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**HEARING THERAPISTS' AND AUDIOLOGISTS' KNOWLEDGE
OF AND ATTITUDES TOWARDS OLDER ADULTS**

A thesis presented in partial fulfilment of the requirements for the degree of

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ABSTRACT

The predicted increase in adults over 65 will challenge health and social service providers. Productive ageing, where healthy older adults are encouraged to remain in the workforce for longer, may be a solution. One barrier to this solution may be the negative attitudes many people have towards older adults. Fishbein & Ajzen's, (1975) theory of reasoned action postulates that attitudes are based on beliefs or knowledge and can have an affect on how people behave. Attitudes may also be influenced by such factors as age, gender, experience and, most importantly, the attitudes and beliefs of significant others (subjective norms) (Fishbein & Ajzen, 1975). Hearing impairment is the third most limiting chronic condition for older adults (Chen, 1994). In the present study, 15 Hearing therapists and 30 private audiologists in New Zealand completed Palmore's (1998) Facts on Aging Quiz (FAQ), Kogan's (1961) Attitudes towards Old People Scale, a vignette measuring treatment intentions and subjective norms, and gave biographical data. It was hypothesized that audiologists would have higher knowledge levels (FAQ) and more positive attitudes (ATOP) than hearing therapists. Despite the differences in education, there were no significant differences between the two groups in FAQ scores. However, hearing therapists did have more positive attitudes towards older adults. Further analyses suggested that this was a function of gender and possibly education, with less-educated females having more positive attitudes. When considering the two professional groups together, those 40 years old and over had more positive attitudes than those less than 40 years old. It was also hypothesised that, based on the theory of reasoned action, positive attitudes will result in positive treatment (as measured by the vignette) and this relationship will be moderated by subjective norms. Subjective norms were not measurable using the vignette and were not investigated further. While all participants had positive attitudes these did not always result in the most appropriate treatment. It was concluded that a lack of specific gerontological knowledge resulted in less appropriate treatment rather than negative attitudes towards older adults.

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TABLE OF CONTENTS

Abstract.....	ii
Acknowledgements.....	iii
Table of Contents.....	iv
List of Tables	ix
List of Figures.....	x
CHAPTER ONE:	
OVERVIEW.....	1
INTRODUCTION.....	4
1.1 Description of Introduction.....	4
1.1.1 The Ageing Population.....	4
1.1.2 Life Expectancy and Health.....	5
1.1.3 Retirement.....	6
1.1.4 Future problems and potential solutions.....	6
1.2 Ageism in Western Society.....	7
1.2.1 Definitions of Old Age.....	7
1.2.2 Attitudes towards Older Adults.....	7
1.2.3 Societal Perspective.....	8
1.2.4 Other Sources of Influence.....	8
1.2.5 Effects of Negative Attitudes.....	10
1.3 Theoretical Issues.....	12
1.3.1 History of Attitude	12
1.3.2 Measurement of Attitude.....	12
1.3.3 Specific Attitude Measures.....	13
1.3.4 The Theory of Reasoned Action.....	14
1.3.5 The Theory of Planned Behaviour.....	16
1.3.6 Potential Limitations of the Theory.....	18

1.3.7	Changing Negative Attitudes.....	19
1.4	Measurement of Knowledge.....	20
1.5	Productive Ageing.....	21
1.6	Normal Ageing.....	22
1.6.1	Cognitive Changes in Ageing.....	22
1.6.2	Age-related Cognitive Decline.....	23
1.6.3	Speed of Performance.....	23
1.6.4	Seattle Longitudinal Study.....	24
1.6.5	Reversal of Age-Related Cognitive Decline.....	24
1.6.6	Physical Health in Older Adults.....	25
1.7	Hearing Impairment.....	25
1.7.1	Hearing Loss in Old Age.....	25
1.7.2	Measurement of Hearing Loss.....	26
1.7.3	Treatment of Hearing Loss.....	26
1.7.4	Psychological Correlates of Hearing Loss.....	27
1.7.5	Aural Rehabilitation.....	28
1.8	Services Available in New Zealand.....	30
1.8.1	Audiology.....	30
1.8.2	Hearing therapy.....	31
1.8.3	Liaison between professional groups.....	31
1.9	Integration of Theory and Practice.....	32
1.10	Research Goals.....	32
1.11	Hypotheses.....	33
CHAPTER TWO: METHOD.....		34
2.1	Design.....	34

2.2	Participants.....	34
2.3	Measures.....	34
2.3.1	Biographical data.....	34
2.3.2	Facts on Aging Quiz (FAQ).....	34
2.3.3	Attitude Towards Old People Scale (ATOP).....	36
2.3.4	The use of vignettes to measure potential behaviour.....	38
2.4	Procedure.....	41
2.4.1	Sponsored draw.....	41
2.4.2	Assignment to vignette versions.....	42
 CHAPTER THREE: RESULTS.....		44
3.1	Data screening.....	44
3.2	Response Rate.....	44
3.3	Biographical details.....	44
3.3.1	Hearing Therapists.....	44
3.3.2	Audiologists.....	46
3.4	Analysis.....	46
3.5	Type of Survey.....	47
3.6	Biographical comparison between groups.....	47
3.7	Facts on Aging Quiz.....	49
3.7.1	The Facts on Aging Quiz as a measure of attitudes.....	52
3.8	Attitude Towards Old People Scale.....	53
3.8.1	Individual Statements of the ATOP.....	53
3.8.2	Total ATOP score.....	58
3.9	Results of the vignette.....	58
3.9.1	Individual vignette answers.....	58

3.9.2	Measurement of subjective norms.....	58
3.9.3	Positive treatment scores.....	59
3.9.4	Audiometric information.....	60
3.9.5	Personal information.....	60
3.9.6	Relationships among variables.....	61
 CHAPTER FOUR: DISCUSSION.....		62
4.1	Description.....	62
4.2	Email versus postal survey.....	62
4.3	Biographical details.....	63
4.4	Facts on Aging Quiz (FAQ).....	65
4.4.1	Facts on Aging Quiz as an Attitude Measure.....	67
4.4.2	Limitations of the Facts on Aging Quiz.....	68
4.5	Attitudes Towards Old People (ATOP).....	69
4.5.1	Limitations of the Attitudes Towards Old People scale.....	72
4.6	The Vignette.....	72
4.6.1	The Positive Treatment score.....	76
4.6.2	The Similarities of Practice score.....	76
4.6.3	Limitations of the vignette scores.....	77
4.7	The Theory of Reasoned Action.....	78
4.8	Summary.....	79
4.9	Limitations of the Study.....	79
4.10	Future Directions.....	81
4.11	Conclusions and Recommendations.....	84
 References.....		86

Appendices.....96
Appendix A:..... 96
Appendix B..... 105
Appendix C..... 106
Appendix D..... 107

LIST OF TABLES

Table 1: Biographical details of participants.....	45
Table 2: Number of correct, incorrect and don't know answers given on the Facts on Aging Quiz.....	49
Table 3: Anti-, pro- and net age bias scores from the Facts on Aging Quiz for hearing therapists and audiologists.....	52
Table 4: Pearson correlations among the Facts on Aging bias scores and the Attitudes Towards Old People scores.....	53
Table 5: ATOP statements means, standard deviations, ranges and significance for hearing therapists and audiologists.....	54
Table 6: Independent samples t-test of gender, age and education with total ATOP score.....	57
Table 7: Means and standard deviations of the Positive treatment score for audiologists and hearing therapists on both vignette versions.....	60
Table 8: Independent samples t-test of gender and education with Facts on Aging Quiz total correct scores.....	105
Table 9: Correlations among FAQ total correct score and age, percent clients over 65, percent clients rural and years of experience.....	105
Table 10: Correlations among Total ATOP scores and age, percent clients over 65, percent clients rural and years of experience.....	106
Table 11: Results from the vignette questions for both audiologists and hearing therapists.....	107

LIST OF FIGURES

Figure 1: Actual and projected population over 65 years in %.....	5
Figure 2: The theory of reasoned action.....	15
Figure 3: Ajzen's theory of planned behavior.....	17
Figure 4: Factors influencing the impact of hearing loss.....	29
Figure 5: Flow chart depicting assignment of participants to either a 63 year old Vignette or a 78 year old vignette.....	43

OVERVIEW

The number of adults over 65 is projected to increase to over twenty-five percent of the total population of New Zealand by 2051 (Statistics New Zealand, 1998). As the population of the world, and New Zealand, ages, it presents new challenges to governments, health services and researchers alike. Issues such as chronic health problems and superannuation become more important as the proportion of older adults compared to younger adults changes. An increasing amount of the money available for general health care may have to be used to deal with the chronic illnesses associated with ageing. Also, there will be a far lower ratio of workers compared to superannuitants available to fund pension plans (Organisation for Economic Cooperation and Development, (OECD), 1988). One potential theory about how to deal with these problems is productive ageing. If older adults are healthy and able to work longer, then perhaps they should be encouraged to do so. This may lessen the financial pressure on both health care and pension plans. However, there are certain barriers to be overcome if productive ageing is to be realised. Perhaps the most crucial barrier is that of the attitude many people, such as policy makers and health professionals, have towards older adults.

There is much empirical and anecdotal evidence to suggest that the attitude of western society in general is negative towards older adults. Ageing is seen as a time of both physical and cognitive decline leading to death, even though there is a great deal of evidence to suggest that such decline does not occur evenly across all functions or at the same rate and that every individual is different (Salthouse, 1991; Schaie, 1994). Additionally, many conditions, while possibly age-related, are not inevitable and there are many other conditions that respond well to treatment when given appropriately. Unfortunately, if knowledge of ageing is inaccurate and if negative attitudes towards ageing and older adults exist, appropriate treatment may not occur. There may also be assumptions made regarding what is and what is not normal ageing.

Attitudes are important because they have an effect on how people behave (Ajzen, 1988; Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975). Attitudes of the general public and health professionals are often based on inaccurate beliefs or knowledge

regarding older adults (Palmore, 1998). For example, a psychologist may believe that depression is normal in old age and therefore not worth treating. Other health care specialists may think that older adults are unable to learn new knowledge so it is pointless trying to train them in new tasks. Thus appropriate treatment may not be forthcoming. In addition, positive attitudes towards older adults that result in an overestimation of abilities are also likely to be detrimental to older adults, such as assumptions about how quickly they can learn or how good their memory is.

As well as being affected by knowledge, attitudes and behaviour are also influenced by such factors as personality, age, prior experience, gender and, importantly, the knowledge and attitudes of significant others (Fishbein & Ajzen, 1975). These may have a direct effect on either the attitude or the behaviour – a person may have positive attitudes towards a target but behave negatively because that is what is expected by significant others. Thus the relationship between knowledge, attitudes and behaviour is complex (Eagly & Chaiken, 1993).

In order to examine the above relationship, the present study focuses on a certain section of health professionals who have an important role in helping older adults deal with a very common chronic condition, that is, age-related hearing loss or presbycusis. This is a progressive and incurable condition that can have a large effect on the psychological well being of the sufferer (Hétu, 1996; Hull, 1997; Stephens, 1996) and it is usually treated with the fitting of hearing aids. Both audiologists and hearing therapists have important roles in aural rehabilitation that sometimes overlap. While only audiologists dispense hearing aids (chosen based on both audiological information and the needs of their clients), both groups work with older adults post-hearing aid fitting to help give the best possible result. In addition, hearing therapists run speech-reading and hearing-aid management classes as well as advise on and sell assistive listening devices such as vibrating alarm clocks and television headphones.

Hearing loss imposes limitations on those who suffer from it (Hétu, 1996; Stephens & Hétu, 1991). While hearing aids cannot totally replace the loss of hearing, they do allow a far higher level of functioning for older adults than would be achieved without hearing aids. Unfortunately, many people who overcome barriers such as finance,

attitudes to hearing loss and aids, and accessibility to health professionals and are actually fitted with hearing aids do not use them (Jerram & Purdey, 1996; Kochkin, 2000; Satherley, 1992). There are a number of explanations why this occurs, one key reason may be the knowledge or attitude of hearing professionals towards older adults and the influence this may have on treatment. The aim of this study is to examine the knowledge and attitudes hearing professionals have towards older adults and investigate whether these affect the treatments that are potentially offered to older adults.

CHAPTER ONE

INTRODUCTION

1.1 Description of Chapter

The following section first examines the age-related demographic changes occurring in the population and the problems that may result from this. The definition and effects of ageism in society are briefly mentioned with an emphasis on the effects of negative attitudes towards older adults. The theoretical implications of the relationships among knowledge of older adults, attitudes towards older adults and subsequent behaviour are then discussed in depth. The theory of reasoned action is introduced and described within the terms of the present study. Normal ageing is described, in particular cognitive changes that occur with ageing. The importance of one chronic age-related condition, hearing loss, is discussed as well as its recommended treatment. The professional groups that are involved in remediation of hearing loss are described along with their roles in aural rehabilitation. The section finishes with a discussion of the aims of the research and the hypotheses that have resulted from the literature review.

1.1.1 The Ageing Population.

The population of New Zealand, along with many other western nations (OECD, 1988), is ageing and at an increasing rate (Statistics New Zealand, 1997, 1998). The changing demographics have been brought about mainly by a drop in fertility rates (the exception being post-war births between 1945 and 1965 known as the baby-boom generation (Statistics New Zealand 1997)), a drop in immigration rates and a decrease in both infant mortality and adult mortality (OECD, 1988). These factors have resulted in more people surviving to an older age than ever before and an increase in the proportion of older adults in the total population. As the baby-boom generation reaches 65, the percentage of older adults will continue to increase (Statistics New Zealand, 1998).

In 1976, the percentage of people over 65 normally resident in New Zealand was between eight and nine percent of the total population. By 1996, the percentage had increased to nearly twelve percent and it is projected to reach 25.5 percent by 2051 (Statistics New Zealand, 1998, see Figure 1).

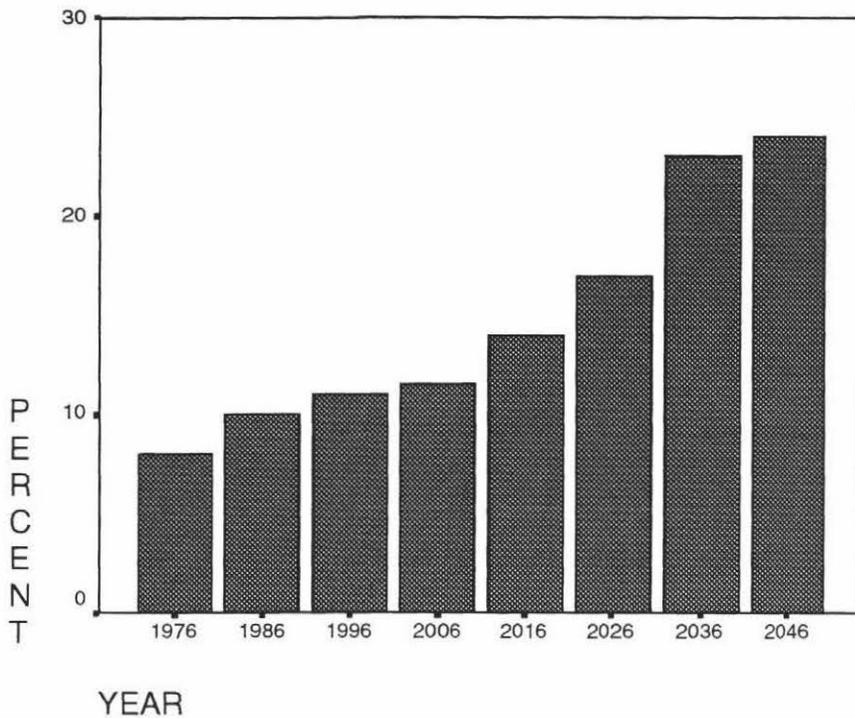


Figure 1: Actual and projected population over 65 years in %. Adapted from Statistics New Zealand, 1998

Within the specific population of those over 65, the greatest changes demographically have occurred with the growth of those surviving beyond 85 years. While in 1956, less than five percent of those over 65 years of age were over 85, in 1996 the figure had increased to nine percent and the prediction for 2051 is that 22.3 percent of those over 65 will be over 85 years old (Statistics New Zealand, 1998). One of the main reasons for the increasing numbers of those over 85 in western countries has been the decline in mortality rates for those over 60 and even more so for those over 70 years (Henrard, 1996). There is also a gender imbalance that increases with age; while there are approximately 87 men for every 100 women aged between 65 and 69, this changes to only 47 men for every 100 women aged 80 and over (OECD, 1988).

1.1.2 Life Expectancy and Health

Life expectancy has been steadily increasing over the last century, due to advances in medical treatment of such conditions as tuberculosis and improved sanitation (Statistics New Zealand, 1998), and this has resulted in increases in the number of people who are likely to suffer chronic conditions associated with old age such as

arthritis, hypertension and hearing impairment (Statistics New Zealand, 1998). Additionally, health care expenditure, on average, increases steeply after the age of 60. In New Zealand, during 1993, 33 percent of health care expenditure went on those aged 65 and over, although they only made up eleven percent of the total population. For the less than five percent of those aged 75 and over, the expenditure was 21.2 percent (OECD, 1997). However, there is an enormous variation in the health status of older adults; most people in their 60's and 70's are as healthy as the rest of the adult population and most of the health care expenditure goes on a very small group of frail, seriously disadvantaged aged people (OECD, 1997).

1.1.3 Retirement

As a greater proportion of adults retire from the workforce, significant strain will be placed on financing social programmes for this group, in particular superannuation and health care (OECD, 1988). An important factor in addressing the issue of the decreasing numbers of workers per superannuitant is placement of policies and concepts that encourage active participation in the workforce as long as possible. The age of eligibility for New Zealand government superannuation has been gradually increasing since 1992 and will be 65 by 2001. However, to maintain the ratio of 25 superannuitants for every 100 people of working age (1991 levels), the retirement age would need to be between 70 and 74 by 2051 (Statistics New Zealand, 1997). If the retirement age does not change, the projected ratio in 2050 is more than 35 superannuitants for every 100 working age people (OECD, 1988).

The number of people over 65 still working is gradually increasing, both in paid employment (over nine percent; Statistics New Zealand, 1998) and in the voluntary sector (24%, Statistics New Zealand, 1998). While older adults have on average, lower incomes than the working age population, a considerably higher percentage (over 70 percent compared with 23 percent) own their own homes mortgage-free (Statistics New Zealand, 1997).

1.1.4 Future problems and potential solutions

The increasing proportion of older adults within total populations does create a challenge for the present social welfare and health care systems used in most western

countries. One suggestion is that prioritising research in long-term chronic conditions would be of great benefit to both individuals and society and that this should include a focus on the training given those who work in the health sector (OECD, 1997). However, a major stumbling block is that in areas such as health care where funding is limited and therefore rationed, those most likely to suffer chronic conditions are older adults and as such may have a lower status than most other groups they are competing with for funding (OECD, 1997). Additionally, because the number of health professionals willing to specialize in issues affecting older adults is low, it is important to encourage more professionals to work in this area. For this to occur it may be necessary to overcome the negative stereotypes many health professionals have towards older adults (Eddy, 1986; Henrard, 1996).

1.2 Ageism in Western Society

1.2.1 Definitions of old age

Old age can be defined in a number of ways; chronologically, clinically (based on the physical and mental changes that occur over time) and socially (Bader, 1980). The OECD (1988) gives a commonly used chronological definition of old age as 65 years and over. Henrard (1996) further divides this heterogeneous group into young old (65 - 74) old-old (75 - 84) and oldest-old (85+). Social age is somewhat harder to define and is contextual; it is dependent on the attitudes held in society towards those seen as older adults (Bader, 1980).

1.2.2 Attitudes Towards Older Adults

Attitudes towards older adults may be confounded by attitudes towards other factors such as health status, income and gender (Henrard, 1996; James & Haley, 1995). Additionally, attitudes are complex and affected by many internal variables such as personality and education and by the experiences an individual has with older adults (Ajzen, 1988; Fishbein & Ajzen, 1975; Thorson & Perkins, 1980). The formation of attitudes is, however, sited within and affected by the culture within which they occur. Kustaborder (1985) argues that the attitudes and beliefs of a specific culture in turn influences behaviour at an individual level.

1.2.3 Societal Perspective

Western society, including New Zealand, has a culture within which an individual's ongoing achievements and independence are highly regarded (Hulicka, 1992). This does not appear to be true of older adults, who generally appear to be devalued in comparison with other age groups (Bader, 1980; Decalmer & Glendenning, 1993; Minichiello, Browning & Aroni, 1992). Older adults may be seen, not only by their families and society in general, but also by policy makers and health professionals as "...unintelligent, unemployable, disruptive, apathetic, aimless, senile and asexual..." (Hulicka, 1992, p. 67). Butler (1995) defines ageism as the "...process of systematic stereotyping and discrimination against people because they are old..." (pg. 35). Eagly (1987) believes that stereotyped attitudes are influenced by observation and that behaviors that are observed arise from social roles. Because few older adults are perceived as working, they are seen as lacking agency and therefore have a low status in western culture as a whole (Eagly, 1987). Agency (for example, self-assertion and self-expression) is associated with youth, not age (Kite, 1996). Capitalist values of success are based on production within the economy (Henrard, 1996) so while young people are portrayed as successful and appealing, old age is seen as a time of decline, isolation, poverty and dependence (Forster, 1993). Saville-Smith (1993) argues that in New Zealand, at least, the state has played a powerful role in defining old age as an illness with policies such as superannuation that at one stage allowed adults to retire aged 60 years. If people who are in a position to help older adults, such as health professionals, believe that older adults are not important or are incapable of learning new information, they are less likely to spend time trying to train them (Kustaborder, 1985).

