

**Prejudice Against Older Teachers:  
Theoretical and Methodological Inquiries**

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## Abstract

Research on prejudice against older workers often tacitly subscribes to outdated attitude theory and rarely attempts to examine methodological questions about the effect of measurement strategy on results. This thesis compared empirically the validity of the tripartite and unitary models of attitudes in relation to prejudice towards (a) older teachers, and (b) the employment of older teachers. In addition, two alternative measurement strategies for assessing stereotypes of older teachers were compared (a 15-item rating scale versus a free-response measure). A postal questionnaire survey was conducted on a random sample of members of the National Union of Teachers ( $n=285$ ) in May 2008. Two equivalent questionnaire versions were constructed that differed only with respect to the measurement strategy for assessing stereotypical beliefs of older teachers (aged 50+). The validity of the tripartite theory of attitudes was tested using hierarchical regression analyses that examined the ability to predict reported attitudes towards older teachers and the employment of older teacher on the basis of (a) stereotypical beliefs of the target group alone, and (b) a combination of stereotypical beliefs, and affective and behavioural associates of the target group. Prediction of attitudes was significantly improved above the level afforded by stereotypical beliefs alone by adding both affective and behavioural information to the regression model, supporting the validity of the tripartite model of attitudes. Measurement strategy was found to have a significant effect on the positivity of stereotypical beliefs elicited ( $r = -0.515$ ), with the average response valence on the stereotypical beliefs rating scale being significantly less positive than the average response valence on the free-response measure. The content of the rating-scale measure was also found not to be representative of naturally elicited stereotype categories. The theoretical and methodological implications for attitude research in organisations were discussed.

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## Preface

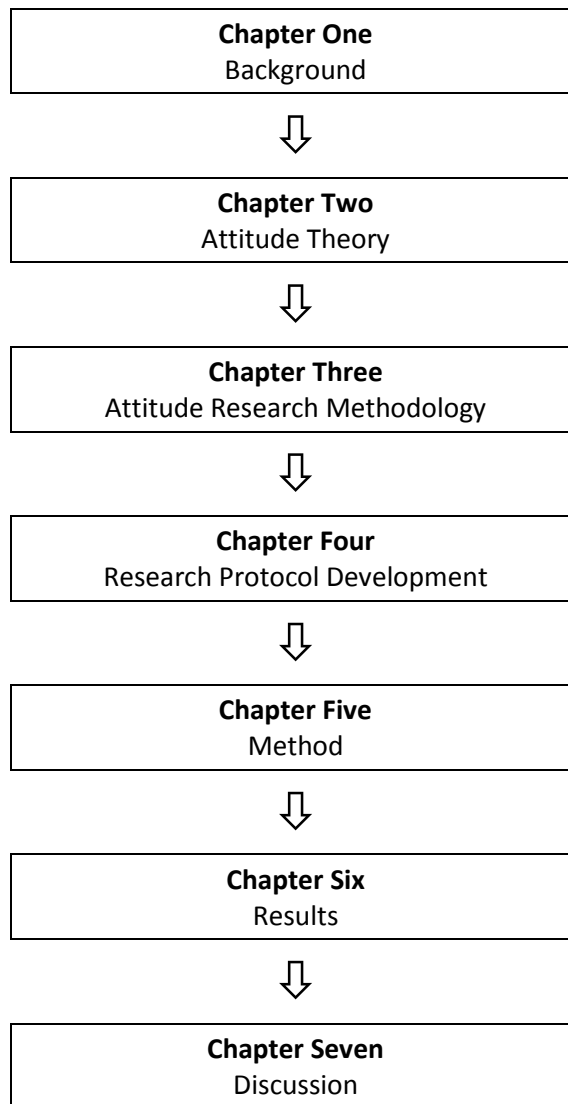
Worldwide, people now live longer and healthier lives than ever before (United Nations, 2002). The trend towards increasing longevity has been lauded as one of the most important accomplishments of modern society (United Nations, 2007) and is clearly demonstrated by the increase in average life expectancy over course of the twentieth century (Dunnell, 2007). In the UK in 1950, the average life expectancy for men reaching the state pension age (SPA) of 65 was a further 11 years. Today, men aged 65 have an average life expectancy of a further 20 years. By 2050, it is projected that the average life expectancy for a 65 year old man will be a further 24 years. Women's life expectancies are even higher (Office for National Statistics, 2008b). Population ageing is clearly a beneficial phenomenon, offering individuals the potential of longer, more fulfilling lives. However, the changing age profile of the population poses major challenges for policymakers and requires significant alterations to be made to the economic, political and social infrastructures that underlie modern society.

The supply of older workers in the UK is low and increasing at slow rate compared with the increase in the number of older people in the population (Whiting, 2005). Numerous factors are believed to contribute to this situation. One major factor, which is the focus of this thesis, is the preference held by many employers and employees for younger workers over older workers. This preference for youth over age can inhibit aspiring older workers from securing employment, can be harmful to older workers during employment, and can be a cause of older workers' premature withdrawal from the workforce.

Since the inception of psychology as a discipline, a significant amount of empirical research has been conducted on why people think about and behave towards derogated groups in the way that they do. Research focusing on antipathy towards older people began in earnest in the latter half of the twentieth century. Research on antipathy towards older people in the workplace commenced later still, but has become a coherent and productive research field in recent decades. Research has focused on three main issues: (a) the psychological determinants of age-related antipathy; (b) the behavioural consequences of age-related antipathy; and (c) other factors that are associated with age-related antipathy. There is an extensive literature in psychology on theoretical perspectives and methodological approaches toward research on derogated groups. Nevertheless, numerous gaps remain in the understanding of how and why older workers are targets for age-related antipathy. For example, antipathy against older workers has been particularly visible in the teaching profession in the UK, and evidence suggests that the profession remains blighted by the problem. While discrimination against older teachers remains a high priority area for policymakers, teaching organisations and individual teachers, there has been little empirical research in the area.

This thesis contributes to the research literature on antipathy towards older workers in general, and against older teachers specifically, by examining the usefulness of the tripartite theory of prejudice and two different measurement strategies for assessing beliefs in the investigation of prejudice against older teachers. This thesis is divided into seven chapters, as displayed in figure 1. The first three chapters introduce the research area at increasing levels of specificity. Chapter one provides a brief overview of why age-related research in applied psychology has become more important and more visible in recent decades. The end of chapter one

focuses on age discrimination as an area of particular significance to academics, policymakers and to society more broadly. Chapter two expands on an issue raised at the end of chapter one, by focusing on the psychological research literature on attitudes, prejudice and discrimination against older individuals. As a result of this review of the theoretical literature, several research gaps in the area of age prejudice against older workers emerged, which were formed into theoretical research objectives at the end of chapter two. Chapter three expands on the issue raised in chapter two that the results of research on age prejudice against older workers are shaped by the general empirical approach and the specific measurement strategy used by the researcher to assess prejudice. On the basis of this review of the methodological literature an additional methodological research objective is advanced at the end of chapter three.



*Figure 1.* Thesis structure.

Chapters four and five move the thesis forward from the recognition of theoretical and methodological research gaps to designing and conducting a piece of research to address those research gaps. Chapter four provides a detailed commentary on the process of developing the research instrument and protocol. The chapter begins by considering broad issues of research such as sampling, stakeholder involvement, and defining key terms. Then, the focus of the chapter is directed towards developing a workable research instrument, the content of which can be

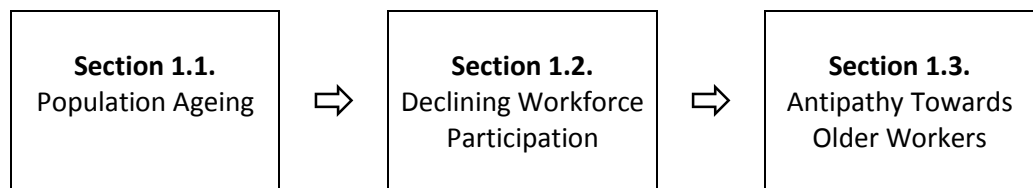
traced back through the research objectives and to the literature review. To ensure clarity, the relations between the research instrument and the research objectives are stated formally at the end of chapter four. Chapter five then describes in detail how the present research was conducted, with sections focusing on participants and sampling, materials and measures, the research procedure, and ethical considerations relating to the research.

