosing one of the alternatives from the scale (A-D) and tick the appropriate box on the right.

Describes Me**A** Strongly agree

a Agree

* Don't know

d Disagree

D Strongly disagree**E.**

- | | A | a | * | d | D |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Because of my hearing problems, I feel miserable most of the time. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. It makes me feel very bad to know there are things hearing people can do that I cannot. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Because of my hearing problem, I have little to offer other people. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Because of my hearing problem, other people's lives have more meaning than my own. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. I feel satisfied with my abilities, and my hearing problem doesn't bother me too much. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Almost every area of life is closed to me because of my hearing problem. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. My hearing problem prevents me from doing just about everything I really want to do and from being the kind of person I really want to be. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. In just about everything, my hearing problem is so annoying that I can't enjoy anything. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Often there are times when I think about my hearing problem, and it upsets me so much that I am unable to think or do anything else. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Instructions

Please read each statement below and indicate *How Well* the statement describes your general feelings in the last few weeks by choosing one of the alternatives from the scale (A-D) and tick the appropriate box on the right.

Describes Me

- A** Strongly agree
a Agree
• Don't know
d Disagree
D Strongly disagree

F.

- | | A | a | • | d | D |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. I give up on things before completing them. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. If something looks too complicated, I will not even bother to try. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. When I decide to do something, I go right to work on it. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. When trying to learn something new, I soon give up if I am not initially successful. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. I avoid trying to learn new things when they look too difficult for me. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Failure just makes me try harder. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. I give up easily. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. I do not seem capable of dealing with most problems that come up in life. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Instructions

Please read each statement below and indicate *How Well* the statement describes your general feelings in the last few weeks by choosing one of the alternatives from the scale (A-D) and tick the appropriate box on the right.

Describes Me

A Strongly agree
a Agree
***** Don't know
d Disagree
D Strongly disagree

G.

- | | A | a | * | d | D |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. Any successes I have had have been due to good fortune. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. When things go wrong it's because of circumstances beyond my control. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Any successes I've had have been due to outside influences. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Any successes I've had have been due to the fact that circumstances have happened to be right. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. If things go well it's just good luck. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. If things go well it's because the system helped me. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

10.7. Appendix 7

Hunter Opinions and Personal Expectations Scale (HOPES)

Instructions

Please read each statement below and indicate *How Well* the statement describes you *IN GENERAL* (i.e. *Most of the time*) by choosing one of the alternatives from the five point scale (0-4) and writing its number in the box on the right.

Describes Me

- 4 Extremely well
3 Very well
2 Moderately well
1 NOT very well
0 NOT at all

- A I generally look forward to new activities and phases in my life.
- B I often feel that when I look back on my life I will be satisfied.
- C I am the sort of person who believes that life is NOT pointless.
- D I often feel that my future is NOT in my own hands.
- E I generally believe that the most important people in my life do NOT care about my future.
- F I believe that I can handle most of the difficulties that I might have to face.
- G I generally believe that my life will be valuable and productive.
- H I generally have little energy to do the things I want to do.
- I I really believe that the children of today CANNOT expect much from their lives.
- J I generally believe that my future will be very active.

Instructions

Please read each statement below and indicate *How Well* the statement describes you *IN GENERAL* (i.e. *Most of the time*) by choosing one of the alternatives from the five point scale (0-4) and writing its number in the box on the right.

Describes Me

- 4 Extremely well
3 Very well
2 Moderately well
1 NOT very well
0 NOT at all

- K The people around me see me as the sort of person who will have a valuable and productive life.
- L I often fear that the rest of my life will NOT be worthwhile.
- M Even when things go right, I often fear that my future is NOT under my control.
- N I often feel that I will be less and less comfortable with my body as time goes on.
- O I generally look forward to sharing my life with others.
- P I often fear that I will understand less and less about myself as time goes on.
- Q I generally am NOT enthusiastic about my future.
- R I am the sort of person who makes definite plans for my future.
- S I generally believe that I will get what I want out of life.
- T I often fear that I will NOT have the personal support I need in the future.