1.2.4 Other Sources of Influence

In addition to the overall attitudes that a particular society might have, other personal demographics also have an affect on attitudes (Fishbein & Ajzen, 1975). Research has examined such variables as age, level and type of contact, gender, education and race to discover what effects these might have on attitudes towards older adults. A study by Hellbusch, Corbin, Thorson and Stacy (1994) of physicians' attitudes towards older adults found that physicians over 70 had the least positive attitudes towards older adults. Hellbusch et al. (1994) suggest that dealing with medically problematic older

adults may be a continuous reminder to older physicians of their own ageing. However, this study was not longitudinal and thus may be confounded by changing attitudes in society or limited by the fact that only eleven percent of the respondents were over 60 years of age. Perry and Slemp (1980) found more favourable attitudes in younger adults towards older adults than in older adults, however the younger group was better educated with higher incomes, and this may have confounded the results. Chasteen (1998) found that older adults had more favourable attitudes towards older adults than younger adults, as did Astle (2000) in a study of health care workers. Sheffler's (1995) study of nurses' attitudes towards older adults found a weak positive correlation between age and attitudes, while a later study of nurses (Sheffler, 1998) found no such relationship. Hale (1998) also found no difference in stereotype scores regarding older adults of younger (18-25 years) adults compared to older adults (64 – 79 years).

A number of studies have examined whether contact with healthy independent older adults might change attitudes; results from these studies are equivocal. Bader (1980) reviewed studies that looked at attitudes towards older adults and concluded that for young people, attitudes towards older adults and ageing became more negative over time, even when challenged by disconfirming evidence. Similarly, Eddy (1986) found no statistically significant difference in attitudes of nursing students who had had contact with independent healthy older adults as a requirement of their gerontology course to those who had not had contact. While 35 percent indicated a decrease in negative stereotypes, 23 percent indicated an increase. Unfortunately, as the curriculum was also changed to include more gerontology-centered learning, this confounded the results regarding contact. Hale (1998) found that both younger and older adults who reported high levels of contact with older adults had lower stereotype scores. Kassab and Vance (1999) examined the effects of education and positive interaction with community-based older adults on youths (12 – 17 years). They found that the experimental group had statistically significant higher levels of both knowledge and attitudes towards older adults than a control group. However, this was a very small sample (25) and there were significantly more females in the experimental group than in the control group, which may have confounded the results. When examining the effects of contact with unhealthy older adults, Sheffler (1995)

found that contact with older adults in either a hospital or nursing home situation increased positive attitudes of nurses towards older adults, while Powell, Thorson, Kara and Uhl (1990) found no change in attitudes of medical students towards older adults during their four years study that included a six-week rotation at an old peoples' nursing home.

There is some evidence to suggest that gender also has an effect on attitudes. While both Hellbusch et al. (1994) and Sheffler (1998) found no evidence to suggest this, the former had fewer than ten percent of female participants and the latter had 87 percent female participants. Benedict (1999) examined the attitudes of undergraduate students towards older adults and found that females had more positive attitudes than males. In a study of the attitudes of adolescents towards older adults, Haught, Walls, Laney, Leavell and Stuzen (1999) also found that females had more positive attitudes than males.

Astle (2000) and Sheffler (1995, 1998) found that knowledge was positively correlated with more favourable attitudes, whereas Benedict (1999) and Powell et al. (1990) found that increased knowledge did not produce attitude change.

While most studies did not examine race as a variable or report no relationship between race and attitudes (Thorson & Ackerman, 1975; Sheffler, 1995, 1998), Harris and Fiedler (1988) investigated preadolescent attitudes towards older adults and found an interaction between race and gender in that white females had the most positive attitudes and black females the least positive. In a cross-cultural study of attitudes towards aging, Levy (1999) found that older Japanese participants had significantly less positive attitudes towards aging than either the Chinese or American participants.

1.2.5 Effects of Negative Attitudes

Attitudes that negatively stereotype older adults are believed to impact on the "...availability, accessibility, adequacy and acceptability of human services intended for use by old persons..." (Bader, 1980, pg. 1) and are seen as one of the most serious problems facing older adults today (Rybash, Roodin & Hoyer, 1995).

While some researchers have found no evidence of anti-age bias in health professionals (Gatz & Pearson, 1988; Hillman, Stricker & Zweig, 1997), university students (Thorson & Perkins, 1980) and the general public (Harris, Page & Begay, 1988), others have found significant negative attitudes towards older adults in a number of different health professionals (Eddy, 1986; James & Haley, 1995) as well as tertiary students and the general public (Bargh, Chen & Burrows, 1996; Harris & Fiedler, 1988; Hummert, Garstka & Shaner, 1997; Perry & Slem, 1980). With the increasing number of older adults in society, there is a concern that ageism will affect the treatment offered to older adults by health professionals (Slotterback & Saarnio, 1996). Some studies suggest that this may be the case already. Few studies have been done on the link between attitudes and behaviour towards older adults (Hillman et al., 1997; James and Haley, 1995; Kee, Middaugh, Redpath & Hargadon, 1998; Ryyanen, Myllykangas, Kinnunen & Takala, 1997). While it has been shown that attitudes do not always directly affect behaviour (LaPiere, 1934), studies suggest that knowledge of attitudes has a predictive value for future behaviour (Bader, 1980). Ryyanen et al. (1997) found that doctors' willingness to refer patients for elective surgery decreased with patients' increasing age, regardless of the absence of medical contraindications. Similarly Kee et al., (1998) found evidence of an age bias in criteria used for selecting suitable candidates for pain programmes. Nearly one third of the programmes surveyed excluded geriatric patients or only took those under 70. In 40 percent of the programmes without specific age limits, exclusion based on such issues as no plan to return to work and comorbid medical problems indirectly screened out disproportionate numbers of older adults. James and Haley (1995) found that psychologists saw older adults as less appropriate candidates for psychotherapeutic or pharmacological interventions. Poor health was even more likely to decrease a candidate's appropriateness – this was described as a form of “double jeopardy” for older adults (James & Haley, 1995, pg. 614). While Hillman et al. (1997) state that, overall, clinical psychologists have positive attitudes towards older adults, they did find evidence to suggest that young-old adults are negatively discriminated against. They suggest that this may be a failure to realistically identify the young-old as an older adult, resulting in inappropriate and unrealistic treatment recommendations.

A further complication is that older adults are often seen as having a poorer prognosis

(James & Haley, 1995; Kee et al., 1998); this may result in self-fulfilling prophecies. Health professionals are obviously not immune to culture based ageist values and the problem may be compounded by the problem-oriented contact that they do have - health professionals usually see people when there is a problem in one or more areas (Bader, 1980; Hellbusch et al., 1994; Henrard, 1996).

A separate but related issue is the difficulty many professions have in recruiting staff to work with older adults (Bader, 1980; Eddy, 1986; Qualls, 1998; Reed & Clarke, 1999). While this may be due, in part, to the lower status and less financial resources available in this area (Reed & Clarke, 1999) it is possibly also a reflection of negative attitudes potential recruits have towards older adults.

1.3 Theoretical Issues

1.3.1 History of Attitude

The concept of attitude has a long, complicated and somewhat ambiguous history within the framework of psychology that is reflected in the large number of definitions and scales that have been used to measure it (Fishbein & Ajzen, 1975). With interest increasing from the early part of the 20th century, it soon became a popular area of research, particularly in social psychology, as it was (and still is) assumed that attitudes have important consequences in motivation, behaviour and information processing as well as social conflict and discrimination (Eagly & Chaiken, 1993). Allport (1954) believed that attitude is "...probably the most distinctive and indispensable concept in contemporary American social psychology." (pg. 43). Many different concepts have been included under the term attitude, including opinions, beliefs, disposition, brand loyalty and behavioural intentions (Fishbein & Ajzen, 1975). Even though most researchers appear to agree that attitude may be best described as a learnt tendency towards a particular object with an evaluative component (for example see Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975) many interpretations are still possible, for instance some researchers disagree with the idea that the tendency is learnt (Fazio, 1990).

1.3.2 Measurement of Attitude

Attitude is a hypothetical variable in that it cannot be directly observed (Allport,

1954). Thus attitude was determined by the measurable behaviors it evoked (Allport, 1954, but see Drola, 1933, cited in Allport 1954). While early definitions were more related to consistency of response than any evaluative aspect (Allport, 1954), one of the most important characteristics that define the concept of attitude in present terms is the affective or evaluative nature of the response consistency (Eagly & Chaiken, 1993). Thus while many researchers have used single-response measures to determine attitude, these may easily be confounded by other influences such as mood or personality, wording used and so on, and may not have any relationship with actual behaviour (LaPiere, 1934). In order to be confident in capturing the overall affective and consistent response, multiple measures are needed (Schuman, 1995). Because the evaluative nature of attitudes is believed to be a critical factor, differentiating attitudes from beliefs or knowledge, response measures are usually in terms of evaluation, both positive and negative, and in terms of strength of that evaluation (Eagly & Chaiken, 1993). Attitude measures commonly employ Likert or semantic differential scales on a number of different questions or statements about a specific object in order to obtain an overall attitude score that is valid and can be replicated (Fishbein & Ajzen, 1975).

1.3.3 Specific Attitude Measures

One of the earliest measures of attitude towards older adults is that of Tuckman and Lorge (1953, cited in Hicks, Rogers & Shemberg, 1976). The measure consisted of 137 statements on aspects associated with aging such as physical change, personality and family relationships that participants had to agree or disagree with. While their study produced evidence supporting the prevailing assumption that older adults were devalued, their yes/no format did not allow degrees of attitude to be measured and may not have captured the varying strengths of attitudes that people have. A shortened version of this scale was found to correlate poorly with other attitude measures (Hicks et al., 1976). Another early measure was that of Kogan (1961), who developed a scale using 17 pairs of statements regarding older adults. Each pair consisted of one negatively worded statement and its positively framed opposite. Likert scales were used to capture attitude strength and in the initial study, the scores were compared to attitudes towards minority groups (physically disabled; mentally ill) and personality traits (anomie, authoritarianism, ethnic prejudice). Kogan's Attitude towards Old People Scale (ATOP) was found to correlate significantly with at least three other

attitude measures (Hicks et al., 1976). Measures such as the above were often developed atheoretically, that is, without an underlying theoretical framework that explained the concept of attitude itself. One theory that attempts to explain how attitudes develop and the possible effects they have on behaviour is the theory of reasoned action.

1.3.4 The Theory of Reasoned Action

The measurement of attitude itself is important only if it predicts or explains behaviour; that is, behaviour occurs because of a specific attitude (Ajzen, 1985). One theoretical framework of how attitudes and behaviours are related has been formulated by Fishbein and Ajzen (1975; Ajzen, 1985; Ajzen, 1988; Ajzen, 1991; Eagly & Chaiken, 1993; Schuman, 1995). The theory of reasoned action assumes that behaviour is goal-directed and that an individual acts rationally and their behaviour is under volitional control (Ajzen, 1988). Behaviour may be affected by a number of variables, some of them described by Fishbein and Ajzen (1975; Ajzen, 1985) as external variables. By this they mean variables external to their theory such as personality traits, demographic variables; they also include attitudes towards targets in this category (see Figure 2).

Cutler (1995) defines the terms beliefs and knowledge of an object as factual perceptions or thoughts and uses them interchangeably. As suggested by the theory above, beliefs about older adults determine attitudes towards older adults that lead to intentions. Those intentions are not always acted on as they are influenced by the subjective norms that are operating within any specific subculture. A subjective norm is defined as an individual's perception of how they are expected to act by their peer group or significant others (Ajzen, 1988). Thus an individual thinks about both the information available and the implications of their actions (Ajzen, 1985). A literature search produced only one study that used the theory of reasoned action to explain the behaviour of health professionals. Plianbangchang (1999) examined the prescribing behaviour of Thai pharmacists and found that attitudes and beliefs explained most of the variance in prescribing behaviour, rather than subjective norms. Subjective norms were still seen as important, with those of academic referents having more influence than commercial referents (Plianbangchang, 1999). Most other studies using the

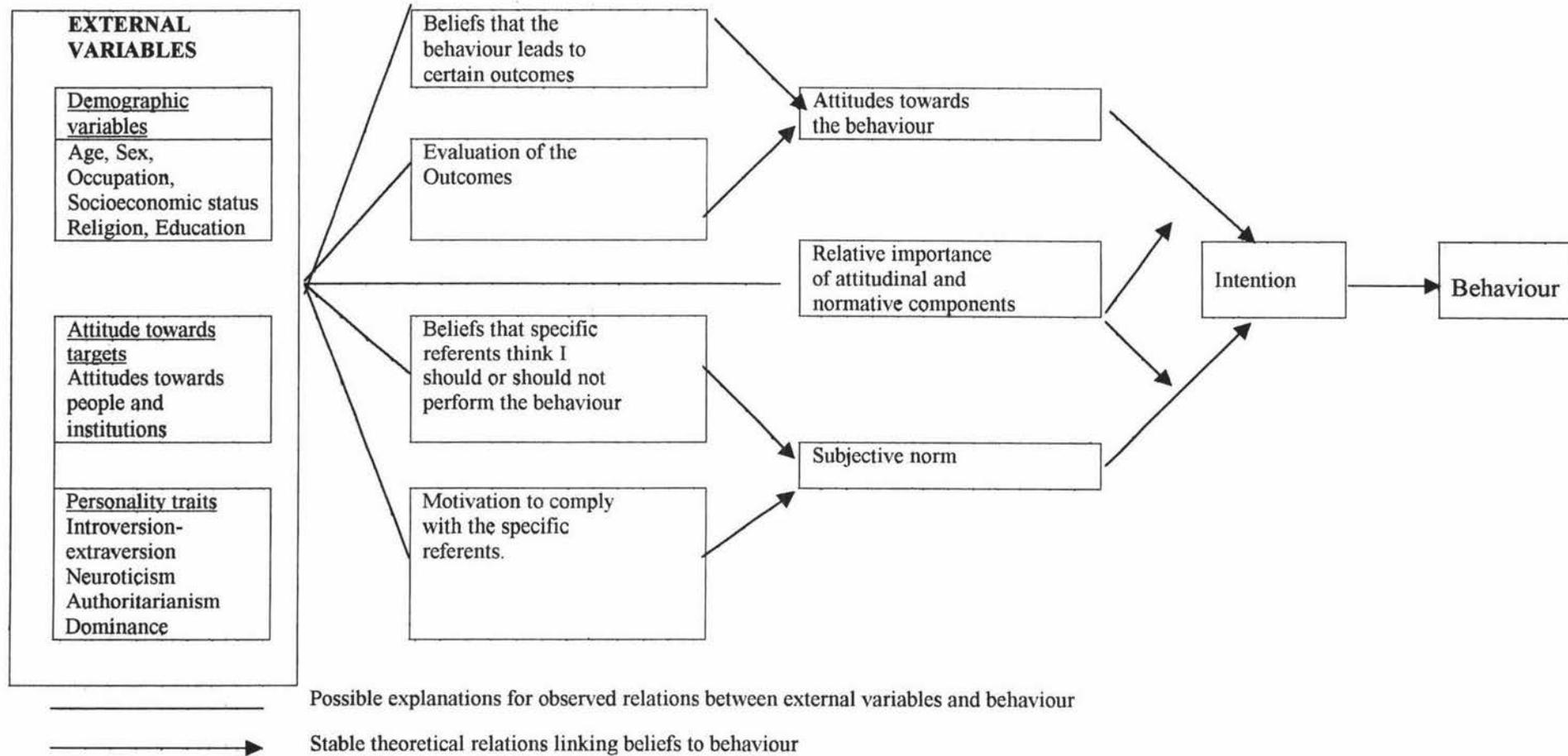


Figure 2: The theory of reasoned action; adapted from Fishbein and Ajzen, 1975.

theory of reasoned action have focused on health behaviours of individuals. One study by Manstead, Proffitt & Smart (1983) examined mothers' intentions to breast or bottle-feed their babies and found that the theory of reasoned action predicted how they actually fed them. The importance of the attitudinal and subjective norm components on prediction varied with previous experience of breast or bottle-feeding infants. Ajzen, Timko and White (1982) assessed whether attitudes and subjective norms predicted both voting in a general election and smoking marijuana by undergraduate students and found while the theory of reasoned action successfully predicted behaviour, attitudes were of more importance than subjective norms. These and the other studies reviewed by Ajzen (1985) either focused on volitional behaviour, that is behaviour within the control of the participants or made the assumption that a specific behaviour was under volitional control. This is often not the case and is a limitation of the theory of reasoned action. A further limitation of the theory is that it cannot predict any change in intention over time. Ajzen (1985) believes that rather than challenge the theory's ability to predict actual behaviour, this reflects the difficulty in accurately measuring intentions. In relating intentions to behaviour, the ideal may be to measure intentions as closely as possible to the predicted behaviour. However, this is not always possible and often it is long-term predictions that are of interest (Ajzen, 1985). While it may not be possible to determine stability of individual intentions because of unanticipated events such as illness, job loss and so on, aggregated data on intentions should show more stability (Ajzen, 1985). The use of a vignette that can measure a number of possible intentions is one way of aggregating data on intentions (Lanza & Carifio, 1990).

1.3.5 The Theory of Planned Behaviour

Ajzen (1985) believes that the assumption regarding volitional control is of more importance than the changing of intentions over time. While many people may form intentions to enact some behaviour, events may occur that are beyond their control and prevent the intended behaviour occurring. For example, they may lack the necessary skills or knowledge or essential information (Ajzen, 1985). Another difficulty in following through with intentions is lack of time – a busy professional may have positive attitudes and good intentions towards a client but may lack time in which to

carry out desired behaviour. Attitudes, beliefs and intentions are not altered but the intended behaviour does not occur. An additional source of variability in behaviour is the co-operation of others (Ajzen, 1985). If a specific behaviour is dependent on the reciprocal behaviour of another, such as simply turning up for an appointment, non-cooperation will prevent the desired behaviour occurring. While in the short term, non-cooperation may have little effect on beliefs, attitudes and intentions, it is likely to do so if non-cooperation continues (Ajzen, 1985). If volitional control is limited and the possibility of failure high, then the theory of reasoned action is not helpful in explaining or predicting behaviour. Ajzen (1985) has amended his theory by including perceived behavioural control; this amended theory is known as the theory of planned behaviour. He argues that intentions should be interpreted as an intention to attempt a specific behaviour as the actual behaviour is not always under volitional control. A simplified diagram of this theory is given in figure 3 below.

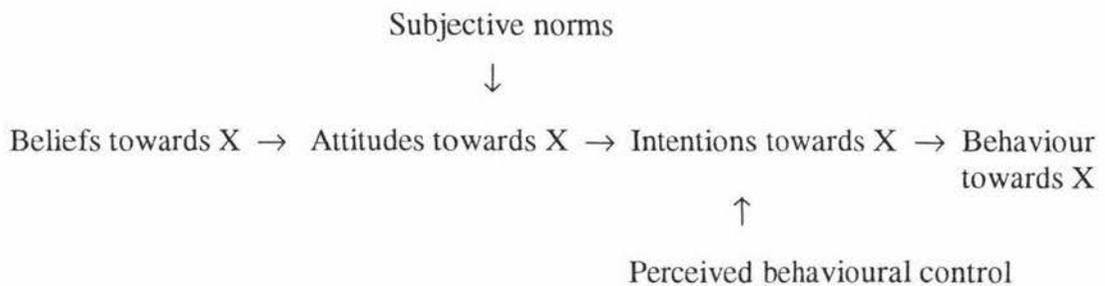


Figure 3: *Ajzen's theory of planned behaviour. Adapted from Schuman (1995).*

Both the effort put in to attempt a particular behaviour and level of volitional control that an individual has over potentially interfering factors directly affects performance of the behaviour (Ajzen, 1985). Ajzen (1985) also differentiates between the attitude towards trying and succeeding and the attitude towards trying and failing and that these are affected by the probability of their happening. Attitudes towards successful and unsuccessful attempts of behaviour are thus determined by beliefs regarding the outcome (Ajzen, 1985). Subjective norms, on the other hand, may influence attempts without reference to likely success if social desirability is the main motivation, but Ajzen (1985) believes that the subjective probability of success does interact with

subjective norms.

1.3.6 Potential Limitations of the Theory

The theory of planned behaviour is not without its critics. Although the name implies that people plan how to act in the face of events that may be beyond their control, the theory does not describe how they go about this (Eagly & Chaiken, 1993). Fazio (1990) disagrees that conscious thought always occurs and argues that rather than a planned action, behaviour is often a spontaneous response to a given situation. However, he does not rule out a more deliberated response as suggested by Ajzen's amended theory. Fazio (1990) believes that for this deliberated or planned response to happen, motivation is necessary to encourage the cognitive effort required. If the specific behaviour is deemed important, then motivation is assumed to be present. Fazio (1990) argues that individuals may be motivated to think carefully for fear of reaching an invalid conclusion. If, however, the individual is unconcerned regarding the outcome of behavior, then it is quite probable that spontaneous attitudes formed from interpreting the present situation will be the driving force behind the behaviour. He also believes that this type of response is far more common as it takes less effort. With regards to the present research, however, use of a postal or email survey means that it will not be possible to determine if the response is planned or spontaneous. The variable effects that volitional control may have over behaviour will be removed by the use of a vignette to measure intentions to behave in a specific way.