The final two chapters of the thesis discuss the results of the research at decreasing levels of specificity, providing a reflective symmetry of the first three chapters of the thesis. Chapter six summarises the collected data and the analyses conducted on those data which were relevant to the preceding chapters and the ensuing discourse. Special attention is given to examination of missing data and nonresponse, prior to the qualitative and quantitative data analyses relating to the research objectives. Chapter seven then evaluates and interprets the implications of the results with respect to the research objectives and to the wider enterprise of research on group prejudices in organisations.



## 1. Background

This chapter discusses the changes in society that have precipitated population and workforce ageing, and highlights the significance of antipathy against older workers. Overall, there has been a dramatic shift in the age profile of the UK workforce in recent decades. Presently there is a paucity of younger and older workers and a disproportionately large number of middle-aged workers. This is the result of population ageing (Section 1.1.) and changes in the workforce participation of younger and older adults (Section 1.2.). Due to a decreasing number of new entrants to the workforce, older workers are increasingly important to continued economic prosperity. However, the preference for younger workers persists, and older workers are often marginalised because of their age (Section 1.3.). The chapter structure is displayed in figure 2.



*Figure 2.* Chapter one structure.

### 1.1. Population Ageing

Like most nations worldwide, the population of the UK is ageing (Babb, Butcher, Church, & Zealey, 2006; Dunnell, 2007; United Nations, 2002). The proportion of older people in the population is increasing and the proportion of children in the population is decreasing. As a result, the average age of the population is rising. Population ageing was caused primarily by major advances in nutrition, medicine and technology that were made during the nineteenth and

twentieth centuries (United Nations, 2007). The process by which population ageing occurred is described by *Demographic Transition Theory* (Kirk, 1996). This theory posits that societies progress through three stages from a premodern regime of high fertility and high mortality to a postmodern regime in which both are low (United Nations, 2007). During the first stage, increased survival at younger ages causes a rejuvenation of the population, and the proportion of children in the population rises. This occurred in the UK early in the twentieth century (Lindsay, 2003). In the second stage, reduced fertility causes the proportion of children in the population to decline and the proportion of adults of working age to increase. In the UK, reduction in fertility actually began towards the end of the nineteenth century and continued to decline until the 1930s (Anderson, 1998). There were sharp spikes in fertility in the UK following both World Wars and in the 1960s (Lindsay, 2003). Since then, the fertility rate has continued to decline and is now below the level of fertility required to ensure the population replaces itself in size (the *population replacement rate*) (Castles, 2003). The third stage of transition usually follows a long period of decline in fertility and mortality, and in this stage the proportions of children and working-age adults in the population are in decline and only the proportion of older adults is rising. The UK population now approaches the third stage of demographic transition (Babb et al., 2006). The peak fertility levels of the *Baby Boom* era (1945-1964) are reflected today in the high proportion of adults in their 40s, 50s and 60s in the population. The drop in fertility following the Baby Boom is reflected in the low proportions of children and adults in their late teens, 20s and 30s in the population. Demographic transition theory has been both lauded as the “central preoccupation of modern demography” (Demeny, 1968, p. 502) and denounced as a nontheory (Greenhalgh, 1996). Regardless, demographic transition remains an important and

influential description of the processes underlying the phenomenon of population ageing.

Evidence for population ageing in the UK since the Second World War is consensual and compelling. The proportion of children (aged below 16) has decreased steadily and the proportions of individuals 65 and over, 85 and over, and 100 and over have increased dramatically (Tomassini, 2005). Significant demographic changes are noticeable over the shorter timescale of the last 25-30 years. Dunnell (2007) summarised these changes, and is the source of the following figures.

Between 1981 and 2006, the UK population grew in size from 56.4 to 60.5 million. There were over a million fewer children in 2001 than in 1981, and over 1.2 million more people aged 65 and over. Over the same period, the average age of the 16-64 age group increased from 38 to 40. By 2031, the average age of the 16-64 age group is set to increase further to 40.3 years. The population aged below 16 is predicted to rise by 11 per cent to 12.8 million, while the population aged 65 and over will rise by 63 per cent to 15.8 million. In relation to the oldest sections of society, people aged 85 and over accounted for just 1 per cent of the population in 1981. In the 25 years that followed, the number of people in this age group more than doubled, and by 2031 the number is projected to double again. Similarly, there were only 10,000 people aged 100 and over in 2006. By 2031, it is projected that the number of centenarians will increase to 59,000. As a result of increased longevity and declining fertility, a significant milestone in UK population ageing was recently reached. In 2008 the number of people at and above state pension age (65 for men and 60 for women; SPA) exceeded the number of children for the first time (Office for National Statistics, 2008a). This trend of decreasing numbers of children and increasing numbers of older adults looks set to become even more pronounced in the near

future. It is projected that by 2031 children will account for just 18 per cent of the population while those aged 65 and over will account for 22 per cent of the population (Dunnell, 2007).

Population ageing is already well established in most developed regions worldwide (including the UK), and is rapidly occurring in developing regions (United Nations, 2002). The increasing number of older adults poses distinct challenges for policymakers worldwide, as population ageing has a profound impact on a broad range of economic, political and social issues. These issues are described in the United Nations' (2007) report on development in an ageing world, which presented the following two cases. First, in populations with a decreasing proportion of children and an increasing proportion of working-age adults there will usually be a temporary enlargement in the working population that may last for as long as 50 years. This provides a window of opportunity for accelerated economic development. However, reaping the potential benefits of this demographic bonus is contingent upon employment and investment opportunities, and the presence of social and political conditions that allow sustainable growth and development. Making the most of this opportunity will be a challenge for many developing nations in the twenty-first century. Second, in populations with a decreasing number of children and younger adults and an increasing number of older adults (such as the UK), the major challenge policymakers face in the twenty-first century relates to the declining workforce and increasing demand for healthcare and old age support. This challenge has been exacerbated by decreases in workforce participation at the younger and older ends of the working population.

## 1.2. Declining Workforce Participation

The British culture of retirement is unusual, particularly in view of the low pension remuneration that people receive in comparison with other industrialised countries (Mein et al., 2000). Currently there is no national statutory retirement age, although the ages that the state pension is distributed (60 years for women and 65 years for men) have become the usual age at which people retire from work (Tanner, 1997). These ages have not been adjusted to reflect the increased life expectancy and improved overall health of older people in recent decades. Rather, SPA has remained at the same level since the inception of state pensions as part of the National Insurance Act (1946). As a result, the average number of years spent in the workforce as a proportion of average life expectancy dropped rapidly over the twentieth century. Banks and Smith (2006) report that people born in 1900 spent an average of 69 per cent of their lifetime in the workforce. This compares to 59 per cent for the 1935 cohort and a predicted 53 per cent for the 1980 cohort. This reduction is explained in part by increasing longevity and health. Two additional factors are also important. First, the average age of entry into the workforce has increased in recent decades, largely due to increased participation in further education (FE) and higher education (HE). Second, the number of workers close to, at, and beyond SPA declined over many years<sup>1</sup>. Numerous factors are believed to underlie the decline in employment among older adults.

Increased involvement in full-time and part-time education has had a significant impact upon the working habits of those at the younger end of the working population. Babb et al. (2006) recently reported education trends over the period 1970/1 to 2003/4. Between 1970/1 and 2003/4, the number of younger

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<sup>1</sup> The trend of declining workforce participation among older workers has recently begun to level-off and reverse marginally (Office for National Statistics, 2008b).

adults in FE and HE in the UK increased dramatically. In 1970/1 there were 1 million men and 725,000 women in FE. By contrast, in 2003/4 there were 2 million men and 2.9 million women in FE. There has also been a substantial increase in the number of people in HE. In 1970/1 there were 0.6 million people in HE, a third of whom were women. In 2003/4, there were four times as many people in HE (2.4 million), and the proportion of women had increased to 57 per cent. The trend toward increased participation in FE and HE explains why many younger adults now enter the workforce at an older age compared to previous generations. As a result, the number of younger working adults is now low compared to historical norms, while the size of the population overall is larger. There is some evidence to suggest that increasing time spent in education has a positive effect on workforce participation by delaying retirement and offsetting the impact of delayed workforce entry (Alley & Crimmins, 2007). Nevertheless, this does not offset immediate workforce supply shortages caused by low numbers of younger adults in the working population.