One major limitation of Fishbein and Ajzen's (1975; Ajzen, 1985) theoretical models in regards to the present study is that the focus is on attitudes towards a behaviour, rather than towards a specific object or person. One may very well have different views on specific behaviours related to an object or person and to that specific object or person. For example, an audiologist may believe that it is pointless dispensing hearing aids to the oldest –old (85 years plus), yet still have very positive attitudes towards that group in general – or, indeed, vice-versa. As recommended by many researchers (for example, Eagly & Chaiken, 1993; Schuman, 1995), it may be necessary to generalize across many behaviours to determine any consistency in attitude towards a specific object or person. Another important limitation of the theory of planned behaviour is that some recent studies have questioned the influence of

perceived behavioural control on behaviour. Bledsoe (1999) found that attitudes and subjective norms were good predictors of intentions to quit smoking for both university students and adults in the community, whereas problems were found in both the measurement and influence of the construct of perceived behavioural control. In a similar study, Rye (1999) found that attitudes and subjective norms were good predictors of intentions and that intentions predicted subsequent behaviour when examining female undergraduate students safe sex behaviour. Perceived behavioural control was not significantly related to either intentions or subsequent behaviour. Not all studies had negative findings related to perceived behavioural control. In a meta-analysis of 56 studies on intentions to use condoms, Sheeran and Taylor (1999) found that perceived behavioural control was a significant predictor of behavioural intention over and above attitudes and subjective norms.

Perhaps the most important contribution of theories such as the theory of reasoned action and the theory of planned behaviour is that they not only attempt to explain attitudes and behaviour, they also suggest possible areas amenable to interventions that may change attitudes and therefore behaviour.

1.3.7 Changing Negative Attitudes

As ageist attitudes are culture-bound, and therefore have an effect on the subjective norms that individuals may have, they are also influenced by changes within the culture that has framed them; if the role of older adults in society changes, then beliefs based on stereotypes may also change (Kite, 1996). This is rather a long-term project and does not address problems that negative attitudes may be causing now. Other ways are needed to change present-day attitudes.

As discussed above, such variables as type and level of contact, and knowledge may have an effect on attitudes towards older adults. The results of the studies reviewed (see Section 1.2.4) are equivocal, but they do suggest that further research should be carried out in this area to determine whether interventions should be focused on those specific areas that are amenable to change. Not all research suggests that positive attitudes result in correspondingly positive behaviour, or that changing attitudes is necessary. An interesting study by Kayser and Minnigerode (1975) suggested that the

more stereotyped towards older adults a nurse's attitudes were, the more likely they were to want to work with older adults. Powell et al. (1990) examined the stability of medical students' attitudes towards older adults and questioned the need to change attitudes as it found that attitudes of the medical students who participated were already positive overall towards older adults.

A change in attitude may be possible through education. Palmore (1998) developed the Facts on Aging Quiz (FAQ) to serve a number of purposes, not least to identify the frequent misconceptions people have regarding older adults. Palmore's (1998) review of studies using the FAQ indicates that most people know very little about what occurs to people when they age and that there are many, mostly negative, misconceptions. The most significant and consistent finding was that education was positively correlated with individuals' knowledge of aging.

1.4 Measurement of Knowledge

Cutler (1995) believes that it is important to differentiate between knowledge and attitudes. While attitudes, as stated above, are learnt tendencies towards an object of an evaluative nature (Eagly & Chaiken, 1993), knowledge, or beliefs are defined as factual perceptions or thoughts (Cutler, 1995). Eagly and Chaiken (1993) elaborate on this by describing beliefs as the associations between a specific object and its attributes. Beliefs can be both descriptive, where they occur with direct observation of an object, or informational, where information has been given from a separate source (Fishbein & Ajzen, 1975). Confusingly, they may also be somewhat evaluative in nature (Eagly & Chaiken, 1993) but this is not a necessary requirement for their definition. Indeed, Fishbein and Ajzen (1975) argue that it is important to make a clear distinction between attitudes, which they describe as feelings or evaluations, and beliefs that represent information regarding a person or object.

The FAQ is one of the most commonly used instruments for measuring knowledge of older adults. It has been widely used in the United States and Australia and has recently been standardized for New Zealand (Pennington, Pachana & Coyle, in press). The FAQ may be used in four ways: to educate, to measure learning, to test group knowledge and to measure attitudes (Palmore, 1998). While Palmore (1998) himself

does not believe that this is the best way to measure attitudes, it is much shorter than other measures, which may be useful when it is important not to overload participants with too many questions. The ability of a measure to assess knowledge and attitude at the same time may be very useful. The basis for using the FAQ to measure attitudes is that a number of statements that it contains do have an evaluative nature and thus the scores for these certain items can be used to measure what Palmore (1998) describes as “positive or negative bias” (pg. 39). A study by Robak, Griffin, Lacombe and Quint (2000) examined the knowledge and attitudes of university students using the FAQ. They found that older adults (38 – 55 years) had higher knowledge levels than younger adults (18 – 25 years) and that attitudes became less negative (rather than more positive) with age. As this was a cross-sectional study, cohort effects may have confounded these results. Haught et al. (1999) presented the FAQ to 954 children and adolescents and found that adolescents had more positive attitudes than children and that adolescent girls had more positive attitudes than adolescent boys. Again, this was a cross-sectional study and cohort effects cannot be dismissed. However, the findings of both these studies do agree with the findings of other studies that have used different attitude measures and found the same effects of age and gender on attitude (Benedict, 1999; Chasteen, 1998). A full description of the FAQ is found in the method section.

While particular groups with specific gerontological knowledge do score higher on the FAQ, one of the strongest findings overall is that the FAQ scores are strongly and positively correlated with education in general (Palmore, 1998). Other findings from Palmore’s (1998) review of studies include the findings that age of respondent is not correlated with higher scores (older people do not know more about ageing than younger people) and that contact with older people does not increase knowledge levels. It must be noted that not all studies support these conclusions; Luszcz and Fitzgerald (1986) found a significant effect for age with FAQ scores, where scores were highest for older adults and lowest for adolescents. Edwards and Aldous (1996) obtained similar results but these may have been confounded with level of education.

1.5 Productive Ageing

Attitude change may also occur if the status of older adults is increased by putting in

place policies and concepts that encourage and enable active participation in the workforce for as long as possible (Kite, 1996; OECD, 1997). Two barriers that immediately arise with this idea of “productive ageing” (OECD, 1997, pg. 18) are a concern that the physical and mental capacity of the older adult, particularly in relation to long-term chronic conditions, may not be amenable to continued employment past the age of 65, and the potentially ageist attitudes of health professionals (and those within the workforce) which need to be identified and eliminated so that older adults can and do reach their potential.

1.6 Normal Ageing

To understand the potential that older adults have, the process of ageing, from a “normal” or disease-free perspective, must be understood. This type of healthy ageing is often called primary ageing to contrast it with secondary, or pathological ageing (Birren & Schroots, 1996). Ageing is often perceived metaphorically in terms of a hill; childhood, adolescence and young adulthood are placed on the upward slope, maturity at the apex, and then the downward decline into old age (Birren & Schroots, 1996). The implication to be taken from this metaphor is that increasing age, after a certain point, is associated with increasing loss, both physical and mental. Yet there is a large body of research that suggests ageing is a more complex process. As people age, inter-individual differences become increasingly common (Birren & Schroots, 1996). There are a number of reasons for this increasing variability among adults as they age, including; personal, social and psychological history, inherent biological differences (Minichiello et al., 1992) and the increasing, limiting effects of chronic conditions associated with ageing such as cancer, diabetes, cerebrovascular and cardiovascular diseases (Birren & Schroots, 1996).

1.6.1 Cognitive Changes in Ageing

Such diseases as mentioned above may be associated with ageing but they are not inevitable, although they do occur more frequently as the biological basis of human tissues and organs does not allow continuous regeneration of damaged parts (Holliday, 1995). This is particularly true of the brain; once neurons die, they are, by and large, not replaced (Holliday, 1995). However, most neurons survive and retain plasticity, which allows for growth in later stages on life, both cognitively and emotionally

(Scheibel, 1996). Scheibel's review of the literature on gross changes that occur in the brain with ageing suggest that loss occurs mainly in gray matter (actual neuronal loss) before the age of 50 and after this loss occurs mainly in white matter (interconnections among neurons and different parts of the brain).

1.6.2 Age-Related Cognitive Decline

Salthouse (1991) comprehensively reviewed the empirical research on cognitive changes that are associated with ageing. Much of the research done has been with psychometric measures such as the Wechsler, Army Alpha, Raven's Progressive Matrices and Thurston's Primary Mental Abilities (PMA) test. While this type of testing ignores such processes as social cognition, wisdom, judgment and long range planning, there is an extensive literature available and the tests used do cover a broad range of what is commonly seen as the underlying abilities that constitute intelligence (Salthouse, 1991). Regardless of the type of psychometric battery used and the methodology of the study, age-related cognitive decline has been fairly consistently recorded. However, there are at least three important factors that must be taken into account before drawing conclusions. First, with the exception of Raven's Progressive Matrices, the decline has occurred unevenly (Schaie, 1994). Second, compared to the total range of individual differences found, those associated with age are small; some of those tested in the oldest age ranges have performances better than the average 20 year old (Schaie, 1994). Third, time-lag effects have been fairly consistently seen in studies done. When comparing same-aged people at different points in time, more recent testing show gains in intelligence (Schaie, 1996). Salthouse (1991) believes that environmental changes including nutrition, public health and cultural stimulation (increased access to television, books, toys and games) may possibly be the cause of some of the age differences in cognitive ability that have been observed.

1.6.3 Speed of Performance

One of the assumptions made with regards ageing is that speed of performance, whether motor or in perceptual processing, declines with age. Schaie (1989) looked at what happened to scores on PMA tests when the effects of speed were partialled out and found that the correlations between age and ability became almost zero. However, there were two constructs, Spatial Orientation and Inductive Reasoning that

still gave age-related declines when perceptual speed was partialled out. While Schaie (1989) concluded that a decline in perceptual speed did suggest evidence that the general physiological decline associated with age resulted in a systematic central slowing, the substantial overlap of young and old scores and the apparent stability of crystallized intelligence measurement scores suggest that age in itself is not a good predictor of the decline in a specific individual.

1.6.4 Seattle Longitudinal Study

Schaie and colleagues (see for example, Bosworth, Schaie & Willis, 1999; Schaie, 1989; Schaie, 1994; Schaie, 1996; Schaie & Willis, 1993) have tested participants in the Seattle Longitudinal Study every seven years since 1956 using Thurston's PMA test as the core battery (Schaie, 1994). The questions that Schaie and colleagues were attempting to answer include; did intellectual changes occur evenly with aging or were there differences associated with different life-courses? After over 35 years of increasingly sophisticated study Schaie (1996) has concluded that no uniform changes occurred across the entire spectrum of ability that was assessed. He also looked to see if detectable age changes occurred, and has concluded that any individual who shows a decline prior to age 60 is manifesting the prelude to pathological rather than normal age changes. Another conclusion reached is that by the mid-70's there is often a significant decrease in all abilities and that this average decrease is severe in the 80's, with the exception of Verbal Ability (Schaie, 1996). However, fewer than half of those aged 81 showed significant reliable decline in ability over the previous seven years (Schaie, 1994).

1.6.5 Reversal of Age-Related Cognitive Decline

Most importantly, in terms of the ageing of the population in general, and as mentioned above, Schaie (1996) has found substantial improvements in the average intellectual performance of older adults in more recent cohorts. It is hoped that the longer retention of ability in individuals as they age will go some way to lessen stereotypical views that are presently held regarding older adults (Schaie, 1996).

Willis and Schaie (1986) also demonstrated that both Spatial Orientation and Inductive Reasoning performance responded to planned interventions. Those adults over 65

who had shown significant cognitive decline in these areas were given retraining and the gains made were still significant seven years after the training occurred (Schaie, 1996).

1.6.6 Physical Health in Older Adults.

At the same time that cognitive changes are occurring, physical changes also occur that result in susceptibility to such disorders as cancer, arthritis, osteoporosis and atherosclerosis (Holliday, 1995). While these are age-related, they are often affected by genetics, and lifestyle and are not uniformly inevitable (Holliday, 1995). The extent to which an individual is limited by a physical disability such as poor health, varies with the condition that they have. In New Zealand, the three most common physical disabilities that limit activity for older adults are arthritis, high blood pressure and hearing loss (Statistics New Zealand, 1998).

1.7 Hearing Impairment.

As discussed above, one of the major physical problems that older adults face is increasing hearing loss due to physical ageing processes. Hearing impairment is the third most common chronic disability suffered by older adults that limits activity (Chen, 1994). Twenty-five percent of New Zealanders over the age of 65 report a loss of hearing; this increases to nearly 50 percent of those 85 and over (Statistics New Zealand, 1998). This is quite possibly an under-representation as many older adults deny any problem even when it exists (Hétu, 1996), and as many may be unaware or undiagnosed, particularly in nursing homes (Christian, Dluhy & O'Neill, 1989; Lubinski, 1995).

1.7.1 Hearing Loss in Old Age

The type of hearing loss that is associated with ageing, presbycusis, involves a progressive increase in the hearing threshold, particularly in high frequency sounds (Brooks, 1989). Central auditory defects may also be involved as many older adults complain that while they can hear what is being said, they cannot understand or interpret it (Hull, 1997). Gelfand, Ross and Millar (1988) define presbycusis as hearing loss that is reported developing through ageing where there is no history of significant noise exposure and no pathological processes are present.

Schuknecht (1964) describes four main causes of presbycusis:

- sensory - primary loss of hair cells in the organs of corti with secondary degeneration of auditory nerve.
- neural- primary degeneration of neurons of cochlear nerve and central auditory nerve.
- metabolic- primary atrophy of stria vascularis.
- mechanical- primary stiffening of basilar membrane.

Many of the age-related changes that occur in cognitive functioning, including hearing, are believed to be mediated by a slowing of the central processing (Salthouse, 1991).

1.7.2 Measurement of Hearing Loss

The measurement of actual hearing loss, by an audiologist or hearing therapist, is initially assessed with an audiogram. Tones of different frequencies and varying levels of intensity are produced and the threshold of hearing is determined (Brooks, 1989; Hull, 1997). Hearing loss is often divided into categories based on the results of the pure-tone audiogram (PTA); a mild hearing loss gives a PTA between 26 and 40 decibels (dB), mild-to-moderate between 41 and 55 dB, moderate between 56 and 70 dB, severe between 71 and 90 dB and profound hearing loss occurs when the PTA is poorer than 90 dB (Tye-Murray, 1998). However, the actual impairment suffered cannot be measured using an audiogram alone (Erdman & Demorest, 1998a; Erdman & Demorest, 1998b; Newman, Jacobson, Weinstein & Sandridge, 1997; Rojeski, 1996). While most health professionals site hearing impairments as a pathological loss within the medical model, those who suffer the loss are more aware of the social context of that loss (Robards-Armstrong & Stone, 1994). The loss, real or perceived, varies more due to such factors as personality and lifestyle than to the technologically measured loss of sound (Erdman & Demorest, 1998a; Héту, 1996; Stephens, 1996).

1.7.3 Treatment of Hearing Loss

The treatment of hearing loss is mainly based on the audiogram and other technical measures such as speech recognition; as yet there is little research in the area of who

will benefit from the using of hearing aids and other listening devices or who will require additional rehabilitation (Erdman & Demorest, 1998a). Erdman and Demorest (1998a) define adjustment, as regards hearing loss, as the “...process wherein the individual makes cognitive and behavioural changes to minimize the problems experienced secondary to hearing impairment.” (pg. 107). The ability to successfully deal with a hearing impairment and subsequent rehabilitation is dependant on physiological, psychological, family, cultural and interpersonal factors (Rojeski, 1996). Erdman and Demorest (1998b) suggest that there is a positive correlation between successful adjustment and education; that is, the more educated a person is, the more successful adjustment to hearing loss. There may also be a non-linear relationship with age and adjustment; both the youngest and oldest sufferers make the poorest adjustment (Erdman & Demorest, 1998b). Importantly, Rojeski (1996) believes that there is no relationship between the amount of hearing loss and adjustment made. Someone with a mild to moderate loss may be more profoundly affected than someone with a more severe or even profound loss.

1.7.4 Psychological Correlates of Hearing Loss

Many studies have suggested a strong correlation between hearing and psychological well-being. Tun (1998) believes that for older adults, this is because the ability to function independently requires the ability to understand and remember information that is communicated. When this is disrupted, as in hearing loss, the well-being of an individual is severely compromised (Slawinski, Hartel & Kline, 1993). Chen (1994) differentiates between the hearing loss (audiometrically measured) and actual hearing handicap (the psychological effect of hearing loss on an individual). When using a self-report measure of hearing handicap (Hearing-Handicap Inventory for the Elderly; Ventry & Weinstein, 1982), Chen (1994) found a significant correlation between hearing handicap and loneliness and low self-esteem for women, and hearing handicap and social difficulties for men. Tye-Murray (1998) believes that there are a number of factors that influence how hearing loss has an effect, including economic, social and emotional variables (see Figure 4). A study by Eastwood, Corbin, Reed, Nobbs and Kedward (1985) found that hearing impairment in nursing home residents was more strongly associated with functional psychiatric disorders (particularly paraphrenia) than among those with either an organic brain dysfunction or no psychiatric disorder.

It must be noted, however, that the sample only had a small number of people with functional psychiatric disorders. Héту (1996) contends that hearing impairment is seen as a threat to an individual's social identity and that a hearing aid is associated with lower intelligence, weakness, disability and old age. This often leads to a denial of any problem and the use of maladaptive strategies (Héту, 1996). Maladaptive strategies of dealing with hearing difficulties may worsen the problem. These strategies include such behaviour as dominating conversations in order to retain control, pretending to understand what is said or withdrawing from social contact altogether (Tye-Murray, 1998).

Factors such as those mentioned above have some serious implications when aural rehabilitation is attempted (Héту, 1996). Many people don't seek help in the first place, and when they do approach hearing professionals and purchase a hearing aid, a significant number end up not using them (Kochkin, 2000; Popelka, Cruickshanks, Wiley, Tweed, Klein & Klein, 1998; Satherley, 1992).

1.7.5 Aural Rehabilitation

Tye-Murray (1998) defines aural rehabilitation as "...the intervention aimed at minimizing and alleviating the communication difficulties associated with hearing loss..." (pg. 2). Montgomery (1994), similarly, argues for rehabilitation aimed at increasing satisfactory and mutual communication within an individual's normal setting. Unfortunately in many cases, the rehabilitation is based on the results of technological tests such as the audiogram and the psychosocial aspect is ignored (Robards-Armstrong & Stone, 1994; Stephens, 1996). People suffering hearing loss make up a very heterogeneous group and their rehabilitation should reflect this (Robards-Armstrong & Stone, 1994). One major factor in rehabilitation is the attitude of the clients towards their own disability and disability in general (Stephens, 1996). Other issues affecting rehabilitation include the beliefs of significant others (Héту, 1996), health status both mental and physical (Tye-Murray, 1998), and perhaps most importantly, the expectations of the individual (Stephens, 1996). Stephens argues that if an individual expects a hearing aid to restore their hearing to normal and this does not occur, the aid may be rejected. Similarly, if expectations are low, the individual may withdraw from the process altogether (Stephens, 1996).

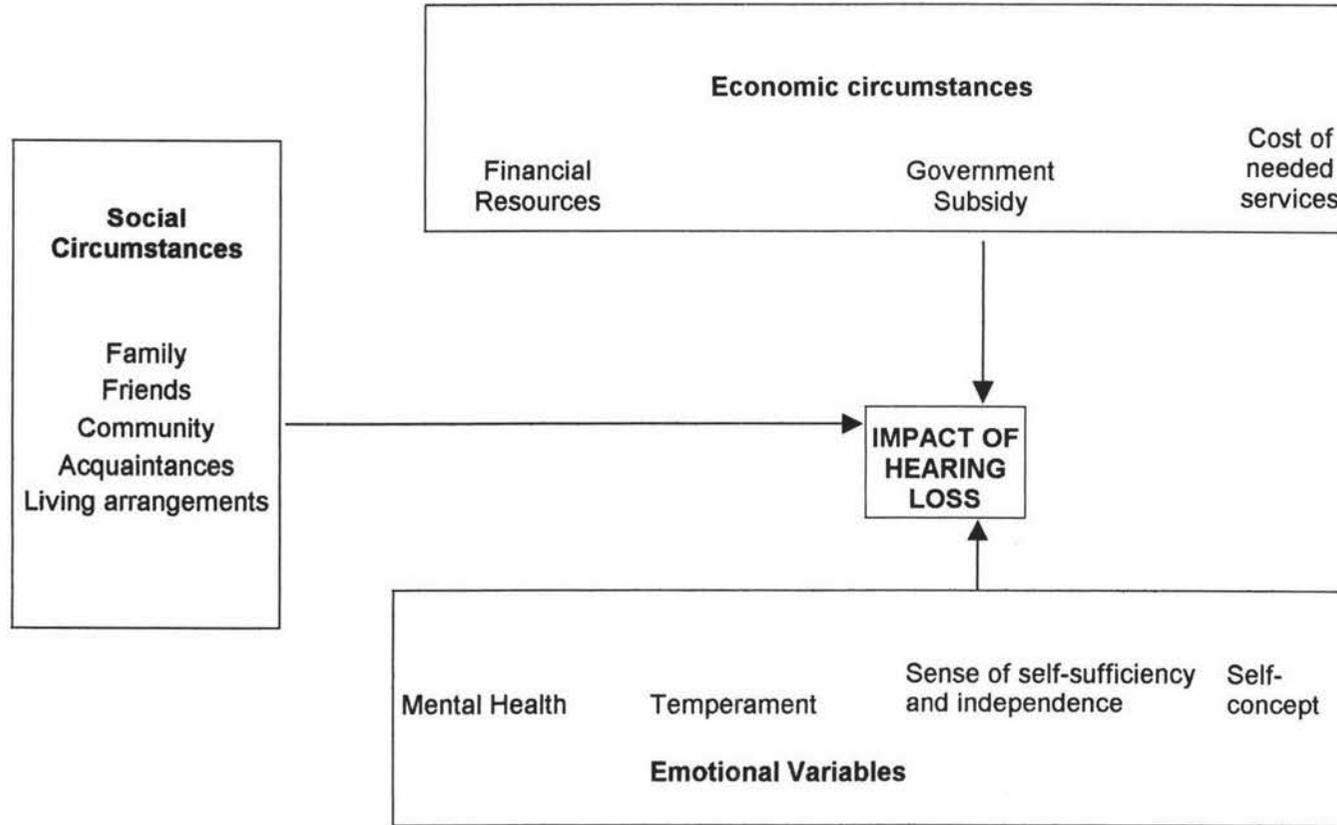


Figure 4: Factors influencing the impact of hearing loss. Adapted from Tye-Murray (1998).