Workforce participation of older adults dropped rapidly between the 1970s and the mid-1990s, particularly among older men (Campbell, 1999; Whiting, 2005). In recent years, older adults' employment rates have risen again, although they have not yet returned to the high levels of the 1970s (Humphrey, Costigan, Pickering, Stratford, & Barnes, 2003). During the period 1968-1996, the proportion of men aged 55-59 in employment fell from more than 90 per cent to less than 70 per cent, and for men aged 60-64 from 80 per cent to less than 40 per cent (Blundell & Tanner, 1999). The proportion of older women (aged 50 and above) in employment increased, from 52 per cent in 1979 to 57 per cent in 2002 (Humphrey et al., 2003). However, while employment of women aged 55-59 increased steadily since the 1950s, employment of women aged 60-64 dropped rapidly over the same time

period (Auer & Fortuny, 2000). Overall, the gradual increase in the employment of older women since the 1970s contrasts with the dramatic increase in employment among younger women over the same time period (Campbell, 1999).

Increasing involvement in education combined with decreasing workforce participation of older workers has the effect of reducing the size of the working population compared to the nonworking population (Whiting, 2005). A variety of arguments have been proposed for the benefits of increasing the involvement of older adults in the workforce to reduce this disparity. Such arguments often propose that extending the working lives of older adults is beneficial at the level of the economy, the employer, or the individual. The economic argument often takes the following form: (a) In relation to the ageing population, a relatively smaller working population and larger nonworking population is particularly telling due to its effect on the cost of social security provision; (b) Nonworkers are reliant on the economic activity of workers and the taxes they pay to fund welfare and public services<sup>2</sup>; (c) Increasing longevity means that pensions will have to be paid to more people and for longer periods of time; and (d) As those born during the Baby Boom begin to retire in large numbers, issues of social security funding will become much more pressing. In recent years, concerns about the rising pension burden have led to legislation raising the SPA for women from 60 to 65 between 2010 and 2020 (Pensions Act 1995), and gradually increasing the SPA for both men and women from 65 to 68 between 2024 and 2046 (Pensions Act 2007). By increasing the retirement age and extending the working life, it is believed that the benefits to the economy will be threefold (International Social Security Association, 2003). First, the goods and services

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<sup>2</sup> Both state and private pensions rely on economic activity. State pensions are funded directly by taxation and private pensions are funded by assets, the value of which are underpinned by economic activity (Office for National Statistics, 2008b).

produced by a larger workforce will contribute to additional economic growth.

Second, the provision of pensions (and related cash benefits such as unemployment benefits or disability pensions) will be deferred. Third, the additional tax revenue and contributions will contribute to the financing of pensions and other benefits. These possible economic benefits are contingent on employers' and older workers' compliance, and rest on the presumption that work is, in some sense at least, a positive or rewarding experience for older adults.

Extending the working lives of older adults can be beneficial to employers as many older workers have practised skills and a large amount of job-related knowledge and experience. Older workers' skills are particularly important at present, as there are widespread labour shortages and skills gaps, which are set to worsen in future as the number of new entrants into the workforce decreases (Chartered Institute of Personnel and Development, 2008b). Moreover, many older workers have preexisting working relationships that are vital to their employers, and they are often the agents for the transmission of corporate values to new employees (Brooke, 2002; Hedge, Borman, & Lammlein, 2006). Therefore, older workers are particularly important in organisations, and employers should attempt to attract, manage and retain their older workforce effectively. However, extending the working life and increasing older adult employment are in direct contrast with the policies adopted by most organisations in recent decades and also with the expectations of many workers themselves (Griffiths, 1999b). While it is becoming necessary to retain older adults in the workforce for longer, it is also vital to ensure that they remain productive and healthy, both now and in the future (Cox, 2003; Griffiths, 2000).



Extending working life has the potential to benefit individuals by having a positive effect on their mental and physical health and wellbeing, as well as assisting financial security and intellectual and social functioning. Moreover, the health benefits of increased employment of older adults may be two-fold, as good health during the working life is associated with good health during retirement (Ilmarinen, 2009). However, the positive effects of work on health and wellbeing of older workers are related to the nature and quality of work and its social context (Ferrie, 2004; Waddell & Burton, 2006). Some work characteristics or demands may actually have a negative effect on individuals' health and wellbeing. Therefore, it would not be beneficial to extend the working life without assessing how employment affects older workers and ensuring their work is designed appropriately. Nevertheless, to the extent that work is well designed and a rewarding experience for older workers, there is evidence that employment can have positive effects on older adults' intellectual functioning and mental health (Schooler, Mulatu, & Oates, 1999; Waddell & Burton, 2006). Older adults might also benefit from remaining in the workforce longer because they may derive satisfaction from working and from the social relationships they develop in the workplace (Burtless & Quinn, 2002). There is the additional possibility that if people continue to retire early, some individuals may be at risk of having insufficient incomes as they grow older (Hedge et al., 2006). Extending the working life would, therefore, make an important contribution to the financial security of some older adults. Clearly, if employment remains well designed and rewarding to older adults, it can be beneficial for these individuals, as well as to their employers, and to society as a whole. For this reason, it is important to understand what might encourage older workers to continue to contribute in the workplace and what might encourage them to retire.

### **1.3. Antipathy Towards Older Workers**

The workforce participation of older workers is affected by various voluntary and involuntary personal circumstances such as physical and mental health, attitudes toward work and leisure, living arrangements, social networks, financial circumstances, and expectations about the future (Quinn & Burkhauser, 1994).

Workforce participation is also affected by societal and organisational factors that are usually beyond the control of the individual, such as the economy, organisational downsizing and layoffs, mandatory retirement, and age discrimination (Campbell, 1999; Hedge et al., 2006). Due to the increasing numbers of older adults in the population and the indispensability of older workers in the current and future workforces, it is particularly surprising that age discrimination is a major negative influence on workforce participation amongst older workers. The problem, it has been suggested, is that workplace culture has stuck to outdated ways of thinking about older workers (Hedge et al., 2006). Steinhauer (1998) suggested that these old ways of thinking are reflected in discriminatory practices by employers, including: (a) refusing to hire or promote older workers; (b) implementing insensitive, poorly conceived policies; (c) limiting or excluding older workers from important and substantive job responsibilities and activities; (d) limiting older workers' access to job-related education, career development opportunities, or employee benefits; and (e) forcing older employees out of the workforce through negative performance evaluations or through encouraging their retirement.

Older workers' colleagues may also contribute to an atmosphere of antipathy towards advanced age in an organisation through ageist communication. McCann and Giles (2002) performed an analysis of age discrimination lawsuits in the United States and discovered that ageist communication played a central role in a large

proportion of cases brought before the courts. Ageist communication took many forms, including pro-youth and anti-age remarks, as well as ageist material within organisational memoranda, charts and surveys. The total effects of ageist communication on individuals, employers, and the economy as a whole are not known owing to a lack of research. However, the effects are probably large and pernicious (McCann & Giles, 2002). Moreover, older workers may also be negatively affected by their own beliefs about ageing. For example, a widely held belief is that older workers are resistant to learning and change (P. Taylor & Walker, 1998; P. E. Taylor & Walker, 1994). When older workers endorse this belief, it may result in them denying themselves training opportunities and being placed in jobs that are not meaningful or cognitively challenging (Hedge et al., 2006). As older workers' skills become obsolete and their motivation declines, the original negative belief is reinforced (Maurer, 2001).

Overall, antipathy towards older people is one of the most socially condoned, institutionalised forms of prejudice in society (Age Concern, 2004; Nelson, 2002). Age prejudice manifests as age discrimination (E. R. Smith, 1993), which can take many forms in the workplace. Age discrimination may affect the workforce participation of older adults by inhibiting them from entering or progressing in the workplace, by diminishing older adults' morale, productivity and wellbeing while they are in employment, and may be a reason for older adults leaving the workforce altogether (Hedge et al., 2006). It is very difficult to estimate the scale of the cost of age discrimination in the workforce, as its direct and indirect consequences are as diverse as reduced self-esteem, disillusionment, poverty, depression, ill health, unemployment, social exclusion, mortality, reduced economic output, reduced retirement income, reduced government tax income, and increased social security

provision (Performance and Innovation Unit, 2000). Nevertheless, the Chartered Institute of Personnel and Development (2008a) estimated that in previous years the cost of age discrimination to the UK economy was between £19 and £31 billion in lost productivity alone, and this figure is likely to be much higher now. Employers have the legal obligation to reduce age bias to ensure that each person is judged on individual merit and is provided an equal opportunity to contribute in the workplace. However, it has been suggested that adherence to legislation outlawing unfair age discrimination in employment will not be sufficient to ensure changes to corporate culture that will lead to optimal use of the ageing workforce (Hedge et al., 2006). In order to do this, it is necessary for employers and policymakers to have an accurate understanding of the causes, manifestations and consequences of workplace age bias.