For the majority of older adults the loss of hearing has been a gradual experience, and adjusting to the use of a hearing aid may be a difficult process (Miller & Zapala, 1998). Anyone with a significant hearing loss who is seeking help must believe that the benefits of using the aid will more than compensate for the inconvenience or disadvantages associated with it for aural rehabilitation to occur (Stephens, 1996). While technology may give compensation for hearing loss by increasing the number of decibels of sounds to the ear, it does not address other important issues.

Most research on the reasons for low uptake and use of hearing aids has been aimed at hearing-aid wearers with little if any attention focused on outcome variance due to the effects of behaviours of the health professionals who are involved in the process of aural rehabilitation. It may be that, rather than trying to influence potential hearing aid users, intervention could focus on the role hearing professionals play in the aural rehabilitation of older adults.

1.8 Services available in New Zealand

1.8.1 Audiology

Audiological services have been available in New Zealand since the 1960's when the National Audiology Clinic (NAC) was set up. Its role was to provide pediatric, diagnostic and rehabilitative services including the identification of lesions and tumours, and the dispensing of hearing aids (W. Keith, 11 April 2000). These are still the key areas for audiology clinics today, except that audiologists in private practice almost exclusively do hearing aid audiology and public hospitals provide the pediatric and diagnostic services with some hearing aid dispensing (E. McNeill, 7th September 1999). Audiologists initially had to go to Australia for training but in 1991, at the urging of the NAC, the Auckland School of Medicine began offering a masters degree in Audiology and there are now around 100 qualified audiologists registered with the New Zealand Audiological Society.

Higher performance hearing aids (both digitally programmable and digital) were introduced in the mid 1990's and overseas studies have shown increases in consumer satisfaction with their use as compared to the older analogue hearing aids (Kochkin, 2000).

1.8.2 Hearing Therapy

The New Zealand League for the Hard-of-Hearing was formed in 1932 in order to help hearing-impaired adults by teaching them to lip-read (MacLean, 1992). In 1979, the League underwent a restructure and became The Hearing Association, offering more rehabilitative services than just lip-reading classes (J. Spencer, 11 October 1999). In December 1999 the National Foundation of the Deaf (NFD) took over management of the contract to supply hearing therapy. Up until approximately three years ago, hearing therapists underwent a thirteen-week training course, the length of which was subsequently halved. For two years there has been no training at all. A new course has been designed under the aegis of the NFD by specialists in the area of hearing rehabilitation (E. McNeill, 7th September 1999). The first training of hearing therapists (and retraining of those already employed) with the new course occurred in February 2000 (E. McNeill, 7th September 1999). At present, hearing therapists provide hearing tests, give advice and assistance with hearing aids, including hearing aid management classes, advice on assistive listening devices, speech reading classes and are available for educational talks to interested groups (Hearing Services Ltd., undated pamphlet). Nominal fees are charged for these services. Hearing therapists do not dispense hearing aids, but they can play a large role in aural rehabilitation if the client is aware of their services and understands how important it is to learn how to use a hearing aid properly (Hull, 1997; Jerram & Purdey, 1996; Satherley, 1992).

1.8.3 Liaison between professional groups

While the roles of these hearing professionals overlap slightly, they also have the potential to augment each other, in particular the referral of audiology clients to hearing therapists for hearing aid management classes. Given the increasing time needed for older adults to learn new skills (Poon, 1995), these classes would be of benefit to older adults in particular (Satherley, 1992). However, studies suggest that few members of the public have heard of hearing therapists and that audiologists do not refer clients on (Jerram & Purdey, 1996; Satherley, 1992). There has been a shortage of hearing therapists in New Zealand particularly in Auckland (E. McNeill, 7th September 1999), thus referral for some audiologists may not be an option.

1.9 Integration of theory and practice

Application of the theory of reasoned action to treatment of older adults by audiologists and hearing therapists can be stated as follows: the audiologist or hearing therapist will have certain beliefs or knowledge about older adults that will affect their attitudes towards older adults. Intentions to behave in a certain way will be affected, not only by those attitudes but also by the subjective norms within each professional group as a whole. The theory of planned behaviour, where the perceived control a professional believes that they have over the outcome (aural rehabilitation) is also measured, will not be applied. Use of a vignette to measure intentions rather than actual behaviour removes the need to take this construct into account.

1.10 Research Goals

The present study aims to examine the attitudes and knowledge of hearing therapists and audiologists towards older adults and investigate whether their attitudes and/or knowledge have consequences in the aural rehabilitation of older adults. To that end, the knowledge and attitudes of participants towards older adults will be measured, along with biographical details, and a vignette will be presented to elicit potential treatment practices. While specific hypotheses are detailed below, there are a number of research goals that will also be addressed which include:

- 1 To assess the popularity of email versus postal surveys.
- 2 To assess the relationship that biographical data, years of experience, and percent of clients over 65 have with knowledge of older adults.
- 3 To determine whether the Facts on Aging Quiz is a valid and reliable measure of attitudes towards older adults.
- 4 To assess the relationship that biographical data, years of experience, and percent of clients over 65 have with attitudes towards older adults.
- 5 To assess whether a vignette may be used to measure attitudes.

- 6 To assess the relationship between contact with older rural adults and attitudes towards older adults.

1.11 HYPOTHESES.

It is hypothesised that:

1. Audiologists will have higher knowledge than hearing therapists regarding older adults as measured by the FAQ due to their higher educational level as a group (Palmore, 1998).
2. Given the evidence in the literature for a positive correlation between knowledge levels and positive attitudes, audiologists will have more positive attitudes towards older adults than hearing therapists (Astle, 2000; Sheffler, 1995, 1998).
3. As subjective norms are theorized to influence the behaviour of individuals within a specific peer group, both audiologists and hearing therapists with a higher number of years of experience will become more alike in their treatment practices within their own professional group (Ajzen, 1985, 1988, 1991; Fishbein & Ajzen, 1975).
4. Based on the theory of reasoned action, positive attitudes (as measured by the ATOP) will result in positive treatment (as measured by the Positive Treatment score) and this relationship will be moderated by subjective norms (Ajzen, 1985, 1988, 1991; Fishbein & Ajzen, 1975).

CHAPTER TWO

Method

2.1 Design

Data were collected by cross-sectional survey method. Survey materials and information were collected from a number of different sources, mainly psychological literature and consultation with members of both professions surveyed.

2.2 Participants.

All practicing hearing therapists (N = 32) and audiologists in private practice in New Zealand (N = 52) were approached via mail and asked if they would be interested in taking part in the survey. Audiologists working in public hospitals were not included in the survey because the time constraints of a master's thesis prevented obtaining ethical approval from multiple sites. The majority of older adults who require aural rehabilitation are, in fact, seen by private practice audiologists (E. McNeill, 7th September 1999).

2.3 Measures.

2.3.1 Biographical data.

Biographical details were asked of all participants (see Appendix A) and included type of training, where the training had occurred, years of experience, age, sex and ethnic background as well as percent clientele who were over 65 and percent clientele who were rural.

2.3.2 Facts on Aging Quiz (FAQ).

A standardized and well-researched measure, Palmore's (1998) FAQ, was used to determine knowledge of older adults (see Appendix A). There are two scales available; both contain 25 statements regarding older adults that participants respond to. One version requires a true/false response and the other also has a "don't know" option. This second version was used as research suggests that the inclusion of the "don't know" option reduces guessing and is therefore more reliable (Clark, 1996; Palmore, 1998; Pennington et al., in press). The answers to each particular statement can be used to assess knowledge in particular areas; more commonly the FAQ is used

to measure overall knowledge of older adults of a particular group of people and this can be compared with that measured in other groups. The FAQ is a widely used instrument in the United States, it has been standardized for use in both Australia (Luszcz, 1982) and in New Zealand (Pennington et al., in press) and has been previously used to measure the knowledge of American audiologists (Cole & Dancer, 1996) as well as medical students (Shahidi & Devlen, 1993), medical lecturers (Edwards & Aldous, 1996) and health care professionals (Astle, 2000; Sheffler, 1995, 1998; Singleton, Harbison, Melanson & Jackson, 1993).

Pennington et al. (in press) have standardized the FAQ for New Zealand. However, as their work was based on the 1988 version of the FAQ, rather than the more recent version (Palmore, 1998), the following changes were made. Question 13 is from Palmore (1998) and was not included in Pennington et al. (in press) and the percentage in question 19 is 20 percent as in Palmore (1998) rather than 15 percent as in Pennington et al (in press). Question 25 is taken from Pennington et al., (in press) as they found that it was not possible to safely predict health and economic status of older adults compared with younger adults in New Zealand and changed the wording of the statement to reflect changes over the last twenty years (see Appendix A). Scores can theoretically range from zero percent correct to one hundred percent correct (total correct scores range from zero to 25) with higher scores representing higher levels of knowledge. There are no published norms as such; the previous study of audiologists in the United States by Cole and Dancer (1996) using a yes/no version (without a don't know option) gave a mean score of 72.3 percent correct.

While the FAQ has been criticized as having low item-to-total score correlation coefficients, Palmore (1998) argues that the quiz is "edumetric" (pg. 57) rather than psychometric in that it measures levels of information rather than a relatively stable trait such as intelligence. In other words, knowledge regarding one facet of ageing does not need to correlate highly with knowledge regarding other facets of ageing. Palmore's (1998) review of studies that have used the FAQ did find consistency in misconceptions across studies; frequently the statements that elicit misconceptions are those that would need to be dropped to improve item-total correlations and would thus result in missing measurement of those misconceptions (Palmore, 1998). In the

present study, Cronbach's alpha for the total FAQ was .7548. While alphas over .7 are considered acceptable (Pallant, 2001), it does not relate any further information on the FAQ; as previously stated the FAQ is edumetric rather than psychometric (Palmore, 1998).

Validity of the FAQ has been assessed in two ways. Firstly, each statement has been researched and the correct answer verified (Luszcz, 1982; Palmore, 1998; Pennington et al., in press). Secondly, results have shown higher percentages of correct answers in groups that have been trained in gerontology, that is, people who would be expected to have a higher than average knowledge regarding older adults get a higher percentage correct on the FAQ than those without specific education (Palmore, 1998).

The FAQ has also been used as an indirect measure of attitudes towards older adults in a number of studies. Questions that have an evaluative content to them are divided into those with a pro-age bias if marked incorrectly (questions 2, 4,6,12 and 14) and those with anti-age bias if marked incorrectly (questions 1,3,5,7 to 11,13,16 to 18, 22,24 and 25). The anti-age bias score is the percentage of anti-age bias questions answered incorrectly and the pro-age bias score is the percentage of pro-age bias questions answered incorrectly. Percentage is used rather than numbers because of the uneven numbers of questions in each category. Scores can therefore range from 0 to 100 percent. A net bias score is calculated by subtracting the anti-age bias score from the pro-aged bias score. Scores range from +100 percent to - 100 percent, with a positive score indicating a net pro-age bias (Palmore, 1998). A review of studies that used the FAQ to measure attitudes found that the researchers were evenly divided as to whether this was an appropriate way to use the quiz (Palmore, 1998).

2.3.3 Attitude Towards Old People Scale (ATOP).

The Attitudes Towards Old People Scale (ATOP) was developed by Kogan (1961). The original scale had 17 pairs of statements regarding older adults, one positively and one negatively worded. Some of the items were taken from ethnic attitude scales while others were developed by the author and his colleagues from the stereotypes they perceived in society regarding older adults (Kogan, 1961). Responses were scored using a Likert scale where 1 indicates strong disagreement with the statement

through to seven, which indicates strong agreement with the statement. Half the statement scores were reversed so that the lower the total score, the more positive the attitude towards older adults (Kogan, 1961).

This initial scale was presented to over 400 university students along with other measures and was found to have an acceptable reliability level overall (particularly the negatively worded statements) and between positively and negatively worded item pairs. While the wording was changed to disguise the opposing nature of the item pairs, they were carefully constructed to represent “logical opposites in terms of connotative meaning” (Kogan, 1961, pg.48). Product-moment coefficients between each item pair were .46 to .52, that is, significant beyond .01. Test-retest reliability coefficient over two weeks for the ATOP was $r = 0.65$ (Hicks et al., 1976). In the present study, Cronbach’s alpha for the total ATOP scale was .7463. Measures that have a Cronbach’s alpha over .7 are considered adequate (Pallant, 2001).

The ATOP appears to have good predictive validity. Silverman (1966) found that there was a .40 correlation between scores on the ATOP and a preference to interview older adults rather than students, employed people or housewives. Silverman (1966) interpreted this to mean that the ATOP was predictive of a disposition to have contact with older adults.

Hicks et al. (1976) compared results from five attitude measures including the ATOP. While the ATOP correlated poorly with the Tuckman-Lorge Attitude Scale and a semantic differential measure of potency, it was significantly correlated with the Adjective Checklist, an evaluative semantic differential measure and The Behavior Preference List ($p < .01$; Hicks et al., 1976). The researchers concluded that attitudes towards older adults are multidimensional and that the measures tap into different aspects of the construct. Thus they recommend that multiple measures of attitudes should be used.

The ATOP was revised by Hilt and Lipschultz (1999) down to 22 items in response to complaints from respondents regarding the length. As the length of the survey was of concern in this present study, it was decided to use the shorter ATOP as used by Hilt

and Lipschultz (1999) but with the inclusion of one additional item from the original survey. The statement “Most older adults are set in their ways and are unable to adjust to change” was included as it was considered pertinent as regards adjustment to aural rehabilitation. In addition, the original and amended statements used the term elderly rather than the now more acceptable term older adult to describe those over 65. The present survey uses the latter description (see Appendix A).

While all statements were scored on a Likert Scale where 1 = strongly disagree and 7 = strongly agree, the negatively worded statements had their scores reversed so that the attitude score was in the same direction. The negatively worded statements in the ATOP were questions 2,5,12,15, 19 and 22. Scores range from 7 to 161, where the higher score indicates a more positive attitude towards older adults. A neutral attitude (neither agreeing or disagreeing with every item) would score 92¹.

2.3.4 The Use of Vignettes to Measure Potential Behaviour.

Vignettes are a way of simulating actual situations that ask for judgments to be made and the responses can thus be measured (Lanza & Carifio, 1990). Although it is obviously an artificial way of measuring responses, it does allow for measurement of responses to a standardized situation. Where a nationwide survey is being undertaken that requires participants’ responses within a specific time frame and would otherwise be extremely difficult to determine, a vignette is an obvious solution. It must be realized, however, that there is a challenge to external validity by using such an artificial way of measuring responses (Lanza & Carifio, 1990).

Vignettes have been widely used in recent years, particularly in the field of attitudes; most of the research on age bias has been done using vignettes. Kee et al. (1998) used vignettes to discover if age was a factor in access to chronic pain rehabilitation and found that an age bias was present. Similarly James & Haley (1995) investigated age and health bias in practicing clinical psychologists by using vignettes that manipulated

¹ Based on the studies of Kogan (1961) and Hilt and Lipschultz (1999), the neutral score was obtained by multiplying the “neither agree nor disagree” score of 4 by the number of statements in the measure. Thus, a neutral score for the 23-item version of Kogan’s (1961) ATOP used in the present study is $4 \times 23 = 92$.

age and health status. In the present study, a vignette was designed to measure the treatment options that hearing therapists and audiologists would think appropriate for aural rehabilitation for a particular individual. The vignette was also designed to measure how alike hearing professionals were in the treatment options recommended – an indirect way of determining the effect of subjective norms on behaviour. As regards theory, the vignette may best be seen as a measure of intention to behave, elicited by aggregating answers to different treatment options. Given the time restraints of the research, it was not possible to measure actual behaviour. Additionally, the issue of privacy and the presence of the researcher during treatment would also make the actual behaviour of hearing therapists and audiologists difficult to accurately record.

A vignette was constructed by the researcher, based on the style of vignettes used by researchers in the area of ageism in health professionals (see Hillman et al., 1997; James & Haley, 1995; Kee et al., 1998) and in consultation with both audiologists and hearing therapists. The vignette (see Appendix A) describes a woman, Joan, her family and social life and the problems she is experiencing with her hearing. It also includes an audiograph indicating more precisely the severity of hearing loss she suffers from. Often this is the only information used by audiologists to decide what type of rehabilitation the person should undergo (Hull, 1997; Tye-Murray, 1998). Two versions were used, the only difference being Joan's age. The two ages used were 63 and 78. Information was kept at a minimum to see if the respondents would, given an opportunity, ask for further audiometric or personal information regarding Joan. A series of questions concerning treatment options, evaluation, the supply of additional written information and possible referral followed the vignette.

While a vignette should ideally use ages that are wider apart, the pattern of presbycusis, by its very definition of hearing loss that occurs with ageing, is peculiar to older adults. Giving a different type of hearing loss pattern in order to use a younger version of the vignette might easily change the type of treatment that would be recommended by hearing professionals (E. McNeill, 7th September 1999) and therefore invalidate any comparison.

The vignette was designed to elicit two sets of data. The first is seen as a measure of intention and consists of those items that suggest a positive intention towards Joan. These were simply scored where a 1 denoted a positive intention and no score indicated no positive intention. For example in question one “Would you recommend that Joan trial a hearing aid?”, the answer yes would score one point. There were two exceptions to this. One score per hour was awarded for the number of hours the participant would see Joan for (question 14) and the level of evaluation was scored progressively (question 15). Thus talking to Joan would score one, using an evaluative measure would score two and both talking to Joan and using a measure would score three. Questions 1,6,14 –20, 22-26 were scored in this way and the total score for each participant defined as a measure of positive intention. Scores range from 2 to 20, with a higher score indicating more positive intentions.

The second measure obtained from the vignette looked at similarity of practice; did the hearing professionals recommend the same type of treatment options? Questions 2-5, and 7-13 were used for this practice measure. The more participants agreed on a particular item, the higher the obtainable score; that is the score was calculated from the percentage of those who had the same answer. For example, in question 2 over 60 percent of participants recommended a “Behind the Ear” hearing aid and over 30 percent did not. Those in the larger group scored six for that item and those in the minority scored three. Each question was calculated separately and then individual scores totaled. This measure was designed as an indirect way of measuring subjective norms. Previous research has tended to measure subjective norms by asking participants what they believe significant others would think about an intended behaviour (see, for example, Finlay, Trafimow and Moroi, 1999; Manstead et al., 1983; Sheeran & Orbell, 1999). As Lam (1999) states, the term significant others is vague and may refer to different groups for different people. In addition, Taylor (1961) argues that the desire to appear socially desirable strongly influences some peoples’ answers to particular questions. It is possible that participants may not wish to be seen as affected by the views of significant others (that is, easily persuadable); equally, it is possible that participants might feel that it should be important to take account of others’ views regardless of whether they do or not. For these reasons it was decided to try and measure subjective norms indirectly. The questions were designed

to elicit a pattern of similar practice among hearing professionals to examine if continuing association within a specific group influenced the intentions of individuals. If continuing association did influence an individual's intentions, then a narrow range of Similarity of Practice scores would be obtained within each professional group and these scores would be correlated to the years of experience each individual had. Scores range from 21 to 78 with a higher score indicating a higher level of similarity of practice.

The vignette was also designed to determine whether the different age of the client (63 or 78) resulted in different scores on positive intentions or practice similarity, and whether there was a relationship between FAQ or ATOP scores and the vignette type or measures.

2.4 Procedure.

Audiologists were contacted through the New Zealand Audiological Society (NZAS) who sent out an initial letter on behalf of the researcher describing the study and asking for their agreement to participate in the survey (see Appendix A). At the time of posting the initial letter, 52 audiologists in private practice were registered with the NZAS, and all 52 were contacted. The Association of Hearing Therapists was also approached and obtained agreement from their members to be approached directly by the researcher. The Association supplied names and addresses of all hearing therapists in New Zealand (in number, 32) and the same initial letter was sent directly to them. Briefly, the letter gave contact details of the researcher and her supervisor and described the rationale behind the study. The letter asked those who agreed to take part to return the initial letter in the freepost addressed envelope provided, indicating whether they would like to receive the survey by post or email and to give appropriate delivery details.

2.4.1 Sponsored draw

To encourage prospective participants, a draw was organized with prizes donated by Hearing Aid companies in New Zealand, and all those who agreed to accept the survey were eligible for the draw. Ten weeks after the initial letters were posted, all initial letters that had been received from agreeable participants were folded so that no details

could be seen and placed in a bag for the draw. Seven letters were drawn altogether, and the first one drawn was allocated the GN ReSound hearing enhancer as a prize. The book on hearing instrument technology donated by Phonak went to the second letter drawn and the remaining five received Dri-Aid hearing containers or batteries together with torch key-rings and post-it notes donated by Siemens. Each winner was advised of their win and informed that their names as winners would be given to the appropriate Hearing Aid company unless they objected.

2.4.2 Assignment to Vignette Versions

As each letter agreeing to participate was returned, it was assigned a number in order of arrival. Due to time constraints, each participant was assigned immediately to one of the two vignette versions and a survey posted back. Because the letters were identical, it was not possible to determine in every situation which were from hearing therapists and which were from audiologists. However, most either stated which profession they belonged to or had a recognizable address indicating profession and these were randomly assigned to one of the two vignette versions. The only variation to this was made to ensure that each profession and each type of response (post or email) had relatively equal numbers in each of the two versions (see figure 5).

A survey was posted or emailed to every agreeing participant on receipt of their agreement, along with an information sheet describing the rationale behind the survey and contact details for those who had questions (see Appendix A). The same number, given to the initial letter on arrival, so that non-responders could be followed up, identified each survey. As this was an on-going situation – surveys were being sent out as initial letters were still being returned – a careful note was made of how many of each vignette versions were being sent to each of the four conditions (audiologist by post, audiologist by email, hearing therapist by post and hearing therapist by email, as in figure 5) and assignment was adjusted where necessary.

Non-responders were sent a reminder and a new copy of the survey six weeks after the initial survey was sent.

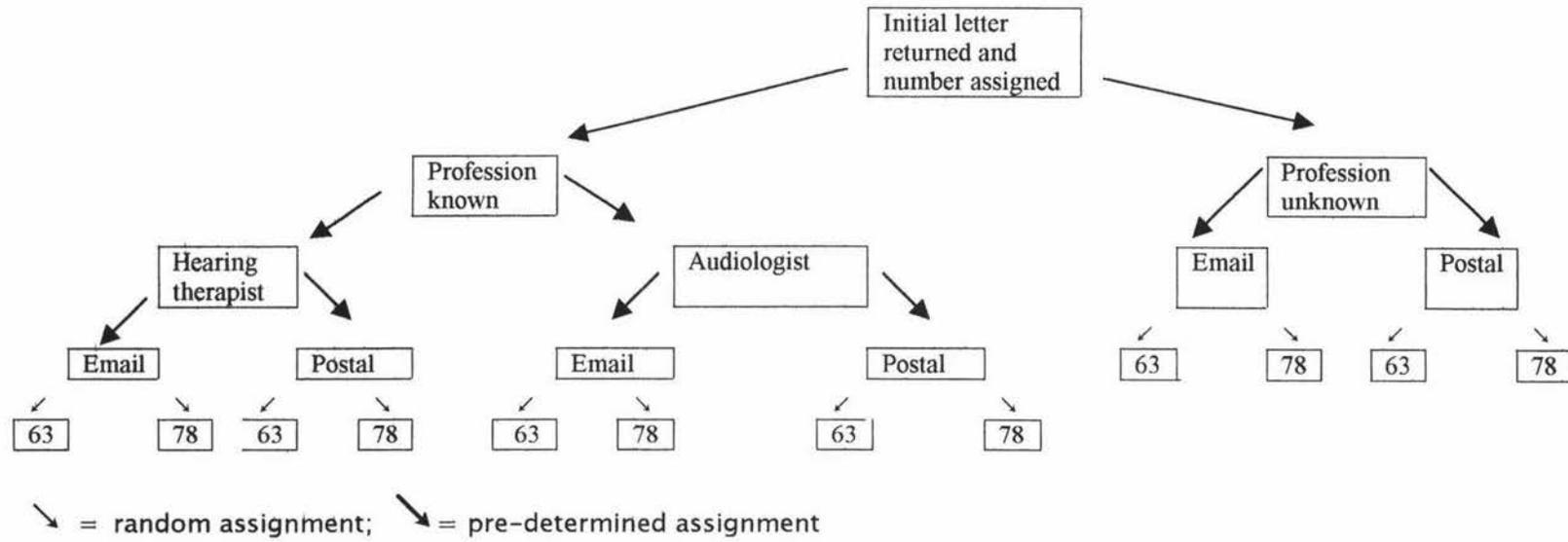


Figure 5: Flow chart depicting assignment of participants to either a 63-year-old vignette or a 78-year-old vignette.

CHAPTER THREE

RESULTS

This section firstly presents the biographical details of the participants in the present study. The results are then presented in line with the hypotheses and research goals presented on page 33.

3.1 Data Screening

Before any analyses were carried out, data were screened for data entry accuracy, missing values, normal distribution and other assumptions of multivariate analysis. All demographic variables, FAQ total scores, ATOP total score, vignette Positive Treatment and Similarity of Practice scores followed a normal distribution. While the audiologists and hearing therapists groups were of different sizes, this was not considered a sufficiently large enough difference to violate assumptions of the data carried out (Tabachnick & Fidell, 1989).

3.2 Response Rate

Twenty hearing therapists and 36 audiologists returned the initial letter agreeing to take part and were posted surveys. A total of 15 out of a possible 32 hearing therapists (47 percent) and 30 out of a possible 52 Audiologists (56 percent) returned the surveys.

3.3 Biographical Details (see Table 1)

3.3.1 Hearing Therapists

All the hearing therapists were female, with a mean age of 50.67 years (SD = 7.8) and a mean of 9.45 years of experience (SD = 6.3). Between 40 and 95 percent of their clientele were aged over 65 years, mean 74.5 percent (SD = 15.7), while the percentage of rural clients varied from 0 to 100 percent with a mean of 29.9 percent (SD = 34.9). Two therapists had secondary level education plus specific training for hearing therapy, one had post-graduate training while 80 percent (N = 12) had tertiary education plus specific training for hearing therapy. All were trained in hearing therapy in New Zealand. Ten hearing therapists identified themselves as New Zealand European, four as European and one as New Zealand Maori.

Table 1: Biographical details of participants

	Audiologist (N = 30)	Hearing Therapist (N = 15)
Demographic Details		
Gender		
Male	13	0
Female	17	15
Age		
Mean (years)	39.6	50.7
Standard deviation	9.0	7.8
Range (years)	25 – 58	40 – 62
Missing data	1	0
Years of experience		
Mean (years)	11.6	9.5
Standard deviation	7.9	6.3
Range (years)	1 – 29	25 - 24
Percent clients > 65		
Mean	64.2	74.5
Standard deviation	17.8	15.7
Range	15 – 90	40 – 95
Missing data	1	0
Percent clients rural		
Mean	24.6	29.9
Standard deviation	21.3	34.9
Range	0 – 90	0 - 100
Missing data	1	0
Training Site		
New Zealand	15	15
Australia	14	
United States	1	

3.3.2 Audiologists

Seventeen of the audiologists were female, thirteen male. The average age was 39.6 years (SD = 9.0) and the mean for years of experience was 11.65 years (SD = 7.9). Between 15 and 90 percent of their client base was over 65 years with a mean of 64.2 (SD = 17.8) and the percent of rural clients varied from 0 to 90 percent, mean 24.6% (SD = 21.3). Twenty-six audiologists identified themselves as New Zealand European, one as Asian, one as European, one from the United States and one did not specify. All had post-graduate training, but their site of training varied. Fifteen trained in New Zealand, fourteen in Australia and one in the United States.

3.4 Analysis

In the present study, relationships among variables were examined using SPSS-PC. (SPSS Inc.; 1989 – 1999). T-tests were used to examine the differences between the two groups on biographical variables, total FAQ results, individual and total ATOP scores and total vignette scores. In these analyses, an F test of sample variances was carried out. If the probability of F was $> .05$, then it was assumed sample variances were equal and pooled variance estimates were used. If the probability of F was $< .05$, it was assumed sample variances were unequal and separate variance estimates of t were used. In the vignette section of this study, sample sizes varied due to missing data. Where necessary, nonparametric measures were carried out. The Mann Whitney Test was used to examine the differences between the two groups for individual vignette questions. An analysis of variance was carried out to examine the effects of age, gender, education and professional group on attitudes as measured by the total ATOP score. A further two-way between groups analysis of variance was conducted to explore the impact of age, gender, education, professional group and vignette type (age of Joan) on Positive Treatment scores, as measured by the vignette. Statistical significance was assessed using two-tailed tests with alpha set at $.05$.

Of concern in the present study is the possibility of finding statistically significant associations that have occurred by chance due to the number of comparisons that have been undertaken. In the present study no adjustments were made to the significance criterion or the calculated p-value to deal with this problem. Instead, following

Rothman (1986), non-significant as well as significant results have been presented, in order to interpret properly the p-values for the positive findings.

3.5 Type of survey

Research goal one: To assess the popularity of email versus postal surveys

Email surveys were requested by 23 participants (18 audiologists and 5 hearing therapists) while 33 (18 audiologists and 15 hearing therapists) requested a posted survey. Of the 23 emails sent out, sixteen were returned (12/18 audiologists and 4/5 hearing therapists) including four that were printed out and posted. This gave a response rate of 69 percent. Of the 33 letters sent out, 29 (18 audiologists and 11 hearing therapists) were returned, giving a response rate of 88 percent. Postal surveys gave a higher response rate, and were also more frequently requested than email surveys, which indicates that postal surveys are more popular than email surveys, at least at present, for the participants of the present study.

3.6 Biographical comparison between groups

There were, as expected, significant differences between the groups for gender ($\chi^2 (1, N = 45) = 9.141, p < .01$) and education ($\chi^2 (1, N = 45) = 40.645, p < .001$) such that there were significantly more male audiologists than hearing therapists and audiologists had a significantly higher level of education. There was also a significant difference for age ($t (42) = -4.024, p < .001$), in that hearing therapists were, on average, approximately eleven years older than the audiologists. There were no significant differences between audiologists and hearing therapists on ethnic background, years of experience, percentage of rural clients or percentage of clients over 65. Ethnicity was not used in further analyses as this variable did not meet statistical criteria for dichotomous split (90%/10%, Tabachnick & Fidell, 1989).

3.7 Facts on Aging Quiz.

Hypothesis One: Audiologists will have higher knowledge than hearing therapists regarding older adults as measured by the FAQ due to their higher

educational level as a group.

The results scored by both groups on all the FAQ questions are presented in Table 2. Overall, there was no significant difference between the two professions in their levels of knowledge of older adults based on the total score of FAQ questions answered correctly ($t(43) = 1.958, p > .05$). Hypothesis one was not supported.

There was also no significant difference between audiologists and hearing therapists on the number of incorrect answers. However, there was a significant difference between the two groups on the number of “don’t know” answers ($t(43) = -2.194, p < .05$) in that hearing therapists were significantly more likely than audiologists to offer a “don’t know” response. A comparison was made regarding knowledge levels on the FAQ between the hearing therapists ($N = 15$) and those audiologists who had been trained in New Zealand ($N = 15$) as it was known that New Zealand trained audiologists do receive four hours training in gerontology. There was a significant difference between these groups ($t(28) = 2.069, p < .05$) in that New Zealand trained audiologists did have a higher knowledge level than hearing therapists. These two groups differed significantly on age, education and gender. Further analysis (ANOVA), when controlling for age, showed this relationship remained ($F(1,27) = 9.269, p < .01$). When this analysis was repeated excluding male audiologists (thereby controlling for gender) the relationship between profession and ATOP scores again remained significant ($F(1,21) = 7.261, p < .05$). Education could not be statistically controlled for as only one hearing therapist and all the audiologists had post graduate training, meaning no variability on this covariate within at least one of the professional groups.

Research Goal Two: To assess the relationship that biographical data, years of experience, percent of clients over 65 and percent of clients rural have with knowledge of older adults.

Independent t-tests were carried out on the relationships between gender and knowledge, and education and knowledge and no significant differences were found (see Appendix B). The correlations between age, years of experience, percent clients

Table 2: Numbers of correct, incorrect and don't know answers given on the FAQ by audiologists and hearing therapists.

FAQ Question number.	Audiologists N = 30			Hearing Therapists N = 15		
	Correct	Incorrect	Don't know	Correct	Incorrect	Don't know
FAQ1. The majority of old people (65+) are senile (have defective memory, are disoriented or demented).	30	0	0	15	0	0
FAQ2. The five senses (sight, hearing, taste, touch and smell) all tend to weaken in old age.	27	3	0	11	3	1
FAQ3. The majority of old people have no interest in, nor capacity for, sexual relations.	27	1	2	13	0	2
FAQ4. Lung vital capacity tends to decline in old age.	21	0	9	3	2	10
FAQ5. The majority of old people feel miserable most of the time.	30	0	0	15	0	0
FAQ6. Physical strength tends to decline in old age.	30	0	0	15	0	0
FAQ7. At least one tenth of the aged are living in long-stay institutions such as nursing homes, mental homes, homes for the aged etc.).	9	16	5	4	3	8
FAQ8. Aged drivers have fewer accidents per driver than those under 65	14	8	8	1	5	9
FAQ9. Older workers usually cannot work as effectively as younger workers	25	3	2	10	1	4
FAQ10. Over three-fourths of the aged are healthy enough to do their normal activities without help.	27	1	2	15	0	0
FAQ11. The majority of old people are unable to adapt to change.	27	2	1	14	1	0
FAQ12. Old people usually take longer to learn something new.	25	4	1	12	3	0

Table 2 continued: Numbers of correct, incorrect and don't know answers given on the FAQ by audiologists and hearing therapists.

FAQ Question number.	Audiologists N = 30			Hearing Therapists N = 15		
	Correct	Incorrect	Don't know	Correct	Incorrect	Don't know
FAQ13. Depression is more frequent among the elderly than among younger people.	14	11	5	7	3	5
FAQ14. Older people tend to react slower than younger people.	29	0	1	13	1	1
FAQ15. In general, old people tend to be pretty much alike.	28	1	1	15	0	0
FAQ16. The majority of old people say that they are seldom bored.	22	2	6	12	2	1
FAQ17. The majority of old people are socially isolated.	27	2	1	12	2	1
FAQ18. Older workers have fewer accidents than younger workers.	10	5	15	2	2	11
FAQ19. Over 20% of the population are now aged 65 or over.	1	23	6	1	7	7
FAQ20. The majority of medical practitioners tend to give low priority to the aged.	6	18	6	3	6	6
FAQ21. The majority of old people have incomes below the poverty line (as defined by the government)	15	5	10	4	5	6
FAQ22. The majority of old people are working or would like some kind of work to do (including housework and voluntary work).	22	1	7	11	0	4
FAQ23. Old people tend to become more religious as they age	14	9	7	7	1	7

Table 2 continued: Numbers of correct, incorrect and don't know answers given on the FAQ by audiologists and hearing therapists.

FAQ Question number.	Audiologist (N = 30)			Hearing Therapist (N = 15)		
	Correct	Incorrect	Don't know	Correct	Incorrect	Don't know
FAQ24. The majority of old people say they are seldom irritated or angry	5	17	8	5	6	4
FAQ25. The health and economic status of old people has stayed the same or worsened in the last 20 years (compared to that of younger people).	4	19	7	1	8	6
Total FAQ score mean	16.3	5.03	3.67	14.73	4.07	6.2
Total FAQ score standard deviation	2.29	2.43	3.51	2.96	2.19	3.93
Total FAQ score, percentage	65.20	20.13	14.67	59.20	16.00	24.80

over 65 and percent clients rural with knowledge were also examined and no significant relationships found (see Appendix B).

3.7.1 The FAQ as a Measure of Attitude.

Research Goal Three: To determine whether the Facts on Aging Quiz is a valid measure of attitudes towards older adults.

The FAQ gives three measures relating to attitudes towards older adults. The anti-age bias, the pro-age bias and the net age bias scores were calculated for the sample as a whole and for both groups (see Table 3).

Table 3: Anti, pro and net age bias scores from the FAQ for Hearing therapists and Audiologists.

Measure N	Total 45	Audiologists 30	Hearing Therapists 15	Significance
Anti Age bias				
Mean	18.61	20.00	15.83	ns
Standard deviation	13.62	14.16	12.47	
Pro Age bias				
Mean	7.11	4.67	12.00	ns
Standard deviation	11.41	8.60	14.74	
Net age bias				
Mean	-11.11	-14.25	-4.83	ns
Standard deviation	20.88	20.34	21.19	

There were no significant differences between the two groups on the three measures. All three scores were correlated with the total scores obtained for attitudes from the ATOP, (see below). As can be seen from Table 4, there were no significant correlations between any of the bias scores obtained on the FAQ and the attitude measured with the ATOP. Given the evidence for the validity and reliability of the ATOP (see pages 37 – 39 in the Method section) it appears that the FAQ is not a good measure of attitude in that it does not appear to have convergent validity.

Table 4: Pearson correlations among the FAQ bias scores and the ATOP attitude score.

	Anti-age bias	Pro-age bias	Net age bias
Total ATOP score	-.163	.045	.152

3.8 Attitude Towards Old People scale.

Hypothesis Two: Given the evidence in the literature for a positive correlation between knowledge levels and positive attitudes, audiologists will have more positive attitudes towards older adults than hearing therapists.

3.8.1 Individual statements of the ATOP

The means and standard deviations for each statement and the total ATOP score for the two groups are given in Table 5. There were significant differences between the groups on a number of the ATOP statements. Audiologists were more likely to agree with Statement 2; “Most older adults let their home become shabby and unattractive” ($t(23.561) = -2.625, p < .05$) and disagree with Statement 8; “Most adults seem to be quite clean in their personal appearance” ($t(42.827) = -3.402, p < .01$). Hearing therapists were more likely to agree to Statement 10; “most adults respect the privacy of others” ($t(36.573) = -2.518, p < .05$) and Statement 13; “Most older adults need no more love and reassurance than anyone else” ($t(43) = -2.043, p < .05$). They were also significantly more likely to agree with Statement 14; “Most older adults would work as long as possible rather than become dependant” ($t(43) = -2.502, p < .05$). Audiologists were significantly less likely to agree with Statement 17; “Most older adults are very relaxing to be with” ($t(42.833) = -3.744, p < .01$), and Statement 20; “Most older adults are as easy to understand as younger people” ($t(39.043) = -2.038, p < .05$).

Table 5: ATOP statement means, standard deviations, ranges and significance for hearing therapists and audiologists

Attitude Towards Old People Statement .		Audiologist N = 30	Hearing Therapist N = 15	Significance
1. Older adults have the same faults as anybody else	Mean	5.83	6.33	ns
	Standard deviation	1.23	0.49	
2. Most older adults let their homes become shabby and unattractive.	Mean	6.07	6.53	**
	Standard deviation	0.52	0.64	
3. Older adults accounts of their past experiences are interesting.	Mean	5.93	6.33	ns
	Standard deviation	0.74	0.72	
4. Most older adults are cheerful, agreeable and good humoured.	Mean	5.10	5.73	ns
	Standard deviation	1.24	0.96	
5. It is foolish to claim that wisdom comes with old age	Mean	4.37	4.67	ns
	Standard deviation	1.59	1.59	
6. A nice residential neighbourhood has a number of older adults living in it.	Mean	5.20	5.47	ns
	Standard deviation	1.21	1.25	
7. Most older adults are very different from one another.	Mean	5.53	5.87	ns
	Standard deviation	1.43	1.41	
8. Most older adults seem to be quite clean in their personal appearance.	Mean	5.53	6.20	**
	Standard deviation	0.90	0.41	
9. Older adults have too little power in business and politics.	Mean	4.47	4.13	ns
	Standard deviation	1.17	1.60	
10. Most older adults respect the privacy of others.	Mean	5.30	5.93	*
	Standard deviation	0.95	0.70	

Table 5 continued: ATOP statement means, standard deviations, ranges and significance for hearing therapists and audiologists

Attitude Towards Old People Statement .		Audiologist N = 30	Hearing Therapist N = 15	Significance
11. Most older adults can adjust when the situation demands it.	Mean	5.10	5.53	ns
	Standard deviation	1.24	0.64	
12. Most older adults bore others by talking about the "good old days".	Mean	5.07	5.07	ns
	Standard deviation	1.05	1.03	
13. Most older adults need no more love and reassurance than anyone else.	Mean	3.77	4.73	*
	Standard deviation	1.50	1.49	
14. Most older adults would work as long as possible rather than become dependant.	Mean	5.27	6.13	**
	Standard deviation	1.23	0.74	
15. If older adults expect to be liked, they should eliminate their irritating faults	Mean	5.50	5.87	ns
	Standard deviation	1.14	1.19	
16. Older adults seldom complain about the behaviour of younger people.	Mean	3.17	3.67	ns
	Standard deviation	1.05	1.40	
17. Most older adults are very relaxing to be with.	Mean	4.80	5.67	ns
	Standard deviation	1.06	0.49	
18. People become wiser with the coming of old age.	Mean	4.40	4.47	ns
	Standard deviation	1.16	1.41	
19. Most older adults spend too much time prying into the affairs of others.	Mean	5.60	5.87	ns
	Standard deviation	1.00	0.92	
20. Most older adults are as easy to understand as younger people.	Mean	5.50	6.00	*
	Standard deviation	0.97	0.65	
21. Most older adults keep a clean home.	Mean	5.63	5.87	ns
	Standard deviation	0.76	1.06	

Table 5 continued: ATOP statement means, standard deviations, ranges and significance for hearing therapists and audiologists

Attitude Towards Old People Statement .		Audiologist N = 30	Hearing Therapist N = 15	Significance
22. Most older adults are set in their ways and unable to adjust to change.	Mean	4.93	5.20	ns
	Standard deviation	1.17	0.86	
23. It would be better if most older adults lived in residential units that also housed younger people.	Mean	4.10	4.40	ns
	Standard deviation	1.54	1.76	
Total ATOP Score	Mean	115.90	125.67	**
	Standard deviation	9.48	8.89	

- p < .05, ** p < .01

Research Goal Four: To assess the relationship that biographical data, years of experience, and percent of clients over 65 have with attitudes towards older adults.

Taking the two groups as a whole, there was a statistically significant difference ($t(42)=2.149, p<.05$) between the attitudes of those 40 years of age and over ($N=33$) to those under 40 ($N=11$), with older hearing professionals having more positive attitudes. There was also a statistically significant difference between the attitudes as regards gender, with female hearing professionals having more positive attitudes than male hearing professionals ($t(43) = -2.125, p<.05$). The attitudes of participants with post-graduate level education ($N = 31$) were compared to the attitudes of those without postgraduate education ($N = 14$) and a significant difference was found ($t(43) = 3.065, p < .01$). Those participants with postgraduate education had significantly less positive attitudes than those without postgraduate education (see Table 6).