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## Chapter One Summary

This chapter introduced the historical and demographic background to population and workforce ageing, and the continued problem of antipathy against older workers because of their advanced age. The chapter was divided into three sections, which discussed (a) the ageing of the population in general, (b) declining workforce participation of younger and older adults, and (c) the magnitude of the problem of antipathy against older workers. First, the demographic underpinnings of the changing population age structure were outlined. Then, cultural underpinnings of the declining workforce participation of younger and older adults were described. Finally, the increasing importance of older workers' employment to individuals and to organisations was highlighted. This was contrasted with the magnitude of the estimated costs of discrimination against older workers, which suggest that many employers do not recognise the importance of older workers' contributions in the workplace. The next chapter unpacks this apparent paradox, and elucidates the problem of organisational bias against older workers using psychological theories and research evidence on age-related prejudice and discrimination.

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## 2. Attitude Theory

This chapter is divided into two main sections (see figure 3). The first section discusses psychological theory and research evidence that have been used to explain and understand employers' continued preference for youth over age in spite of the changing demographic landscape (Section 2.1.). The second section focuses on teaching as a profession in which older workers play a particularly important role, but which has been subjected to limited empirical research on antipathy towards older workers (Section 2.2.). At the end of the second section, specific research objectives that are derived from the attitude theory literature are advanced for empirical investigation in the teaching profession.

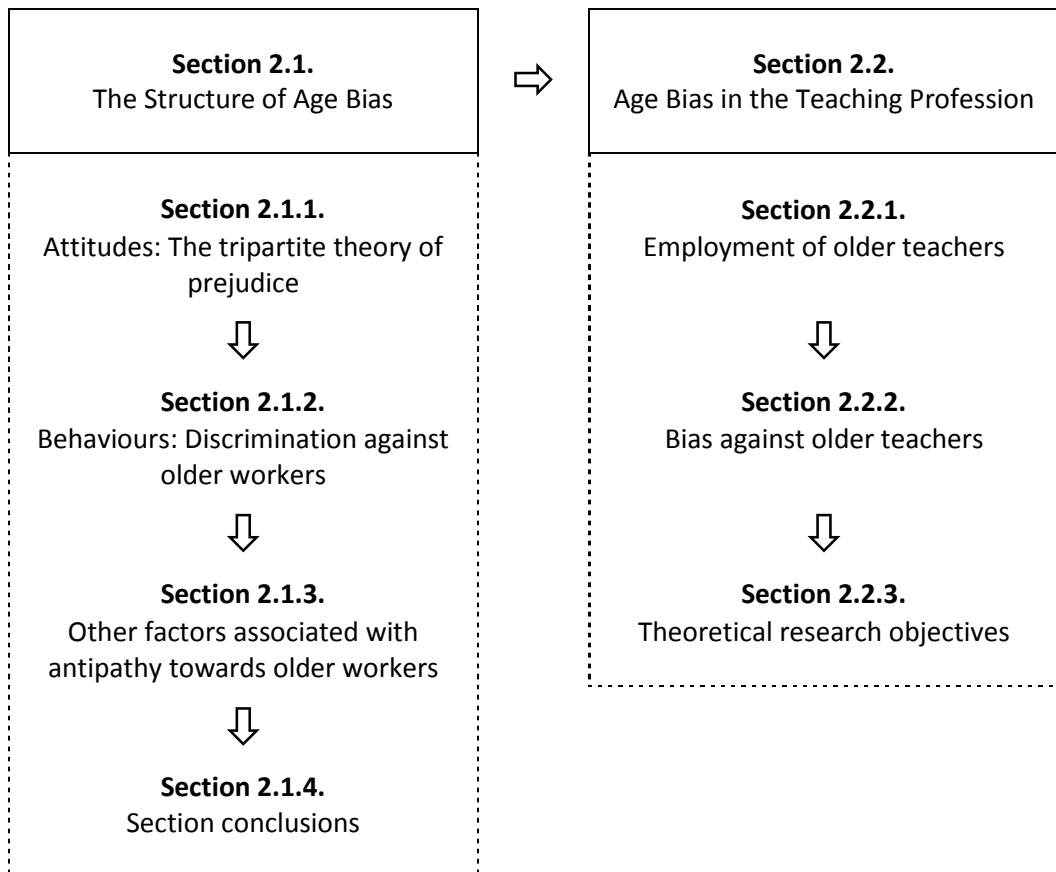


Figure 3. Chapter two structure.

## 2.1. The Structure of Age Bias

The changes in the age structure of the population described in the previous chapter necessitate the increased involvement of older adults in the workforce. Nevertheless, widespread antipathy towards older adults remains a significant barrier to their employment. To remedy this situation, it will first be necessary to understand why age-related antipathy exists, how it manifests, and the factors that promote or inhibit its occurrence. Antipathy towards older workers is believed to stem from underlying attitudes about ageing and older individuals (see Section 2.1.1.). Attitudes are often linked with behaviour, so the private thoughts of an individual can impinge on the lives of other people (see Section 2.1.2.). However, research suggests that the link between prejudice and behaviours is tenuous, and can be affected by numerous internal and external factors (see Section 2.1.3.). Henceforth the term *age bias* refers to all aspects of antipathy towards older people, including the psychological substrate of antipathy (prejudice) and its behavioural manifestations (discrimination).

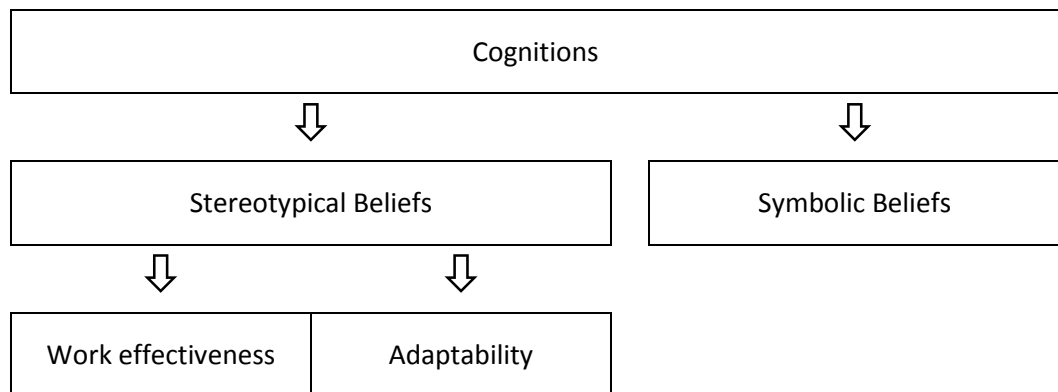
**2.1.1. Attitudes: The tripartite theory of prejudice.** Attitudes about groups (*prejudices*) are defined as overall categorisations of groups along an evaluative dimension (e.g. favourable-unfavourable) (Zanna & Rempel, 1988). A central issue in prejudice theory focuses on the relation between these evaluations and the experience that underlies them. One common assumption is that prejudices result from beliefs that are held about a group of people. This assumption underlies the idea that stereotypes of groups cause prejudice, which is itself the psychological antecedent of discrimination. This perspective is known as the *unitary view of prejudice* or *unidimensional view of prejudice*. However, psychologists now usually adopt a broader perspective and recognise the importance of additional factors as

determinants of prejudice. In particular, past behaviours and affective (emotional) reactions to a group are also believed to be important (Esses, Haddock, & Zanna, 1993). This broader perspective, known as the *tripartite view of prejudice* or *multidimensional view of prejudice*, has become the dominant approach in psychology to understanding prejudice (Schneider, 2005). Formally, the tripartite view proposes that the process of evaluation is based on three components or classes of information: (a) cognitive information; (b) affective information; and (c) behavioural information. The three components of prejudice are described in more detail below. Although the components are empirically distinct, they are often directionally consistent so that positive feelings about a group are associated with positive beliefs about the group and positive past experiences with them (Breckler, 1984; Zanna & Rempel, 1988).

**2.1.1.1. The cognitive component of prejudice.** The cognitive component of prejudice incorporates beliefs or thoughts about a group. Haddock and Zanna (1998) have suggested that there are two categories of beliefs within this component (see figure 4). The first category of belief is known as *stereotypical beliefs* or *feature-based beliefs* and relates to characteristics attributed to typical members of a group. For example, older workers are often stereotyped as being resistant to change and slow in judgement, having a low physical capacity, having low potential for development, and being poor financial investments for employers (e.g. Finkelstein, Higgins, & Clancy, 2000; Gibson, Zerbe, & Franken, 1993; P. Taylor & Walker, 1998). It is now understood that stereotypical beliefs about groups are usually not entirely negative (or positive), but contain a mix of positive and negative elements (Fiske, Cuddy, Glick, & Xu, 2002). Accordingly, older workers are often believed to have good interpersonal skills, and are perceived as experienced, conscientious, reliable and



loyal (Finkelstein, Higgins, & Clancy, 2000; Warr & Pennington, 1993). Until recently, stereotypical beliefs were viewed as being isomorphic with the cognitive component of prejudice, and stereotypes were the predominant focus of research on workplace age bias (Finkelstein & Farrell, 2007).