Table 6: Independent samples t-test of gender and education with total ATOP score

Variable	Total ATOP Score			t	df	Sig.
	N	Mean	SD			
Gender						
Male	13	114.23	5.95	-2.125	43	*
Female	32	121.16	11.07			
Age						
< 40	11	30	4.49	2.149	42	*
≥40	33	47.85	6.86			
Education						
Tertiary or less	14	125.57	9.21	3.065	43	**
Post graduate	31	116.26	9.53			

* $p < .05$

** $p < .01$

The correlations between age, years of experience, percent clients over 65 and percent clients rural with ATOP scores were also examined and no significant relationships found (see Appendix C).

3.8.2 Total ATOP Score

Although there was no significant difference in knowledge between the two groups (see Section 3.7), there was a significant difference between the two groups for the total ATOP scores. An independent samples t-test ($t(43) = -3.324, p < .01$) confirmed that the hearing therapists had significantly more positive attitudes towards older adults than audiologists. These two groups differed significantly on age, education, and gender. Further analysis (ANOVA), when controlling for age, showed this relationship remained ($F(1,41) = 6.575, p < .05$). However, when this analysis was repeated (again controlling for age) excluding male audiologists (thereby controlling for gender) the relationship between profession and ATOP scores was not significant ($F(1,29) = 3.127, p > .05$). Again, education could not be statistically controlled for as only one hearing therapist and all the audiologists had post-graduate training, meaning no variability on this covariate within at least one of the professional groups. Thus hypothesis two, that audiologists would have more positive attitudes towards older adults than hearing therapists, was not supported.

3.9 Results of the Vignette.

3.9.1 Individual Vignette Answers

The answers from each profession for the vignettes are considered individually in Appendix D.

3.9.2 Measurement of subjective norms

Hypothesis Three: As subjective norms are theorized to influence the behaviour of individuals within a specific peer group, both audiologists and hearing therapists with a higher number of years of experience will become more alike in their treatment practices within their own professional group.

The Similarity of Practice score (an indirect measure of subjective norm) was calculated using questions 2 – 5, 7 – 13 and 21 of the vignette. This measure showed a normal distribution and did not correlate with years of experience ($r = -.175$, $p = .331$).

These findings do not support hypothesis three and suggest that the vignette, as it stands, cannot be used to determine the subjective norms of the groups in question. There was no significant difference between Similarity of Practice scores for audiologists and hearing therapists, which indicates that the groups do not have particular group-specific treatment practices.

3.9.3 Positive Treatment Scores.

The answers to vignette questions 1,6,14 – 20 and 22 – 26 were combined to give a measure of Positive Treatment. Means and standard deviations of the Positive Treatment score for both audiologists and hearing therapists in both vignette versions are presented in Table 7. There was no significant difference between Positive Treatment scores for the two vignette versions for the audiologists ($t(28) = -1.953$, $p = .061$). Because of the small numbers of hearing therapists who completed the vignette section of the survey, the Mann Whitney non-parametric tests was used to determine if there were any significant differences between Positive Treatment scores for the two versions of the vignette for hearing therapists only. No significant differences were found ($MWU = 17.0$, $p = .566$). However, when the vignettes were considered as one group, there was a significant difference between professions on the Positive Treatment score ($t(41) = 2.372$, $p < .05$) in that audiologists had a significantly higher Positive Treatment score overall than hearing therapists.

A two-way between groups analysis of variance was conducted to explore the impact of age, gender, education, profession and vignette type (age of Joan) on Positive Treatment scores, as measured by the vignette. There was no significant main effect for any of the variables on the Positive Treatment score, nor was there a significant interaction effect (Profession x vignette type) on the Positive Treatment Score.

Table 7: Means and standard deviations of the Positive Treatment scores for audiologists and hearing therapists on both vignette versions.

Vignette Version	Profession	N	Mean	SD
63 years old	Audiologist	16	13.50	3.18
	Hearing Therapist	6	11.17	2.48
	Total	22	12.79	3.21
78 years old	Audiologist	14	15.79	3.21
	Hearing Therapist	7	12.71	3.45
	Total	21	15.35	3.26
Both versions	Audiologist	30	14.57	3.35
	Hearing Therapist	13	12.00	3.03
	Total	43	13.79	3.42

3.9.4 Audiometric Information

Participants were asked what further audiometric measures they would like to have regarding Joan. The hearing therapists did not give any audiometric measures so the results are for audiologists only. While a number of audiometric tests were recommended, the majority of audiologists (57 %) felt that bone conduction tests were important for both vignette versions. Bone conduction audiometry investigates whether the hearing loss is sensory-neural or conductive. Almost equally important were speech discrimination (50%) and loudness discomfort levels (37%). There was no significant difference between the audiometric information required in either vignette version.

3.9.5 Personal Information

Question 26 of the vignette asked if there was any other information about Joan herself, which the participants would wish to have and would normally receive. The few hearing therapists (N = 6) who completed this question were interested in whether Joan was ready for an aid (n = 3) and where she was having difficulty (n = 3) regardless of her age. The information mentioned by a majority of audiologists as most important was social or family support (43.3%), followed closely by financial considerations (43%) and medical factors (40%). The least frequently wanted types of

information were motivation (13%), expectations (13%), cognitive ability (13%) and personal hearing goals (10%). Medical knowledge was considered important (70%) only when Joan was 78 years old.

3.9.6 Relationships among variables

Hypothesis Four: Based on the theory of reasoned action, positive attitudes (as measured by the ATOP) will result in positive treatment (as measured by the Positive Treatment score) and this relationship will be moderated by subjective norms.

Bivariate analysis showed no significant correlations between the ATOP score and the Positive Treatment score ($r = .156$, $p = .317$). This does not support hypothesis four.

Because there was no significant relationship between the measure of subjective norm and either attitudes or Positive Treatment, the moderating effect hypothesized was not investigated further.

Research Goal Six: To assess the relationship between contact with older rural adults and attitudes towards older adults.

The correlation between percentage of rural clients and attitudes as measured by the ATOP was investigated and no significant relationship found ($r = .095$, $p = .535$).

CHAPTER FOUR

Discussion.

4.1 Description

The general aims of this research were to investigate the levels of knowledge and attitudes that hearing professionals in New Zealand have regarding older adults and to assess whether these were related to treatment intentions. The present study hypothesized that audiologists would have better knowledge than hearing therapists, more positive attitudes towards older adults and therefore more positive treatment intentions than hearing therapists, and that each group would demonstrate a similarity of practice positively correlated with each individual's years of experience. The results show that audiologists and hearing therapists did not have significantly different levels of knowledge about older adults. Hearing therapists have significantly more positive attitudes towards older adults, however this was due to differences between the groups on gender and possibly education. Positive attitudes were not related to positive treatment options and there was no relationship between treatment options and years of experience. The discussion chapter explores the present findings as they pertain to the research goals, hypotheses and the literature. Limitations of specific parts of the present study are discussed as are general limitations and future directions. Conclusions of the study are then presented.

4.2 Email versus Postal Surveys

With increasing use of computer technology, it would seem likely that emails would be a more popular way to survey people and thus achieve a greater response. This did not occur in the present study; although all hearing therapists are now online and use computers regularly in their work, only four opted to do the survey via email and two of these were posted back. There is some suggestion that computer use may be a function of age (Charness & Bosman, 1992), and in the present study the hearing therapists were approximately eleven years older on average than the audiologists. However, the relationship between type of survey and age was not significant, indicating age was not a factor in the choice of email or mail survey. It is possible that

a lack of familiarity with computer technology may have influenced this choice. It was only in February 2000 that hearing therapists started routinely using computers as part of their professional practice and many may not have felt confident in an email survey (J. Lissaman, 6th September 2000).

Published contact details for audiologists suggest about equal numbers do and do not have email addresses, and in the present study equal proportions of audiologists did elect to have their surveys by email and by post. In this instance, a postal survey would appear to be a more likely way of optimizing response rates than email surveys. One problem in using computer-generated communication is that there is a large difference in socioeconomic class for those who do and do not have access to computers (McRae, 2001) and this must be taken into account when considering a particular population for email or Internet based surveys. It is probable that as communication via computers becomes a more familiar and frequently used tool for the general public the use of such data collection techniques may be more effective.

4.3 Biographical details

Although not specifically targeted in hypotheses, biographical details are discussed as they pertain to some of the findings. As expected, there were a number of male audiologists and no male hearing therapists. Audiology requires post-graduate training and an interest in technology, both areas traditionally more male-dominated although this is changing (Koopman-Boyden, 1993). In addition, hearing therapy is a part-time job, which may give it added appeal to women who are generally the primary caregivers of children (Statistics New Zealand, 1999).

While the difference in gender between hearing professionals and audiologists was known in advance, the age difference was not. The hearing therapists are, on average, approximately eleven years older than the audiologists in this sample. The reason for this may be a cohort effect in that older women may have had less education in general and be socialized in ways that make part-time work preferable compared to both males and younger women (Koopman-Boyden, 1993).

The level of education of the hearing therapists was high, with twelve having tertiary education (level unspecified) and one having post-graduate level education. This partially helps to explain the high knowledge level that the hearing therapists had regarding older adults. All had been trained in New Zealand and twelve had had five years experience or more with, on average, 75 percent of their clients being over 65. Comments made in the survey by a number of the hearing therapists indicate that they do not support the common stereotypes that exist regarding older adults. They were significantly more likely to use the “don’t know” option in the FAQ than the audiologists (see Section 4.3 for details) which suggests that they are aware of the limits of their knowledge, as does the reluctance of many to complete the vignette questions. Of the most recent trainees (N =12), only two returned the survey, so it was not possible to examine any differences between experienced and newly qualified hearing therapists on the vignette responses.

Training in audiology has only been available in New Zealand for ten years, so participants were requested to give their training site. Half of the audiologists had been trained in New Zealand and all but one of the others in Australia. There was no significant difference on any of the dependent variables between audiologists from the different training sites apart from age and years of experience (younger audiologists having been trained in New Zealand). The Auckland School of Medicine based course includes a four-hour lecture on gerontology (J. Purdey, 6th September 1999). No such information is available regarding overseas courses. The lack of a significant difference between the two groups of audiologists in knowledge of older adults suggests that either comparable gerontology courses were provided at the overseas sites or that knowledge comes from increasing age and experience. The latter relationship has not been empirically demonstrated (Palmore, 1998) and in this present study, there was no correlation between age and knowledge or experience and knowledge.

The majority of the participants described themselves as New Zealand European, while a small minority came from other Western cultures. There was one Maori hearing therapist and one Asian audiologist. Partly because of the unequal ethnic split (Tabachnick & Fidell, 1989) and partly because only two articles in the literature review found that race had an effect on attitudes towards older adults (Harris and

Fiedler, 1988; Levy, 1999) race was not considered as a pertinent factor as regards knowledge or attitudes. As in most other health professions, the lack of Maori service providers is a serious concern, although this particular problem is outside the parameters of the present research.

There was no significant difference between the two professional groups for Years of Experience, Percent clients over 65 and Percent clients rural. In spite of the hearing therapists (all female) being older than the audiologists, they were slightly less experienced, suggesting that this may have been a return to work after having children. This type of job would have appealed to those with primary caregiving responsibilities as, until recently, hearing therapists only worked during school term times. Under the new contract with the National Foundation of the Deaf, while still part-time, hearing therapists only have two weeks paid leave a year (A. Scanlon, 19 December 2000). The Percent Clients over 65 was included in the questionnaire to see if there was a relationship between level of contact with older adults and either knowledge or attitudes, but this was not found to be the case. The literature review on the effects of contact with older adults presents mixed results. While Hale (1998) found adults with high levels of contact with older adults had lower stereotype scores and Sheffler (1995) reported that nurses' attitudes towards older adults improved after contact in either an acute setting or in a nursing home, Eddy (1986) reported no overall change in nurses' attitudes after contact and Bader's (1980) review concluded that attitudes become more negative over time, regardless of the level or type of contact. These equivocal results may be due largely to the different methodologies, attitude measures and samples used in the different studies.

4.4 Facts on Aging Quiz (FAQ)

Given the previous research showing a relationship between education and knowledge of ageing, it was hypothesized that audiologists would score higher than hearing therapists on the FAQ. While their knowledge levels were slightly higher (65.2 percent correctly answered items compared with 59.2 percent), there was no statistically significant difference between the two groups. While, as stated above, hearing therapists did have a high education level overall, it was significantly lower than the postgraduate level required by all audiologists. This result, that the more highly educated hearing professionals do not have higher levels of knowledge of older

adults, contradicts most other studies that have used the FAQ (Palmore, 1998). This may be a result of the small sample size in the present study.

A comparison between the hearing therapists and only those audiologists who had been trained in New Zealand showed the audiologists had a significantly higher level of knowledge than hearing therapists. This relationship remained when controlling for age and gender. Both groups differed on educational levels with all audiologists having post-graduate training. It was not therefore possible to test whether education accounts for this relationship as it could not be statistically controlled for. It may be possible, with a larger sample, to determine whether specific education does contribute to increased knowledge, as Palmore's (1998) review concludes.

As the "don't know" version of the FAQ (see page 31 of the Method section) was used in the present study, there are few studies that this result can be easily compared with. Pennington et al (in press), in a study of first and third year university students using the "don't know" version of the FAQ, found that the first-year students scored 55 percent correct and the third-year students scored 58 percent. This suggests that, rather than the audiologists having a lower than expected knowledge of older adults given their post-graduate level of education, hearing therapists have a higher than expected level of knowledge, given their level of education. A comparison can also be made with scores obtained using the true/false version. Of most interest is the score obtained by audiologists in the United States. Cole and Dancer (1996) report that audiologists scored 72.3 percent correct on the FAQ. Given that the True/False version appears to score approximately ten percent higher than the "don't know" version (Pennington et al., in press), this score differs little from that scored by the New Zealand audiologists. The FAQ scores obtained by audiologists in the present study are not as high as those obtained by health professionals with training in gerontology (Palmore 1998). This may be because the training of audiologists is focused more on hearing loss and aural rehabilitation rather than the specific problems of older adults. While the scores do compare favourably with other groups, including American audiologists, the question that must be asked is, is this level of knowledge enough to enable the successful aural rehabilitation of older adults? This question is answered, at least in part, in Section 4.6 below.

Unfortunately, no literature was found regarding FAQ scores for the equivalent profession of hearing therapists in other countries so direct comparisons cannot be made. However, when looking at scores obtained for nurses (68%), dental hygienists (67%) (Singleton et al., 1993) and medical students (59%, Edwards & Aldous, 1996) on the True/False version, New Zealand hearing therapists appear to have as much if not more knowledge as these possibly more highly educated groups do. It may be that the level of contact and type of service (helping people to become independent) does have an effect on knowledge levels, although there is little empirical evidence to support this (Palmore, 1998). This finding may also be a reflection of the type of people who are attracted to hearing therapy – if an individual has an interest in working with older adults, it may also be related to the amount of knowledge that they have regarding them. As the association of old age with hearing loss is common knowledge, anyone entering the field would be expecting that at least some of their work would be with older adults. Thus, the field of hearing therapy might attract people interested and knowledgeable about older adults. One further possibility is that the older age overall of hearing therapists in the present study may be a factor in higher knowledge levels. While there is some support for this suggestion (Luszcz & Fitzgerald, 1986), most studies, including the present study, have found no relationship between age and knowledge level (Palmore, 1998; Sheffler, 1995).

While there was no significant difference between the two groups on the number answered correctly, there was a significant difference in the number of FAQ items answered “don’t know”. Hearing therapists were far more likely to say that they did not know the answer to items than audiologists. The “don’t know” score measures ignorance while the incorrect score measures misconception. Palmore (1998) suggests that it may be easier to change ignorance than alter misconceptions. This is encouraging for those involved in the training of hearing therapists.

4.4.1 Facts on Aging Quiz as an Attitude Measure

With mixed support found in the literature for the use of the FAQ as an attitude measure (see Palmore, 1998 for a review), one aim of the research was to determine whether the FAQ was an appropriate measure of attitudes towards older adults. In the present study, the FAQ did not correlate with the direct attitude measure, the ATOP. The FAQ measure appears rather unbalanced with few items contributing to the Pro-

age bias score compared with the number of items contributing to the Anti-age bias score. Because the weighting on the Pro-age items is increased considerably to give them equal potential with the Anti-age items, a very small positive bias in one area may be able to negate several negative biases in different areas. Palmore's (1998) review of studies using the FAQ as an attitude measure found a fairly even split on those who found it did measure attitudes and those that found it did not. In this instance, the FAQ does not appear to be a valid measure of attitudes towards older adults, possibly due to the way it is scored.

Of greater theoretical concern is whether it is valid to use knowledge to measure attitudes even where there is an evaluative component. While there may be a positive correlation between the concepts of knowledge and attitudes, they are different constructs. As stated in the introduction, Eagly and Chaiken (1993) believe that it is possible to use evaluative items in a measure of knowledge. However, they also believe that the evaluative nature of attitudes is that which separates them from beliefs or knowledge. Bader (1980) argues that a clear separation should be made between what she labels information and attitudes, while Fishbein and Ajzen (1975) make a clear delineation between attitudes and beliefs or knowledge, arguing that the former is evaluative and the latter information known. It may be true that if attitudes are based on stereotyped views of ageing it is possible to measure those attitudes using knowledge, but attitudes may be negative despite accurate knowledge of ageing and older adults or vice-versa. If attitudes are positive but based on inaccurate knowledge, measurement of knowledge would be irrelevant to attitudes. It appears that more research in this area is needed; for instance, a further study could look at the relationship between specific knowledge and specific attitudes (see section 4.10 below).

4.4.2 Limitations of the Facts on Aging Quiz

While the FAQ is a useful way of testing group knowledge and can, in itself, be used as a tool to educate, the lack of research using the "don't know" version has prevented easy comparison with other studies. Additionally, only one other study (Pennington et al., in press) has been undertaken in New Zealand. While some aspects of Western culture may be similar, this should not be taken for granted in any one issue, such as

knowledge regarding older adults, or the effect that education, age, gender, race, culture or contact may have on that knowledge.

Like all measures that are short enough to be realistically useful to use in combination with other measures when surveying participants, the FAQ can only measure restricted amounts of knowledge in particular areas. While some of the statements of the FAQ are pertinent to the type of knowledge needed for aural rehabilitation of older adults (particularly the ones covering physical and mental health) they do not go into great depth and only briefly touch on such issues as vision or dexterity. It is possible that a measure specifically designed for this specialized population may be more useful long-term than the more general-knowledge based FAQ. For example, a specialized version of the FAQ for measurement of attitudes about mental health and ageing has been developed for use with mental health professionals (Palmore, 1998).

4.5 Attitude Towards Old People (ATOP)

It was hypothesized that audiologists would have higher knowledge levels and therefore more positive attitudes towards older adults. Despite the fact that knowledge levels regarding ageing were similar for both groups, hearing therapists had significantly more positive attitudes towards older adults than audiologists. Analysis showed this was not due to age differences between the two groups. However, further analyses comparing ATOP scores of the hearing therapists with only female audiologists (thereby controlling for gender), while still controlling for age (>40 years) did not show any significant difference between the two. This suggests that the gender differences between the two groups may explain the difference in attitudes towards older adults rather than group membership. In addition, educational levels between the two groups differed significantly and could not be statistically controlled for suggesting that this too may in part account for any differences in ATOP scores between these two groups.

For both groups, overall, their attitudes towards older adults were positive. With a score of 92 on the ATOP indicating a neutral attitude towards older adults, both hearing therapists (mean = 125, SD = 8.89) and audiologists (mean = 115, SD = 9.48) had scores that were significantly above that of a neutral attitude. Additionally, no individual in either group had a negative attitude towards older adults. Thus, while

older females have more positive attitudes overall, even young male audiologists are positively inclined.

When comparing the results from the present study to Hilt and Lipschultz' (1999) study of television news producers, the hearing professionals had far more positive attitudes both to individual statements as well as overall. In the study by Hellbusch et al. (1994), the attitudes of physicians' towards older adults were similar to those of the present study. In addition, there was no statistically significant difference found among different specialties of physicians. It was not possible to compare differences in the scores across gender in the Hellbusch et al. (1994) study as less than ten percent of the physicians were female. However, in the present study women were found to have more positive attitudes to the older person than males. Hellbusch et al. (1994) also found a negative correlation between increasing age and positive attitudes, whereas in the present study it was found that the older adults had more positive attitudes. Thorson and Perkins (1980) in a study of university students that looked at the effect of certain personality traits on attitudes towards older adults found that age and gender had the most significant correlations with positive attitudes, with females and older students (median age was 23, range 18 – 53) having the most positive attitudes. These findings are supported by the present research.

A recent dissertation by Astle (2000) reported on attitudes of health workers towards institutionalized older adults. Positive attitudes were predicted by age and high knowledge levels of older adults (as measured by the FAQ). In two separate studies of nurses' knowledge (FAQ) and attitudes, Sheffler (1995, 1998) found that gender was not related to attitudes. A weak positive correlation between age and attitudes was found in only one study (Sheffler, 1995), while a positive correlation between knowledge and attitudes was found in both Sheffler studies.

The present study supports Astle's (2000) and Sheffler's (1995) findings that age is positively correlated with attitudes. Perry and Slep (1980) found that older adults had more negative attitudes regarding themselves than younger adults; this may have been confounded with education if, as Palmore (1998) suggests, there is a correlation between education and attitudes. Kayser and Minnigerode (1975) reported that while contact with older adults increased willingness to work with them, it did not positively

affect attitudes. No relationship was found between hearing professionals' level of contact and attitudes in the present study.

A review of recent dissertations that investigate attitudes towards older adults found two further studies relevant to the present study. In a study by Benedict (1999), female undergraduates had more positive attitudes than male undergraduates towards older adults and increased knowledge did not produce attitude change. The present study supports the above findings in that females did have more positive attitudes (but only those females over 40). Chasteen (1998) found that older adults had more positive attitudes than younger adults as a group and as individuals. Age was found to be related to attitudes in the present study, where age 40 was used as a cut point, but this was only for female participants. It may be that the small number of males (N = 13) in the study resulted in too low a statistical power to detect differences in attitudes due to the male participants age.

Overall, while the present study had a small number of participants, it does support the majority of past studies that have found a positive correlation between age and attitudes towards older adults. Only two of the studies found in the literature search did not support this relationship. Hellbusch et al. (1994), reported that older male physicians had more negative attitudes towards older adults than younger male physicians. Their ages ranged from 30 to over 70. Perry and Slemp (1980) found that adults over 65 had less positive attitudes towards themselves than either middle-aged or younger adults; it is possible that, rather than a linear relationship existing between age and attitudes, future research may show a U-shaped curve. In other words, it is possible that positive attitudes may increase with age until a certain point and then decline as older adults begin to deal with their own ageing. It was not possible to determine such a relationship from the present study due to the small sample size and narrow age range of the participants.

As regards the relationship between attitudes and gender, the findings are equivocal. While most studies, including the present study, support the finding that females have more positive attitudes than males, there are a number of studies that do not. For example, Sheffler (1995, 1998) and Chasteen (1998) found no relationship between gender of participants and their attitudes towards older adults. It may be that females

do have more positive attitudes towards older adults due to gender differences in such traits as compassion and sensitivity to the needs of others (Bem, 1981). Chodorow (1989) argues that the early social environment is experienced differently by males and females and that this results in characteristic differences in personality between the genders. One of the major differences is that females are encouraged in such traits as nurturance and responsibility to others rather than self-reliance and achievement (Chodorow, 1989). A practical example of this is that females are more likely to be the principle caregiver for their ageing parents (Statistics New Zealand, 1999), although this may be due to societal and financial pressures rather than personal choice. More research is needed to describe this relationship clearly.

4.5.1 Limitations of the Attitude Towards Old People

The ATOP scale does have limitations. While reducing the number of items to 22 makes the scale shorter and therefore more acceptable to participants, Hilt and Lipschultz (1999) did not fully investigate the reliability of the abbreviated scale. In the present study, the scale does give acceptable inter-item reliability but further research should be conducted comparing the reliability and validity between the two versions. Time constraints and the focus of the present study prevented this from being possible. The wording of the scale also needs reviewing as it was initially designed 40 years ago. While the term “elderly” has been replaced by “older adult” for the present study, this is only a cosmetic change. Some of the statements may not necessarily measure attitude in the direction they were initially designed for. In particular, statement 23 (It would be better if most older adults lived in residential units that also housed younger people) ignores the existence of retirement villages that are a recent entity. Believing that retirement villages are an excellent idea should not necessarily equate with a negative attitude towards older adults. Other statements are rather transparent and support negative stereotypes in themselves. Participants in both the present study and Hilt and Lipschultz’ (1999) study commented on the ATOP statements and felt that the wording in some instances was insulting to older adults and confirming of negative stereotypes.

4.6 The Vignette

The vignette was designed to elicit potential treatment options that could be used to measure both positive treatment intentions towards older adults and similarity of

practice within professional groups. The small numbers of hearing therapists who completed the vignette questions limits the interpretation of results.

When comparing the two vignette versions, it appears that the age of Joan was not very relevant when considering treatment options. There were few differences given by either group that were of statistical or practical significance. Audiologists were far more likely to want extra audiological information than hearing therapists when Joan was 78 years old. While this seems sensible given the different nature of the roles of each profession, this information should also be considered useful for audiologists when Joan was portrayed as a 63 year old. It is very important to prescribe the correct type of hearing aid based on both audiological information as well as personal needs, regardless of age (Hull, 1997; Tye-Murray, 1998)

When audiologists alone were considered, a number of differences appeared between the vignette versions. Aged 78, Joan was more likely to be recommended to try one hearing aid rather than two. In any interactive situation, two hearing aids are far more useful than one (Andersson, 1995; Tye-Murray, 1998), yet audiologists appear not to recommend this to older adults. This may be due to assumptions made regarding financial status, physical or cognitive ability to cope with two aids or, of more concern, the importance of good hearing in older people. While the financial status of Joan was a concern for a number of audiologists (eight out of thirteen in the 63 year old version and five out of fourteen in the 78 year old version), this concern was not significantly related to Joan's age. Finance is important but as Kochkin (2000) found, the price of a hearing aid or aids was not as important to the client as the benefit, adjustment to background noise, comfort and negative side-effects of the hearing aid or aids. The number of audiologists wanting medical information was significantly higher in the 78 year old version. Other issues of concern were her family hearing history and such issues as wax, size of ear canals, and the presence of tinnitus. More attention was paid to Joan's dexterity in the younger vignette version. It would seem logical that dexterity would become more of an issue as the client aged, yet this was not demonstrated. Only two audiologists mentioned the importance of vision (both where Joan was 78). As regards cognitive ability, only two audiologists wanted further information when Joan was 63, and only two when she was 78. This is of serious concern. As discussed in the introduction, age-related cognitive decline has

been consistently recorded (Salthouse, 1991). As it has also been shown that this cognitive decline is inconsistent both across intra-individual domains and across individuals (Schaie, 1994), it would seem that assessment of the individual's abilities to correctly use and maintain a hearing aid should be a very important part of evaluation. Other information from the vignette that confirms this lack of interest in cognitive ability is that there is no significant difference in the number of hours suggested for total evaluation for the two vignette versions. It has often been demonstrated that older adults take longer to learn something new (Poon, 1995) and 83 percent of the audiologists and 80 percent of the hearing therapists taking part in this survey are aware of this.

In a review of papers submitted to a special issue on hearing and aging to the *Journal of Speech-Language Pathology and Audiology*, Pichora-Fuller and Cheesman (1997) emphasize the need for continued audiological support for older adults in order for aural rehabilitation to be successful. While the majority (N = 24) of audiologists would evaluate Joan one to four weeks post hearing aid fitting, this number drops to only eight at six months and nine at one year (seven audiologists said that they would evaluate Joan at both six months and one year). It is possible that hearing therapists are looked to for continued support for clients, but six of the audiologists state that they would not refer Joan to a hearing therapist; in all six cases no evaluation would be carried out at either six months or one year. This may not be sufficient for successful audiological rehabilitation (see Section 4.10).

Joan, at 63, was just as likely to receive handouts from hearing professionals regarding the use of her hearing aid as Joan at 78. Handouts can be an important source of information. If benign senescent memory loss is present, even such a straightforward operation as cleaning the aid would quickly be forgotten. A number of demonstrations are needed when learning a new skill such as care of a hearing aid for people much younger than the ages given in either vignette version (Hull, 1997). Limited sessions spaced some weeks apart are unlikely to result in the learning of new skills, so written instruction on this, as well as problems likely to be encountered and the best way to adjust to using hearing aids are necessary. Only four audiologists and one hearing therapist (two did not answer this question) did not have written handouts for their clients.

As regards evaluation, Joan aged 78 was significantly more likely to be evaluated using both a self-report measure and a discussion regarding her problems than Joan at 63. In both instances a self-report evaluation would help the professional decide whether the aid is helping the client in the situations that they are having the most trouble with. The impact of hearing loss is subjective (Hétu, 1996; Stephens, 1996) and the use of technological measures only is insufficient (Hull, 1997; Tye-Murray, 1998). A verbal discussion is always useful, but pertinent information may have been forgotten by the client. An evaluative measure such as the Hearing Handicap Inventory for the Elderly (HHIE; Ventry & Weinstein, 1982) will possibly cover more areas that are problematic than a discussion alone. Over both vignettes, 63 percent of audiologists said that they would use such a measure. This compares favourably with an American study that surveyed 200 audiologists and found 88 percent did not use any formal evaluation of subjective hearing loss (Pamplin & Dancer, 1998)

Only four audiologists mentioned the importance of the client's expectations regarding the benefits of hearing aids. The literature suggests that this is potentially one of the most important factors as regards the likelihood of successful adaptation to hearing aids (Abrahamson & Wayner, 1998; Brooks, 1989; Hull, 1997; Stephens, 1996). As Stephens (1996) explains, expectations that are too high (that is, that normal hearing will be restored) will not be satisfied and may result in the hearing aid being rejected. If expectations are too low, the client may not complete aural rehabilitation or not be motivated to wear the hearing aid. Similarly, only six audiologists wanted to know about Joan's motivation to wear a hearing aid. Often, when the impetus to wear an aid has come from those who normally interact with the hearing-impaired person and the client's personal motivation is low, aural rehabilitation is not successful (Brooks, 1989; Hull, 1997). A further concern is that three out of the four areas of information considered by the majority of audiologists to be important are pragmatic issues – financial considerations, medical factors and such factors as tinnitus, wax and ear canal shape. It is, however, encouraging to see that the importance of social or family support is recognized by over 40 percent of the audiologists. Significant others often have an extremely important role to play in the successful aural rehabilitation of clients (Hull, 1997; Pedley, 1989). The great majority of audiologists also said that they would refer Joan to a hearing therapist, but six did not. Wherever possible,

clients should be encouraged to use the services of hearing therapists (Jerram & Purdey, 1996; Satherley, 1992). Hearing therapists are an excellent resource for ongoing support and information regarding the care and use of hearing aids, of suitable behaviours in difficult hearing situations and the use of assistive listening devices.

It is possible that more treatment differences would emerge if hearing professionals were asked to describe treatment options for a middle-aged client versus an older adult, but the differences in treatment for the different types of hearing loss may well confound any results of such a study.

4.6.1 The Positive Treatment Score

The positive treatment score was designed to elicit treatment intentions. The vignette questions looked at the time spent with the client, type and frequency of evaluation done, use of written handouts and referral onwards. When considered together as one measure, however, they did not correlate with the direct attitude measure of the ATOP for all participants combined, suggesting that there is no relationship between attitudes as measured by the ATOP and treatment options. When considering positive treatment scores for the audiologists only, there was a correlation with the total ATOP score. This difference probably occurred because, in hindsight, the vignette was aimed at issues concerning audiologists rather than hearing therapists and this is reflected in the low numbers of hearing therapists who completed the vignette questions. A number of those who did not answer the questions commented that they were outside their professional practice. While it appears that hearing therapists' treatment options for older adults cannot be measured using the vignette, this is probably due to limitations of this particular vignette rather than inherent limitations of using vignettes in this way for other groups.

4.6.2 The Similarity of Practice Score

The vignette was also designed to assess whether it could be used to determine subjective norms (an individual's perception of how they are expected to act by their peer group or significant others (Ajzen, 1988) within the two professional groups. It was hypothesized that the more years of experience each individual had within their professional group, the more their treatment practices would be alike. The usual method of determining subjective norms (for example, asking the participant the level

of importance of the approval/disapproval of important others regarding a particular action; Armitage, Conner & Norman, 1999) was not thought to be useful in that it was normally a single question regarding one particular behaviour and might easily be affected by social desirability or may not generalize to other behaviours. For this reason, examining intended multiple behaviours was thought to be more likely to give a valid and reliable measure of the norms working, sometimes unconsciously, within a particular group. As the results show, the measure presented a normally distributed score; however a narrower range of scores was expected within each group and this did not occur. Additionally, the scores did not correlate with Years of Experience, which would have been expected if subjective norms did occur within this group situation. There was also no significant difference on the Similarity of Practice scores between the groups. As the groups do not work directly together and had significantly different attitudes towards older adults, a difference in the subjective norms would be expected. Again, this may be a result of the low numbers of hearing therapists who answered the vignette questions. However, the low numbers do not explain the lack of correlation between the Similarity of Practice and Years of Experience. It must be concluded that the vignette questions used in this present study are not an adequate way of eliciting subjective norms.

4.6.3 Limitations of the vignette scores

The major limitation to the vignette scores was that few hearing therapists thought the questions pertained to their work and therefore did not answer them. The vignette also did not pick up on any major treatment differences between the two versions. It was expected that differences in treatment of the different age versions would reflect ageist attitudes. The results suggest evidence to the contrary; it is possible that not enough allowance is being made when older adults are adjusting to the wearing of hearing aids, that attitudes are so positive towards older adults that proper consideration of potential difficulties that they might have is not occurring. This may well be related to the amount of time available for any one individual, or perhaps to a lack of realization that more time is needed. The small age gap between the two versions was necessary given the definition of presbycusis, but the younger age version, at 63 years, might also have produced responses aimed at an older adult.

A further limitation was the Similarity of Practice score that was designed to elicit any subjective norms that may operate within each professional group. While measuring the similarity of different treatment options suggested seems, in theory, a better way to measure subjective norms than a single question regarding the participants' beliefs regarding the importance of the views of significant others, no similarity of practice was found within the groups. This could mean that either the measure, as designed, did not detect them or there were no subjective norms operating. Both audiologists and hearing therapists tend to work in individual practices (Auckland audiologists being the exception with a number of group practices) and there may be little if any discussion regarding treatment options for individual clients. It is also possible that where attitudes towards older people are concerned, the significant others (whose opinions matter most) are not those people within their own profession. Subjective norms may be influenced by the family and/or social subculture within which each individual exists. The present research was not designed to elicit such influence. Future research could examine whether specific groups within society as a whole have subjective norms that exert an influence stronger than that of professional practice. In retrospect, it appears that the Similarity of Practice score merely examined whether hearing professionals were similar in their treatment practice, rather than elicit any pressure that may be brought to bear on individuals to behave in a certain way.

4.7 The Theory of Reasoned Action

As regards the Theory of Reasoned Action, the results of this present study do not support the proposal that knowledge, attitudes and subjective norms combine to influence intentions to behave. While there was no significant difference between the knowledge of hearing therapists and audiologists, hearing therapists had more positive attitudes towards older adults. This in itself appears to be more a function of gender (and possibly educational level) rather than profession. While there was a positive correlation between total ATOP scores (attitude) and positive treatment scores (a measure of intention to behave) for audiologists, there was no evidence to suggest that subjective norms had an effect on audiologists' intentions to behave.

An underlying assumption of the present study, based on the literature review, was that ageist attitudes present in society influence the attitudes and intentions of health professionals in general and would therefore influence hearing professionals as well.

The results of the present study do not support this assumption as regards attitudes as, individually and overall, the attitudes of the hearing professionals were positive. It is more difficult to come to any conclusion as far as intentions are concerned as, while there was a positive correlation between audiologists' attitudes and intentions, this relationship was not found with hearing therapists' attitudes and intentions. The small sample size, as well as the biographical differences in age, gender and education between the two groups sampled, has limited the conclusions that can be drawn from the present study (see Section 4.9 below). While it was hypothesized that group norms would influence intentions, these were not measurable by the method used. This does not mean that they do not exist, but that a more valid and reliable way of measuring norms needs to be achieved. There may also be other differences between the groups that have not been examined by the present study, such as personality traits, religion or family subcultures that influence the relationship between attitudes and intentions.

4.8 Summary

While the knowledge levels of both groups appeared comparable with similar health professionals, and attitudes were, in general, positive towards older adults, some of the treatment options preferred and extra information required are of concern. The lack of relevance of Joan's age, particularly where cognitive ability and manual dexterity are concerned, suggests a lack of knowledge of the mental and physical changes that occur with age. It also seems that the knowledge the hearing professionals do have is not always applied in practical terms. The need for written handouts to aid memory, the possibility of extra time being needed to learn new skills, and the benefits of referral onwards (particularly referral to a hearing therapist) were not part of the recommended treatment in either vignette version for a number of the participants.

The low priority placed on clients' expectations and motivation was surprising, given their importance, and is a concern regardless of the client's age. Clients need to be assessed and counseled regarding motivation and advised on what to expect; that is, a hearing aid can help enormously but cannot return perfect hearing (Stephens, 1996).

4.9 Limitations of the Study

The theoretical implication underlying this present research is that knowledge affects attitudes and attitudes, along with subjective norms influence behaviour. In addition

the cross-sectional nature of the present study precludes any causal conclusions regarding the direction of the relationships outlined in the theory of reasoned action. Because of time constraints and privacy issues, it has only been possible to measure *intentions* to behave, rather than behaviour itself. Any conclusions drawn must rely on an assumption that an intention to behave does translate into behaviour. While the issue of volitional control (Ajzen, 1985; Ajzen, 1991) may be side-stepped through use of a vignette, it still exists in the real world; such issues as client cooperation, available time, other obligations and work conditions do have a large effect on what actually happens. This means that generalizing the behavioural intentions as elicited in the vignette to actual behaviour must be done with extreme caution.

Generalizing the results obtained from these participants to the population that they came from must take into account that there may be differences between those who agreed to participate and those that did not. It is possible that those who did not wish to participate do not have the same level of interest, knowledge or positive attitudes towards older adults as those that did. Other biographical variables may also be different; it was not possible in the present study to determine if there were significant differences between those that responded and those that did not because of the anonymity of the survey.

Time constraints prevented the additional surveying of audiologists working for public hospitals. While the majority of older adults are served by audiologists in private practice, it might have been informative to compare the differences in knowledge, attitudes and treatment options between public and private services. Audiologists in public hospitals are usually extremely busy (S. Purdey, 6th September 1999) and may have less volitional control over the amount of resources available to older adults.

In retrospect, the study may have been more successful in recruiting hearing therapists if the survey itself could have been delayed until they had adjusted more fully to the changes made in their practice. Although initial contact with the Hearing Therapists Association was very positive, the eventual response rate from the hearing therapists, 47 percent, was disappointing. However, it must be remembered that this is nearly half of all the hearing therapists practicing in New Zealand. Similarly, while a group

of 30 audiologists may seem small, it represents over 50 percent of the total number of audiologists in private practice in New Zealand.

As demonstrated in Figure 5, assignment to the vignette conditions was not random. Assignment to condition was done in this way in order to ensure that the vignette conditions had similar numbers. If the process had been entirely random, a disproportionate number of audiologists or hearing therapists in either condition may have occurred due to the small sample sizes. Apart from profession, and whether the survey was requested to be emailed or posted, no other criteria determined whether a particular participant was assigned to the 63 or 78 year old vignette version, thus the assignment was, as far as possible, randomized.

The limited number of hearing professionals working in New Zealand has resulted in two very small groups to be used for data analysis. These small numbers have produced some results that are equivocal. In particular, the relationship between age, education and gender and attitudes towards older adults has not been clearly delineated; further study with larger numbers is necessary to clarify this relationship. Another problem that is related to small group size is the unclear relationship between attitudes as measured by the ATOP and by the Positive Treatment score of the vignette. While there is a positive correlation between the two for audiologists, this did not occur for hearing therapists, probably because of their poor response in this section. Any further research in this area needs to take into account more carefully the different roles that the two groups have in aural rehabilitation.

4.10 Future Directions

While this and related research supports the relationship between personal variables such as age and gender with attitudes, and attitudes with intention to behave, the process of how attitudes guide behaviour is still unclear. Positive attitudes towards an individual are not always related to positive behaviour. While this present study attempted to discover the relationship of subjective norms to intentions, it was unable to do so and it is impossible to conclude that subjective norms influence intentions given the cross-sectional nature of the study and the measurement problems discussed earlier. While Fishbein and Ajzen (1975; Ajzen, 1985; Ajzen, 1988; Ajzen, 1991) have thoroughly described the concept of subjective norms and how it relates to other

variables in their theories, the actual measurement of this concept (asking participants to rate how much significant others would approve or disapprove of their behaving in a particular way; Ajzen, 1991) allows such influences as social desirability to confound any score obtained. However, the indirect method used in the present study (Similarity of Practice) has failed to capture any relationship that may be present. Future research in this area should investigate more valid and reliable ways of measuring subjective norms if either the theory of reasoned action or the more conceptually complicated theory of planned behavior underlie that research.

The theoretical models of Fishbein and Ajzen (1975; Ajzen, 1985; Ajzen, 1988; Ajzen, 1991) that drive this research makes the assumption that there is thoughtful deliberation occurring at the point between which attitudes and subjective norms lead to behaviour. Fazio (1990), however, believes that, if there is a strong memory-based connection between the evaluation and the object, subsequent behaviour may occur spontaneously without any forethought. What little research that has occurred in this area suggests that when time is restricted, behavioural decisions are less likely to correlate with previously measured attitudes (Fazio, Ledbetter & Towles-Schwen, 2000). Research comparing the two models would help clarify how attitudes, norms and time restrictions interact to produce behaviour. This may be of more relevance to the participants in the present study than either the connection between knowledge and attitudes or the effects of subjective norms. Time pressures on a busy professional might well limit the quality of service to clients, regardless of knowledge or attitudes towards that client.

In order to gain a clearer understanding of the importance of age, gender, education and group membership to attitudes towards older adults, a number of different areas of research could be explored. With a very limited age range and gender-specific group of hearing therapists available in New Zealand, it may be worthwhile comparing the results of the present study with any future similar studies conducted in the United States that, with a far larger population base, is more likely to have both male and younger members and a greater variation in education level. The small numbers in New Zealand allow for an in-depth study of how the hearing therapists differ as a group from other health professionals and what draws them to their profession. It may

also be useful to address such issues as what strengthens an individual's bonds with older adults and what does not, and how attitudes initially form.

One area of research focusing on health professionals in general could investigate the possibility that attitudes have a U-shaped relationship with age – increasingly positive until a specific age where they begin to decline. The relationship of gender with attitudes towards older adults should also be investigated with other health professionals, as results from such a small, specific group of health professionals cannot be generalized to other groups. If gender differences do occur, then the attitudes and intentions of specific groups of health providers may directly affect the quality of health services provided for older adults based on the gender balance of that group rather than the specific needs of older adults.