*Figure 4.* Hypothesised structure of the cognitive component of prejudice against older workers.

A large amount of research suggests that stereotypical beliefs form along two principal dimensions (Abele, Cuddy, Judd, & Yzerbyt, 2008). These two dimensions have been given different labels in different areas of research. For example, Fiske, Cuddy, Glick and Xu (2002) labelled these dimensions “warmth” and “competence” in relation to perceptions of groups in the general population. The warmth dimension is characterised by positive traits such as friendliness, honesty, and being good-natured, and by negative traits such as being deceitful, cold, and unreliable. The competence dimension is characterised by positive traits such as assertiveness, ambitiousness and intelligence, and by negative traits such as inefficiency, indecisiveness, passiveness, and laziness (Abele et al., 2008). A two-dimensional factorial structure was also described by Warr and Pennington (1993) with specific reference to stereotypical beliefs about older workers. They labelled the dimensions

along which older workers are stereotyped as “work effectiveness” and “adaptability”. Work effectiveness relates to traits such as conscientiousness, reliability, loyalty and interpersonal skills, while adaptability relates to traits such as the ability to grasp new ideas, and adaptability to new technology and change. This factorial structure has been confirmed by numerous subsequent empirical studies on perceptions of older workers across various countries and cultures (e.g. Chiu, Chan, Snape, & Redman, 2001; Redman & Snape, 2002; D. Smith, 1997). However, the work effectiveness/adaptability classification of work-related stereotypes was devised somewhat independently from the competence/warmth framework of fundamental dimensions of social judgements. It is unclear how the two classifications correspond. It seems likely that both work effectiveness and adaptability are aspects of the competence dimension, as both relate to agency (i.e. competence) rather than interpersonal characteristics (i.e. warmth). Little is known about the possible influence of beliefs relating to warmth on bias towards older workers.

Research now suggests that cognitions about groups may not be derived solely from stereotypical beliefs. Haddock and Zanna (1998a) hypothesised that more general, abstract beliefs are also an important and separate part of the cognitive component of attitudes. This second category of belief is known as *symbolic beliefs* or *value-based beliefs* and relates to whether an out-group violates or promotes the attainment of cherished values, customs and traditions. To date, there has been no research on the influence of value-based beliefs on bias against older workers. Therefore, it is not known if older workers are perceived to violate or promote certain values, customs or traditions or whether value-congruence or incongruence between age groups is an important factor in workplace age bias. This may be because it is more difficult to ascribe symbolic beliefs to subjectively defined

outgroups such as older people than for more clearly defined outgroups like ethnic, cultural or religious groups.

**2.1.1.2. The behavioural component of prejudice.** The behavioural component of prejudice relates to past behaviours and behavioural intentions toward a group of people. Bem (1972) argued that attitudes may be inferred from behaviour and its circumstances, particularly when initial evaluations are weak or ambiguous. Behaviour towards an individual that is inferred from their group membership is known as *unfair discrimination* (or often simply *discrimination*). Age discrimination has been the main focus of workplace age bias research, specifically in relation to employment decisions such as selection, training and promotion. Age stereotypes are often tacitly assumed to be the main antecedent of age discrimination (e.g. Redman & Snape, 2002; P. E. Taylor & Walker, 1994; Warr & Pennington, 1993). However, the cognitive and behavioural components of prejudice are often only modestly correlated (Ajzen & Fishbein, 2005; Gardner, Wonnacott, & Taylor, 1968). Therefore, limiting the explanation of age bias to stereotyping alone provides only a partial account, and could obscure our understanding of what can be done to reduce age bias (Finkelstein & Farrell, 2007). Moreover, discrimination against older workers in employment-related decisions is not the only insidious consequence of age bias. Discrimination against older workers may manifest as age-related harassment or bullying, and older workers may be marginalised or excluded from social networks, which are important but underresearched topics (McCann & Giles, 2002).

**2.1.1.3. The affective component of prejudice.** The affective component of prejudice relates to the feelings or emotions that are associated with a group of

people. This is the least consistently conceptualised or researched component of prejudice in psychological research (Finkelstein & Farrell, 2007). Some researchers believe that, rather than being a component of prejudice, prejudice is itself an affective evaluation (e.g. E. R. Smith, 1993). Other researchers believe that the affective component of prejudice actually refers to particular feelings that a group elicits within the individual (e.g. Haddock, Zanna, & Esses, 1993). Therefore, when talking of prejudice, researchers may be referring to an overall evaluation encompassing thoughts, feelings and behaviours, or they may be referring specifically to affect (Fiske, 2004b). This lack of consistency in defining affect, and the exclusion of affective measures in previous research on workplace age bias suggests that research to date may not have fully considered the contribution of affective information to age bias. Moreover, affective information is often based on direct experience (e.g. contact with group members) in contrast to cognitive information that can often be based on indirect experience (e.g. cultural knowledge). It has been hypothesised that direct experience is more salient than indirect experience and is more likely to influence attitudes (Fazio, Powell, & Herr, 1983). According to this logic, affect should play an important role in understanding prejudices, perhaps even more so than cognition. This hypothesis has subsequently been confirmed by empirical research (e.g. Stangor, Sullivan, & Ford, 1991). Moreover, research suggests that stereotypical beliefs of a group may serve primarily to justify existing negative affect (e.g. Zawadski, 1948). Therefore, negative stereotypes may actually be consequences rather than causes of negative affect toward a group.

Reducing workplace age bias may help to improve the working lives of older workers and improve the employment rate of older adults. The tripartite view provides a rich framework for understanding bias against older workers and posits

that prejudice has multiple determinants. Some determinants of workplace age bias are well researched (e.g. stereotypical beliefs), and other determinants have been neglected in comparison (e.g. value-based beliefs and affective information). For this reason, future research on age bias in the workplace should recognise the contribution of multiple sources of information in determining prejudice.

**2.1.2. Behaviours: Discrimination against older workers.** The mental life of the individual is a private, hermetic domain. Prejudices reside in this domain and, for the most part, are harmless internal evaluations of social groups. It is only when thoughts, feelings, and intentions to behave are translated into action (or inaction) that prejudices can be damaging to other people (Fiske, 2004a). Therefore, behaviours have been described as the most important and interesting consequence of prejudice (Schneider, 2005). Discrimination is the behavioural consequence of prejudice (E. R. Smith, 1993). In a general sense, discrimination refers simply to the action of perceiving, noting or making a distinction or difference between things (Discrimination, N.D.). Pasupathi and Löckenhoff (2004) describe two further meanings of the term discrimination with specific reference to age bias. The first, *age-differentiated behaviour*, refers to behaviour that differs as a function of the age of the target person. The second, *ageist behaviour*, is a subset of age-differentiated behaviour, and is caused by a negative attitude about older adults or ageing or has a clear harmful impact on older adults. UK anti-age discrimination legislation (The Employment Equality (Age) Regulations 2006) relates to age-differentiated behaviour and ageist behaviour. Age-differentiated behaviour in employment and vocational training is allowed by law where objective justification can be provided for the differential treatment of individuals on the basis of age. However, ageist behaviour in employment and vocational training is prohibited by law where there is no objective

justification for so doing; that is, where the justification for the differential treatment of individuals is based on subjective information that is inferred about an individual because of their age group membership. In common language, however, the term “age discrimination” almost always refers specifically to ageist behaviour rather than age-differentiating behaviour. It is important to note that age discrimination is not unique to older individuals. In principle, individuals of any age may be unfairly treated because of their age. Nevertheless, older individuals are the most common target of age discrimination, and the most common focus of workplace age bias research. For brevity, age discrimination refers here specifically to ageist behaviour against older people, as defined by Pasupathi and Löckenhoff (2004).