While the present study employed measures that looked generally at knowledge of ageing (FAQ) and of attitudes towards ageing (ATOP) and found that there was no correlation between the two, future research looking at more specific areas of knowledge and their relationship with specific attitudes that relate to that knowledge may uncover a stronger relationship. For example, a knowledge measure that focuses on the cognitive and physical changes that are likely to occur with ageing could be used in conjunction with an attitude measure that looks at behaviours that directly relate to cognitive and physical issues such as memory, dexterity and ability to learn new information. A closer relationship between knowledge and attitudes may then be detectable.

As regards audiologists, research investigating the lack of fit between older adults and the technology behind hearing aids may suggest that this is a potential source of frustration for audiologists working with older adults. Recent advances in micro-technology, as well as negative attitudes towards the wearing of hearing aids and the stigma of deafness, combine to produce hearing aids that are physically difficult for many older adults to operate without help. Hearing aids, particularly the types that fit into the ear canal, are extremely small, as are the batteries. As ageing is associated with a gradually diminishing dexterity (both arthritis (Holliday, 1995) and a decrease in the sensitivity of touch (Lesnoff-Caravaglia, 2000) have an affect, as do other chronic conditions), manipulation of hearing aids becomes more and more difficult.

While the advent of remote controls might be seen as a useful addition, particularly for those with arthritis, an interesting comment made to the researcher by a number of audiologists in the present study was that women tend not to like remote controls because they have nowhere to put them. This appears to ignore the common use of handbags by older women rather than older men. A handbag seems to be an excellent way of carrying a remote control. While this is a very small point, it does cause speculation as to the type of interactions that occur between older adults and audiologists. A study designed to examine these interactions may help shed some light in this area.

In any replication of the present study using hearing professionals, it is possible that more treatment differences would emerge with vignettes using a middle-age audiogram versus an older adult audiogram. This would allow for a greater age discrepancy between vignette versions that may elicit a clear difference in attitudes between younger and older adults. Care would be needed to ensure that other differences between the vignette versions were minimal.

4.11 Conclusions and Recommendations

The present study found that hearing therapists and audiologists have comparable levels of knowledge and positive attitudes towards older adults to similar professional groups. It does not appear that their attitudes are specifically related to their knowledge of older adults or their specific group membership but are related to increasing age, gender and education level. The finding that age and gender do have an affect on attitudes towards older adults is largely supported by the literature.

The finding that the more highly educated hearing professionals had less positive attitudes towards older adults than those less highly educated is surprising, given the evidence found in the literature. This may not be a cause for great concern, however. All participants had positive attitudes towards older adults, to the point, possibly, where some treatment options that should be considered by hearing professionals or recommended to older adults were not occurring. It is possible that the more educated hearing professionals had more realistic attitudes; it is equally likely that their knowledge was in areas that are relevant to the technological expertise required by audiologists and not in areas relevant to gerontology.

While audiologists' attitudes are positive, this does not always result in the most appropriate treatment options as regards amount of time spent with older clients, evaluations done, or referral onwards. This may be because of an underestimation of the effects that ageing has on individuals or time constraints, or a combination of both. Regardless of the age of the client, the motivation and expectations of clients are not being taken into account by the majority of hearing professionals and this, in itself, may have a significant effect on the success rate of aural rehabilitation. Additionally, cognitive ability, dexterity and vision are not seen as significant issues for the great majority of participants.

Based on the results of the present survey and from the review of the relevant literature, the following recommendations are made:

The training for both audiologists and hearing therapists should provide a significantly increased amount of specific gerontological content. Such issues as inter- and intra-individual differences, cognition and ageing, primary versus secondary ageing, physical changes and the need of continued support for older clients should be addressed.

Where possible, audiologists should strongly recommend that their clients gain continued support and knowledge through the services of hearing therapists.

Clients should all be assessed and educated regarding realistic expectations in the use of hearing aids.

Clients' motivation should be assessed and addressed as regards the wearing of hearing aids.

Where possible, extra time should be allocated for educating older adults regarding adjustment, use and maintenance of hearing aids and assistive hearing devices.

Clients should routinely be issued with handouts that reiterate information given them during sessions with hearing professionals.

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APPENDIX A

Survey: Part A

Biographical Details

- 1 Year of Birth _____
- 2 Gender _____
- 3 Ethnic Background (Please tick one):
 New Zealand European
 New Zealand Maori
 Pacific Islander
 Asian
 European
 Other (please specify) _____
- 4 Education level (Please tick one):
 Secondary education plus hearing therapy training
 Tertiary education plus hearing therapy training
 Post graduate training plus hearing therapy
 Post graduate training plus audiology
- 5 Specific training for Audiology/Hearing Therapy carried out (Please tick one):
 New Zealand
 Australia
 United Kingdom
 United States
 Other
- 6 Approximately what percentage of your client base is Over 65? _____
- 7 Approximately what percentage of your client base is Rural ? _____
- 8 How many years experience do you have in the field of Aural rehabilitation?

Please note that choosing to fill out and return this survey to the researcher implies informed consent.
Please note that you have the right:

- * to decline to participate
- * to refuse to answer any particular question
- * to withdraw from the study at any time
- * to ask any questions about the study at any time

Part B

The Facts on Aging Quiz

Mark the statements "T" for true, "F" for false or ? for don't know.

- _____ 1. The majority of old people (age 65+) are senile (have defective memory, are disoriented or demented).
- _____ 2. The five senses (sight, hearing, taste, touch and smell) all tend to weaken in old age.
- _____ 3. The majority of old people have no interest in, nor capacity for, sexual relations.
- _____ 4. Lung vital capacity tends to decline in old age.
- _____ 5. The majority of old people feel miserable most of the time.
- _____ 6. Physical strength tends to decline in old age.
- _____ 7. At least one tenth of the aged are living in long-stay institutions (such as nursing homes, mental homes, homes for the aged, etc.)
- _____ 8. Aged drivers have fewer accidents per driver than those under 65.
- _____ 9. Older workers usually cannot work as effectively as younger workers.
- _____ 10. Over three fourths of the aged are healthy enough to do their normal activities without help.
- _____ 11. The majority of old people are unable to adapt to change.
- _____ 12. Old people usually take longer to learn something new.
- _____ 13. Depression is more frequent among the elderly than among younger people.
- _____ 14. Older people tend to react slower than younger people.
- _____ 15. In general, old people tend to be pretty much alike.
- _____ 16. The majority of old people say they are seldom bored.
- _____ 17. The majority of old people are socially isolated.
- _____ 18. Older workers have fewer accidents than younger workers.
- _____ 19. Over 20% of the population are now aged 65 or over.
- _____ 20. The majority of medical practitioners tend to give low priority to the aged.
- _____ 21. The majority of old people have incomes below the poverty line (as defined by the government).
- _____ 22. The majority of old people are working or would like to have some kind of work to do (including housework and volunteer work).
- _____ 23. Old people tend to become more religious as they age.
- _____ 24. The majority of old people say they are seldom irritated or angry.
- _____ 25. The health and economic status of old people has stayed the same or worsened in the last 20 years, (compared to that of younger persons).

Source: Palmore, 1998.; Pennington, Pachana & Coyle, in press.

Part C.

Attitudes Towards Old People: Kogan, 1961; Hilt, 1999.

Below are a series of sentences to do with older adults.

Please tick the box below the statement that you most agree with when considering that sentence.

1 Older adults have the same faults as anybody else

Strongly Disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

2 Most older adults let their homes become shabby and unattractive

Strongly Disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

3 Older adults accounts of their past experiences are interesting

Strongly Disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

4 Most adults are cheerful, agreeable and good-humoured

Strongly Disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

5 It is foolish to claim that wisdom comes with old age

Strongly Disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

6 A nice residential neighbourhood has a number of older adults living in it

Strongly Disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

7 Most older adults are very different from one another

Strongly Disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

8 Most older adults seem to be quite clean in their personal appearance

Strongly Disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

9 Older adults have too little power in business and politics

Strongly Disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

10 Most older adults respect the privacy of others

Strongly Disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

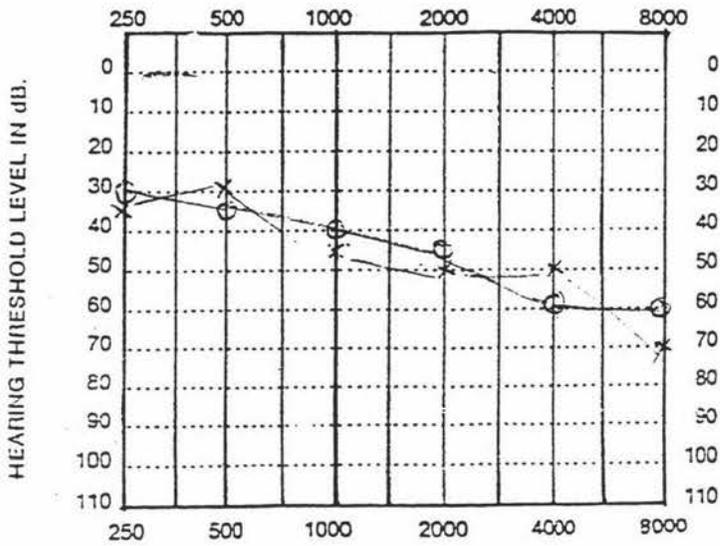
11 Most older adults can adjust when the situation demands it

Strongly Disagree	Disagree	Somewhat disagree	Neither agree or disagree	Somewhat agree	Agree	Strongly agree

- 12 Most older adults bore others by talking about the “good old days”
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |
- 13 Most older adults need no more love and reassurance than anyone else
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |
- 14 Most older adults would work as long as possible rather than become dependant
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |
- 15 If older adults expect to be liked, they should eliminate their irritating faults
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |
- 16 Older adults seldom complain about the behaviour of younger people
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |
- 17 Most older adults are very relaxing to be with
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |
- 18 People become wiser with the coming of old age
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |
- 19 Most older adults spend too much time prying into the affairs of others
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |
- 20 Most older adults are as easy to understand as younger people
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |
- 21 Most adults keep a clean home
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |
- 22 Most older adults are set in their ways and are unable to adjust to change
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |
- 23 It would be better if most older adults lived in residential units that also housed younger people
- | | | | | | | |
|-------------------|----------|-------------------|---------------------------|----------------|-------|----------------|
| Strongly Disagree | Disagree | Somewhat disagree | Neither agree or disagree | Somewhat agree | Agree | Strongly agree |
| | | | | | | |

Vignette

Joan Archer is 63/78 years old. She lives with her retired husband and has two married daughters, a married son and seven grandchildren living within an hours travel. While Joan briefly worked as a secretary before her marriage, she has not had paid employment since. She is active in both her church and in Age Concern. On visiting her GP recently for a general check-up (she is in good health apart from a touch of arthritis in both hands), she complained of difficulties understanding what others were saying, especially in noisy family situations that she was beginning to find tiring. She also noted that she had misunderstood parts of discussions at meetings with the local Age Concern committee and that this had been embarrassing. A screening pure-tone audiogram (see below) indicated that Joan had presbycusis.



On the basis of the information given above:

- 1 Would you recommend to Joan that she trial a hearing aid?
 yes
 no

- 2 Would you recommend a "Behind the Ear" hearing aid?
 yes
 no

- 3 Would you recommend an "In the Ear" hearing aid
 yes
 No

- 4 Would you recommend an "In the Ear Canal" hearing aid?
 yes
 no

- 5 Would you recommend a "Completely in the Ear Canal" hearing aid?
 yes
 no
- 6 Would you recommend (please tick one)
 a) One hearing aid?
 b) Two hearing aids?
- 7 Would you recommend a T-switch?
 yes
 no. If no, please indicate why

- 8 Would you recommend compression?
 yes
 no
- 9 If yes to 8 above, would you recommend automatic volume control (no manual adjustment)?
 yes
 no
- 10 Would you recommend a remote control?
 yes
 no
- 11 Would you recommend multiple memories (e.g. quiet/noisy situations)?
 yes
 no
- 12 Any other recommendations? (Please specify):

- 13 Would you recommend the use of a specific assistive hearing device?
 yes. If yes, please specify _____
 no
- 14 How many hours, altogether, including initial audiological evaluation, would you plan to see Joan? _____
- 15 How would evaluate rehabilitation? (Please tick one or more)
 Discussing any problems she is having with her.
 Using an evaluative measure (for example the COSI, CPA, or the Hearing Handicap Inventory for the Elderly (HHIE)). Please specify which you would use.

 No specific evaluation would be needed
- 16 If such an evaluation is used, would this occur before aural rehabilitation/intervention?
 yes
 no

- 17 If such an evaluation is used, would this also occur one to four weeks after aural rehabilitation/intervention?
 yes
 no
- 18 If such an evaluation is used, would this also occur six months after aural rehabilitation/intervention?
 yes
 no
- 19 If such an evaluation is used, would this also occur one year after aural rehabilitation/intervention?
 yes
 no
- 20 Do you have specific handouts that would help Joan, other than hearing aid instruction manuals?
 yes
 no
- 21 Would you be willing to share sources of information that you find helpful for older adults? If so, please name sources.

- 22 Would you refer Joan onwards?
 yes
 no
- 23 If yes, where would you refer her?

- 24 For what purpose would you refer her?

- 25 What other information regarding audiometric measures (**that you would normally receive**) would you like before making the above recommendations?

- 26 What other information regarding Joan herself (**that you would normally receive**) would you like to have before making the above recommendations?

Thank you for your time and patience. If there are any issues that this survey has prompted in you, please feel free to write them separately and include with the survey.

(To be printed on Massey University letterhead)

Initial letter sent out through both organisations

Dear Audiologist/Hearing Therapist

My name is Elinor Seville and I am a Masterate student from Massey University's School of Psychology. My research supervisor is Dr. Nancy Pachana, a lecturer in Psychology at Massey University. Dr. Pachana can be contacted at:

School of Psychology, Massey University, Private Bag 11 222, Palmerston North

Tel: (06350 5799, ext. 2065)

I can be contacted via the above address or by e-mail: j-e.seville@xtra.co.nz

I am planning a study that looks at the knowledge and attitudes that hearing professionals have towards older adults. As the population of New Zealand ages, more and more older adults will be suffering from hearing impairment. While technological advances in hearing aids have resulted in devices that are of benefit for those with presbycusis, many hearing aids are being used minimally, or not at all. It is hoped that the results gained may help in finding ways to increase acceptance and use of hearing aids in older adults.

This study is in the form of a survey that has four parts to it, and should only take 20 minutes to complete. The survey can be sent via email to the address given or by post with a stamped addressed envelope included for its return. Your survey answers will be treated confidentially and will be identifiable to my supervisor or myself only by a code number which will be used to identify participants who do not return their surveys so that a reminder can be sent. Your name need not appear anywhere on the survey. All returned surveys will be kept in a locked cabinet and available only to my supervisor, and myself and will remain confidential. Only group data will be published.

All those who agree to accept delivery of the survey will be entered into a draw; prizes of which have been donated by several Hearing Aid companies in New Zealand. Items include; an Avance Hearing Enhancer, Dri Aid containers, batteries and key rings . Winners will be notified by mail through their professional organisations.

Would you like to participate in this survey?

yes _____

no _____

If yes, would you like to receive and return the survey by:

email _____(please give details)

Post _____(please give details)

Would you like a summary of the results on completion of the survey?

yes _____

no _____

Please return this letter in the stamped addressed envelope provided. If you choose to complete and return the survey to me, this indicates informed consent.

Please do not hesitate to contact my supervisor or me if you have any questions regarding this research

Yours faithfully

Elinor M Seville

Knowledge and attitudes of hearing professionals towards older adults.

Information Sheet.

My name is Elinor Seville and I am a Masterate student from Massey University's School of Psychology. My research supervisor is Dr. Nancy Pachana, a lecturer in Psychology at Massey University. She can be contacted at:

School of Psychology,
Massey University
Private Bag 11 222
Palmerston North,

Tel: (06) 350 5799, extn. 2065

I can also be contacted at the above address or by email at: j-e.seville@xtra.co.nz

This study is looking at the knowledge and attitudes that hearing professionals have towards older adults. As the population of New Zealand ages, more and more older adults will be suffering from hearing impairment. While technological advances in hearing aids have resulted in aids that are of benefit for those with presbycusis, many hearing aids are being used minimally, or not at all. It is hoped that the results gained may help in finding ways to increase acceptance and use of hearing aids in older adults.

This study is in the form of a survey that has four parts to it, and should only take 20 minutes to complete. The survey can be sent via email to the address given or by post with a stamped addressed envelope included for its return. While the survey cannot be anonymous, your survey answers will be treated confidentially and will be identifiable to myself or my supervisor only by a code number which will be used to identify participants who do not return their surveys so that a reminder can be sent. Your name need not appear anywhere on the survey. All returned surveys will be kept in a locked cabinet and available only to myself and my supervisor, and will remain confidential. Only group data will be published.

Please note that you have the right:

- * to decline to participate
- * to refuse to answer any particular question
- * to withdraw from the study at any time
- * to ask any questions about the study at any time

Thank you for your consideration of participation in my project.

Appendix B

Table 8: Independent samples t-test of gender and education with Facts on Aging Quiz total correct scores.

Variable	FAQ scores					
	N	Mean	SD	t	df	Sig.
Gender						
Male	13	15.69	2.29	-.138	43	.891
Female	32	15.81	2.76			
Education						
Tertiary or less	14	14.71	3.07	-.189	43	.066
Post-graduate	31	16.26	2.26			

Table 9: Correlations among FAQ total correct score and age, percent clients over 65, percent clients rural and years of experience.

	TOTFAQ	Age	Percent > 65	Percent rural
TOTFAQ				
Age	-.049			
Percent > 65	-.125	.185		
Percent rural	-.061	.052	.100	
Years of experience	.140	.533**	.071	-.007

Appendix C

Table 10: Correlations among Total ATOP scores and age, percent clients over 65, percent clients rural and years of experience.

	Age	Percent > 65	Percent Rural	Years of experience
Age				
Percent > 65	.185			
Percent Rural	.052	.100		
Years of Experience	.533**	.071	-.007	
Total ATOP	.261	.145	.096	-.046

**p < .01

Appendix D

Table 11: Results from the vignette questions for both audiologists and hearing therapists

Vignette Question	Answer	Audiologists N = 30	Hearing Therapists N = 15	Significance
1. Would you recommend to Joan that she trial a Hearing aid?	Yes	30	14	ns
	No	Nil	Nil	
2. Would you recommend a "Behind the Ear" hearing aid?	Yes	16	6	ns
	No	11	3	
3. Would you recommend an "In the Ear" hearing aid?	Yes	26	6	*
	No	Nil	2	
4. Would you recommend an "In the Ear Canal" hearing aid?	Yes	18	1	**
	No	7	8	
5. Would you recommend a "Completely in the Ear Canal hearing aid?	Yes	2	Nil	ns
	No	23	9	
6. Would you recommend one hearing aid? Two hearing aids?	Yes	4	1	ns
	Yes	23	11	
7. Would you recommend a T-Switch ?	Yes	25	12	ns
	No	2		
8. Would you recommend compression?	Yes	29	5	ns
	No	Nil	Nil	
9. Would you recommend automatic volume control (no manual adjustment)?	Yes	23	7	ns
	No	4	1	
10. Would you recommend a remote control?	Yes	14	4	ns
	No	13	4	
11. Would you recommend multiple memories?	Yes	24	6	ns
	No	3	2	
12. Any other recommendations?	Yes	16	4	ns
	No	12	4	
13. Would you recommend the use of a specific assistive listening device?	Yes	11	6	ns
	No	17	4	

Table 11 continued: Results from the vignette questions for both audiologists and hearing therapists

Vignette Questions	Answers	Audiologists	Hearing Therapists	Significance
		N = 30	N=15	
14. How many hours, altogether, including audiological evaluation, would you plan to see Joan?	2 – 2.9	3	2	ns
	3 – 3.9	17	3	
	4 – 4.9	4	1	
	5 +	6	3	
15. How would you evaluate rehabilitation? Discussing any problems she is having with her. Using an evaluative measure such as the COSI Both discussion and an evaluative measure No specific evaluation would be needed		10	4	ns
		3	Nil	
		16	10	
		Nil	Nil	
16. If such an evaluation is used, would this occur before aural rehabilitation/intervention?	yes	22	11	ns
	no	7	Nil	
17. If such an evaluation is used, would this also occur one to four weeks after aural rehabilitation/intervention?	yes	24	11	ns
	no	5	Nil	
18. If such an evaluation is used, would this also occur six months after aural rehabilitation/intervention?	yes	8	7	*
	no	21	4	
19. If such an evaluation is used, would this also occur one year after aural rehabilitation/intervention?	yes	9	2	ns
	no	20	8	
20. Do you have specific handouts that would help Joan, other than hearing aid instruction manuals?	yes	26	12	ns
	no	4	1	
21. Would you be willing to share sources of information that you find helpful for older adults?	yes	11	6	ns
	no	19	6	
22. Would you refer Joan onwards?	yes	26	11	ns
	no	5	5	
23. If yes, where would you refer her?	Hearing Therapy	24	N/A	ns
	Audiology	N/A	11	
	Medical	2	Nil	
24. For what purpose would you refer her?	Further evaluation/support	24	N/A	ns
	Audiological assessment	N/A	11	
	Medical assessment	2	Nil	

Table 11 continued: Results from the vignette questions for both audiologists and hearing therapists

Vignette Questions	Answers	Audiologists	Hearing Therapists	Significance
		N = 30	N=15	
25. Any other information regarding audiometric measures (that you would normally receive) would you like to have before making the above recommendations?	yes	27	4	**
	no	3	7	
26. Any other information regarding Joan herself (that you would normally receive) would you like to have before making the above recommendations?	yes	28	5	**
	no	2	6	

*p < .05 ** p < .01