Age discrimination in employment is a varied and complex phenomenon. It may be accidental or intentional, direct or indirect, and it may operate with or without conscious awareness of the discriminating person (Hedge et al., 2006; Levy & Banaji, 2004). *Access discrimination* occurs when employers discriminate against older workers to prevent their employment or to impede their training or advancement during employment (Perry, Hendricks, & Broadbent, 2000). *Treatment discrimination* occurs when older individuals are harassed, victimised, bullied, or socially excluded because of their age, and these discriminatory actions can take one or more of a large number of forms (Perry et al., 2000). Research rarely distinguishes between these two types of discrimination. However, it is possible that these different behaviours have different motivations and are informed by different types of information. Indeed, one’s attitude towards older workers may be a separate psychological structure from one’s attitude towards the employment of older workers. To date, these hypotheses have not been tested empirically.

Fiske (2004a) suggested that there are two fundamental categories of age bias (*subtle bias* and *blatant bias*) that are driven by different innate motives. Subtle biases may be driven by the motive to *understand* (i.e. to make sense of the world using cognitive heuristics) or the motive to *enhance oneself* (i.e. the need to have a positive view of the self). Blatant biases may be driven by other motives, such as the *desire for control* (i.e. to have a sense of control in one's life and to avoid potential threats) or *belonging* (i.e. the drive to feel a sense of being a part of a group and connected to other individuals). Much additional research is required to improve our understanding of the different types of age discrimination in the workplace and people's motivations for discriminating. However, the notion that different types of age discrimination may be driven by different motives in different people, or by combinations of motives within a single person, may help us better to understand discrimination against older individuals in the workplace.

Behaviours are the interface between the internal mental world of the individual and the external social environment. For this reason, discrimination is sometimes considered the most important factor by psychologists interested in prejudice. However, discrimination is a term with multiple common and technical meanings. Current theorising and research evidence suggests that there are a variety of motives for age discrimination, and that people discriminate against others in a variety of ways. For example, a situation where an older worker is refused training opportunities that would be given to a younger worker and a situation where an older worker is stigmatised and verbally denigrated because of his or her age are both examples of age-related discrimination. However, these examples also have important differences. If age discrimination in the workplace is to be reduced, it will be important to understand such differences. Aggregations of research evidence

often do not facilitate this aim as they tend to focus on providing generalised information about prejudice against older workers rather than delineating divergent classes of discrimination. Moreover, just as people do not always view the elderly as a homogenous group of people (e.g. Hummert, Gartska, Shaner, & Strahm, 1994) people may not view older workers as a homogenous group. Prejudice against one older worker may be different from prejudice against another, and an individual older worker may experience different types of discrimination in different circumstances.

### **2.1.3. Other factors associated with antipathy towards older workers.**

Thoughts, feelings and intentions to behave are not always converted into corresponding behaviours. People who express a prejudice in private may not discriminate against the target group in public (e.g. LaPiere, 1934). Research suggests that this inconsistency between prejudice and discrimination is due to a large number of factors that regulate behaviour and make discrimination more or less likely to occur. Finkelstein and Farrell (2007) describe three categories of factors that can influence whether age prejudice is translated into age discrimination in the workplace (see figure 5). The first category, *context*, relates to the situation in which the individual is located, ranging from narrow factors (*decision context*) through intermediate-level factors (*job context* and *organisational context*), to very broad factors (*national context* and *cultural context*). The second and third categories, which are described later, refer to specific characteristics of the decision maker (*the rater*) and the attitude object (*the target*).



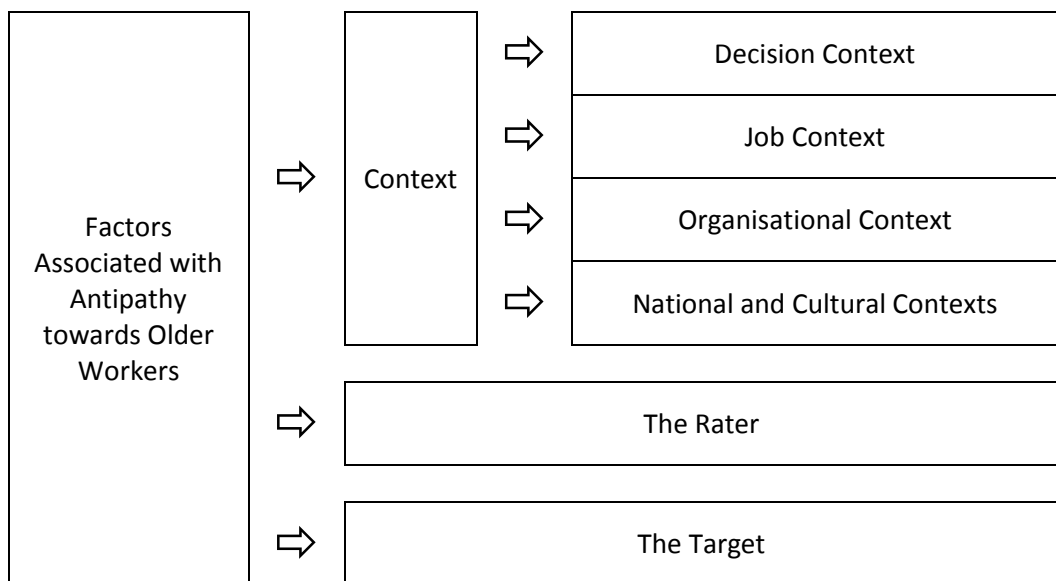


Figure 5. Factors that can influence whether age prejudice is translated into age discrimination in the workplace.

**2.1.3.1. Context.** Several characteristics of the context in which decisions are made may moderate discrimination against older workers. This section outlines four categories of these contextual characteristics.

*2.1.3.1.1. The decision context.* The amount of information available to a decision maker about a particular older worker may be important. Age discrimination is less likely when more information is provided about a target (Kite, Stockdale, Whitley Jr., & Johnson, 2005). When individuating information about an older person is provided, people are less likely to use category-based processing and more likely to individuate the target, reducing the likelihood of age discrimination (Fiske & Neuberg, 1990). However, Gordon and Arvey (2004) highlighted some limitations of research on individuating information about older workers. For example, people report more age bias when they have little individuating information compared with

none at all, possibly as this situation alerts individuals to the artificial nature of the context in which they are making a decision. Furthermore, laboratory studies may result in exaggerated reports of age discrimination compared to field studies.

Moreover, the vast majority of research on the effect of individuating information on age bias has been conducted in personnel decisions (i.e. access discrimination). Little research has been conducted on the effect of individuating information on everyday behaviour towards older workers (i.e. treatment discrimination) (Finkelstein & Farrell, 2007).

Second, research suggests that there is a difference in discrimination between decisions that are absolute compared to those that are relative. Evidence is conflicting as to whether older workers are rated more or less favourably when decisions about them are considered relative to younger workers (Finkelstein, Burke, & Raju, 1995; R. A. Gordon & Arvey, 2004). This ambiguity may highlight the impact that research design can have on conclusions about age discrimination at work. Moreover, it has been questioned whether real life decisions are ever truly absolute (Finkelstein & Farrell, 2007). Findings relating to absolute decisions about older workers may, therefore, have limited external validity. Third, accountability may affect the likelihood of age discrimination occurring. For example, Gordon and colleagues (1988) report that raters viewed younger interviewees as more attractive, having more positive traits, and more employable than older workers when they believed they would have to justify their decision to a group of personnel managers following the task. This counterintuitive evidence may be a result of the instruction that raters would have to justify the reasoning behind their decision, rather than having to account specifically for avoiding age bias in their decisions (Finkelstein & Farrell, 2007). Fourth, Perry and colleagues (1996) report that cognitive busyness also

moderates the effects of age prejudice on discrimination. Highly prejudiced raters were more positive about younger applicants but not older applicants during periods of high cognitive load. Less prejudiced raters were more positive about the older applicant. The authors suggest that people may have relied on their positive stereotypes during periods of high cognitive load, but it is not clear why negative stereotypes were not influential in this case.

*2.1.3.1.2. The job context.* Research has demonstrated that jobs can be age-typed. Jobs may be directly age-typed and be associated with a particular age group, or they may be indirectly age-typed in that specific characteristics are believed to be needed for the job and these features are associated with a particular age group (Perry & Finkelstein, 1999b). For example, jobs titles related to technology may be more often associated with younger workers than older workers. Moreover, seniority within an organisation may be age-typed, so that higher-status titles may be associated with a specific age (e.g. job titles containing the word “senior”) while lower-status titles may be associated with youth (e.g. job titles containing the word “assistant”). Certain individuals may be employed in a job that others perceive not to be appropriate for their age group, or may be at a level of seniority not usually associated with their age group. Such discrepancies may form the basis for unfavourable presumptions about the individual. It is possible that an unfavourable discrepancy between an individual’s age and the age-type of their job could be perceived as being due to dispositional factors rather than situational factors. From this unfavourable starting point, additional unwarranted negative attributions could be made about the individual because of his or her age. In this way, job context could be an important determinant of age discrimination. However, there is little discussion in the research literature of the possible mechanisms by which age-typing

of jobs could result in discrimination against older workers. Moreover, there is little direct evidence of a link between age-typing of jobs and age discrimination overall (Perry & Finkelstein, 1999a).

*2.1.3.1.3. The organisational context.* Perry (1994) argued the need for consideration of the impact of organisational factors on age discrimination. The structures, values and technologies of an organisation may impact on the age-typing of jobs, the activation of age stereotypes of people and jobs, and the ability for these matches to be used in decision making (Perry & Finkelstein, 1999b). Organisational norms may develop about what ages are appropriate for different positions and these may affect individuals' performance ratings (Lawrence, 1988). For example, a high technology company permeated with messages of speed and change may support expectations that young people will rise quickly to the top (Finkelstein & Farrell, 2007). By extension, associations with older age will be contrary to such an organisational culture, and may explain bias against older workers. Communication in the workplace may also have a significant impact on the organisational culture that develops with respect to age (McCann & Giles, 2002). If ageist expressions become part of acceptable discourse, they can become a normative part of work life and may influence employees' age norms. Other organisational variables that may also be related to employees' beliefs about older workers include the average age of employees in the organisation, the education level of employees, the size of the organisation, and the presence or absence of an ageism policy (Chiu et al., 2001; Remery, Henkens, Schippers, & Ekamper, 2003).

Intergroup contact has been a popular focus for researchers investigating factors that influence prejudice between groups. Research has consistently found

that increased contact with a group reduces prejudice towards that group across a broad range of outgroup targets and contact settings (Pettigrew, 1998). Although research usually focuses on community samples and racial or ethnic outgroups, research has been conducted in work and organisational settings and on age outgroups (Pettigrew & Tropp, 2006). However, research has rarely focused simultaneously on age outgroups in work and organisational settings. Studies that have attempted to investigate the relationship between contact with older workers and prejudice against older workers often report nonsignificant associations (e.g. Redman & Snape, 2002). However, intergroup contact is a complex phenomenon, and such research may have failed to yield significant associations between contact and prejudice due to overly simplistic measures of intergroup contact (Islam & Hewstone, 1993). For example, organisational studies examining contact with older workers rarely distinguish between quality and quantity of contact, or voluntary and involuntary contact both inside and outside of the workplace.

*2.1.3.1.4. National and cultural context.* Research on the impact of contextual factors on age bias at work is most sparse in relation to the broadest contextual factors (Finkelstein & Farrell, 2007). In some countries it is not illegal to use age as a factor in employment decisions, and to mention age preferences in job advertisements (Ghosheh, 2008). Therefore, it is logical to conjecture that patterns of age discrimination will differ between countries with divergent laws. Moreover, the status of older people in the wider culture may have an impact on age bias against older workers. For example, traditional Eastern cultures often have high respect for elders compared to Western cultures (Palmore, 1975). With this fact in mind, it is logical that age discrimination in the workplace will differ as a function of wider culture. It is curious to note, therefore, that research suggests bias against older

workers has a similar form and frequency in both Western and Eastern cultures (Chiu et al., 2001; Cuddy, Norton, & Fiske, 2005).

**2.1.3.2. The rater.** When it comes to providing evaluations of people belonging to specified age groups, the age of the person doing the evaluating may be a significant determinant of how they will respond. Schneider (2005) suggests three possible accounts why rater age may influence responses. First, individuals may prefer people from their own age group (*ethnocentrism*). Second, individuals of a certain age may provide higher or lower ratings of other people, independent of the age of the target (*age-relates differences in response behaviour*). Third, individuals from one age group may prefer targets from another age group (the *age-favourability bias*). Contradicting research evidence exists to support each of these alternative perspectives in different situations (e.g. Finkelstein et al., 1995; Jackson & Sullivan, 1988), although much of the research does not have a workplace focus. Research also suggests that an individual's employment status and level may be important determinants of age discrimination. For example, older hourly-workers gave more positive ratings of older employees than younger hourly-workers, but this was not true for supervisors (Chiu et al., 2001; Hassell & Perrewe, 1995). Importantly, much of the existing research has employed university students. Student samples differ from working samples in many important ways, and it is logical that students' evaluations may differ from workers' evaluations. Evidence suggests that students (who are often young and have little full-time work experience) report more negative beliefs about older workers than do managers (R. A. Gordon & Arvey, 2004; Lyon & Pollard, 1997). Other evidence suggests the relationship between employment status and views of older workers is more complex. For example, Singer and Sewell (1989) argued that students preferred an older worker for a high status job and managers

preferred a younger worker for a low status job, and this pattern was reversed when positive information about older workers was supplied. Finally, some evidence exists to suggest that females have more positive views about older workers than males (Chiu et al., 2001), and that white students have more positive age stereotypes than black students (Crew, 1984).

**2.1.3.3. The target.** Characteristics of the person being evaluated have also been found to influence whether age discrimination occurs. One important characteristic is the age of the target. There has been much variation in terms of the specified age of older workers in research, ranging from as young as 40 years of age (e.g. Warr & Pennington, 1993) to as old as 63 years of age and above (e.g. Rupp, Vodanovich, & Crede, 2006). As Bytheway (2005) has noted, it is important for researchers to consider how the way that they define *older* could affect the results and conclusions of their research. In addition, research suggests there may be important interactions between age and job-related information. For example, among highly competent job applicants, younger applicants are preferred to older applicants (Haefner, 1977). Among moderately competent job applicants, Lee and Clemons (1985) report, more favourable decisions were made about an older applicant than a younger applicant. In the same study, when no job-related information was supplied the younger applicant was favoured over the older applicant. Other research suggests that a target's gender and race may also interact with age to influence the likelihood of an individual being a target for discrimination (Finkelstein & Farrell, 2007; Kite et al., 2005).

**2.1.4. Section conclusions.** Conceptualising age prejudice as an attitude provides a framework on which to base age bias theory and research (see figure 6).

The tripartite view is presently the dominant approach in psychology to understanding attitudes. However, research on workplace age bias often neglects the influence of some components of attitudes. Discrimination has legitimately been the main outcome variable investigated in workplace age bias research. However, discrimination is a multifaceted phenomenon, and specific aspects of discrimination have been the predominant focus of research (e.g. access discrimination) while other aspects are less well researched (e.g. treatment discrimination). In addition, a very large number of factors are believed to affect whether age prejudice is translated into age discrimination. Some of these factors are mentioned above, but it is likely that numerous other factors are also related, for example mood (Forgas & Fielder, 1996).

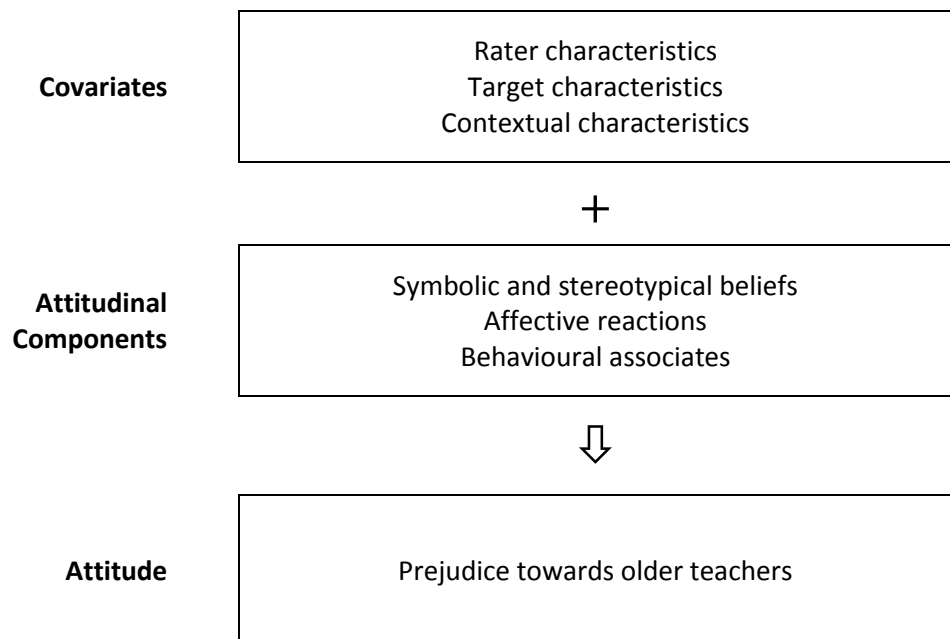


Figure 6. Framework for investigating workplace age prejudice.



The research literature on workplace age bias rests on certain assumptions and traditions. For example, the explanation for age discrimination is that age discrimination is the behavioural consequence of situational and attitudinal determinants. This explanation does not provide an answer to the question of whence age-biased attitudes originate. Attempts have been made to provide an explanation of age bias at this level, for example by invoking *Terror Management Theory* (e.g. Greenberg, Schimel, & Martens, 2004). Terror management theory was developed to explain how humans cope with the knowledge of our own vulnerability and mortality. Greenberg and colleagues reasoned that individuals' faith in their cultural worldviews provides them with psychological equanimity in a threatening world where death is the only certainty. Moreover, older people represent the threat to the young of their own fate, along with the prospects of diminishing beauty, health and sensation. However, these explanations remain largely speculative and untested. Moreover, it is not clear how applicable are theories of antipathy towards the elderly in general to antipathy towards older workers specifically.

Another major issue with age bias research worth noting was recently highlighted by Finkelstein and Farrell (2007). Participants involved in workplace age bias research are usually asked to provide responses about an "older" target. Exactly how this task is construed will differ between participants. Some people may construe the instruction as relating to older people (i.e. not confined to the working population); others may construe it as relating only to older workers, while others may base their responses on their attitude towards a specific individual who they consider to be an older worker. Even when research instructions are very clear, it is not possible to ensure that participants respond in relation to the desired target rather than one of these (or other) alternatives. Nevertheless, Griffiths (1999a)

argued that researchers should not abandon existing research approaches or devalue existing research evidence just because research methods have inherent limitations. Organisational research is fraught with difficulty and it may be unrealistic to expect research to explain in full people's attitudes and behaviour. Finally, organisational psychology has focused on the pragmatic ontological orientation and has developed somewhat autonomously from laboratory psychology (Schönplflug, 1993). Therefore, organisational research may not have benefited from some of the theoretical and methodological advances made in attitude research in laboratory psychology (e.g. the tripartite view of attitudes). Despite the pragmatic imperative, organisational research on prejudice should not employ outdated theories and methods when they have been superseded by contemporary alternatives.

## **2.2. Age Bias in the Teaching Profession**

The teaching workforce in the UK is a subset of the working population at large and is affected by population ageing and declining workforce participation like other industries. Amidst changing employment patterns, the role of older teachers is becoming more important (see Section 2.2.1.). Nevertheless, and despite the recent introduction of anti-age discrimination legislation, evidence suggests that a bias against older teachers persists (see Section 2.2.2). However, research on age bias in the teaching profession is sparse. In light of this research gap, several key objectives for research on age bias in teaching are developed for empirical investigation (see Section 2.2.3.).

**2.2.1. Employment of older teachers.** There is considerable policy interest in the role of older teachers in the UK. The National Union of Teachers (NUT) argues that older teachers play an invaluable role in the teaching workforce and make

significant contributions to the schools in which they work (National Union of Teachers, 2001). Moreover, the NUT argues that it is important to the educational development of children that all age groups are properly represented within the teaching profession so that children can relate to adults of all ages and benefit from a diversity of knowledge and experience. Furthermore, the contributions of older teachers are becoming increasingly important in light of sustained teacher shortages, which have become particularly apparent in the last decade (Clare, 2001; Gould, 2008). For these reasons, the NUT has for many years promoted the retention of older teachers and encouraged older adults to enter the teaching profession for the first time. However, despite the fact that teachers are presently able to work up to the age of 75, less than 0.2 per cent of teachers working in the UK are aged 65 or over (United Kingdom Parliament, 2008). As in the working population at large, bias against older individuals in the teaching profession may be a major cause for the low level of employment of older teachers.

For many years, teachers were encouraged to take early retirement. Older teachers were viewed as more expensive than their younger counterparts, it was reasoned, so it made economic sense to employ cheaper, younger teachers in their place (National Union of Teachers, 2001). However, the outflow of a large number of older teachers resulted in teacher shortages, especially in London and the South East (Redman & Snape, 2002). In an attempt to encourage more prudent retirement decisions, the funding of premature retirements was shifted away from the collective responsibility of employers, to the sole responsibility of individual employers (Redman & Snape, 2002). Nevertheless, premature retirement among teachers remains high and is continuing to rise (Blair, 2007), costing taxpayers in the region of £2 billion per year in England alone (National Statistics, 2007a). Although no data is

available on the contribution of age discrimination to early retirements among UK teachers, many teachers may retire prematurely as a direct or indirect consequence of age discrimination.

Teacher shortages are exacerbated by the large number of people who qualify as teachers but who choose not to take up employment as teachers. Not surprisingly, these groups have been seen as a source of potential employees, and incentives have been offered to attract them into teaching. A large number of these individuals are in their 40s, 50s and 60s. In total, there are 270,000 qualified and previously active teachers under the age of 60 who are classified as “out of service”, and 91,000 qualified teachers under the age of 60 who have never worked as a teacher (National Statistics, 2007b). Efforts to attract these individuals into teaching, and to attract experienced people from other professions into teaching for the first time, may be hindered by the perception of widespread age discrimination in schools (Milne, 2008). Age-bias in the teaching profession has been detrimental not only to older teachers themselves, but also to people considering a career change into teaching, as well as to pupils, and to the taxpayers who fund the school system.

**2.2.2. Bias against older teachers.** There is considerable anecdotal and empirical evidence of age bias in teaching, which may undermine attempts to attract and retain older teachers. According to the NUT, mature entrants to the teaching profession face difficulties in securing employment and are perceived as being more expensive than their younger counterparts (National Union of Teachers, 2001). Myriad newspaper articles provide anecdotal evidence of a recruitment bias against older teachers (e.g. Graham, 2006; Holmes, 2001; Leaback, 2005). Empirical research on recruitment bias against older teachers supports the general trend suggested by

the anecdotal evidence, with older teachers being less favoured, regardless of their teaching experience, professional qualifications and gender (e.g. Young, 1982; Young & McMurry, 1986). However, the empirical evidence on recruitment bias against older teachers is sparse, dated, and tends to focus on American rather than UK samples. Nevertheless, a convergence of anecdotal and empirical evidence suggests that age discrimination may continue to be a significant problem for the teaching profession (Milne, 2008).

Much of the concern about age bias against older teachers has focused on access discrimination. Anecdotal reports and empirical research have emphasised the biased actions of decision-makers involved in recruitment and career development decisions. There is some evidence that older teachers are perceived as less able to cope with the nature and volume of educational change, to accommodate to new managerial culture in schools, and have been leaned on by managers to leave the profession (Troman, 1996). There is also evidence of negative beliefs about older teachers, with older teachers perceived as being less up-to-date in their subject knowledge, less willing to learn, to be trained or to accept new technology, and less willing to engage in extracurricular activities (Redman & Snape, 2002). To the extent that these perceptions are representative of many decision-makers' thoughts about older teachers, these beliefs may provide a psychological corollary of age discrimination against older teachers. However, high quality research on age bias in the teaching profession remains sparse. Research that has been conducted is often atheoretical, lacks external validity, or oversimplifies concepts like prejudice and discrimination. For example, Troman's (1996) ethnographic research did not attempt to make any explanatory conclusions and was primarily a descriptive endeavour. On the other hand, research conducted by Young and colleagues (Young, 1982; Young &

McMurry, 1986) relied on simulated teacher selection interviews. Redman and Snape's (2002) survey of teachers' stereotypical beliefs and attitudes towards teachers over the age of 50 neglected to examine affective and behavioural components of prejudice, and did not properly distinguish between important concepts like discrimination and prejudice. It was also unclear as to whether the latter study was concerned with access or treatment discrimination, and it was notable that it focused on perceptions of older teachers' competence rather than warmth (see Abele et al., 2008).

**2.2.3. Theoretical research objectives.** In spite of the significance of age discrimination in the teaching profession, there has been little systematic research on attitudes towards older teachers and older teachers' employment. The present research addresses this research gap by examining teachers' attitudes towards older teachers in general and towards older teachers' employment specifically. The relationships are examined among these attitudes and their psychological corollaries. In addition, demographic and employment characteristics that may be related to age bias are recorded and their contribution to reported age bias examined. The research model that underlies this thesis (figure 7) is derived from the research literature discussed in previous sections, and is analogous to the theoretical framework for investigating workplace age bias outlined in figure 6. The research objectives relating to attitude theory are derived from the research model.

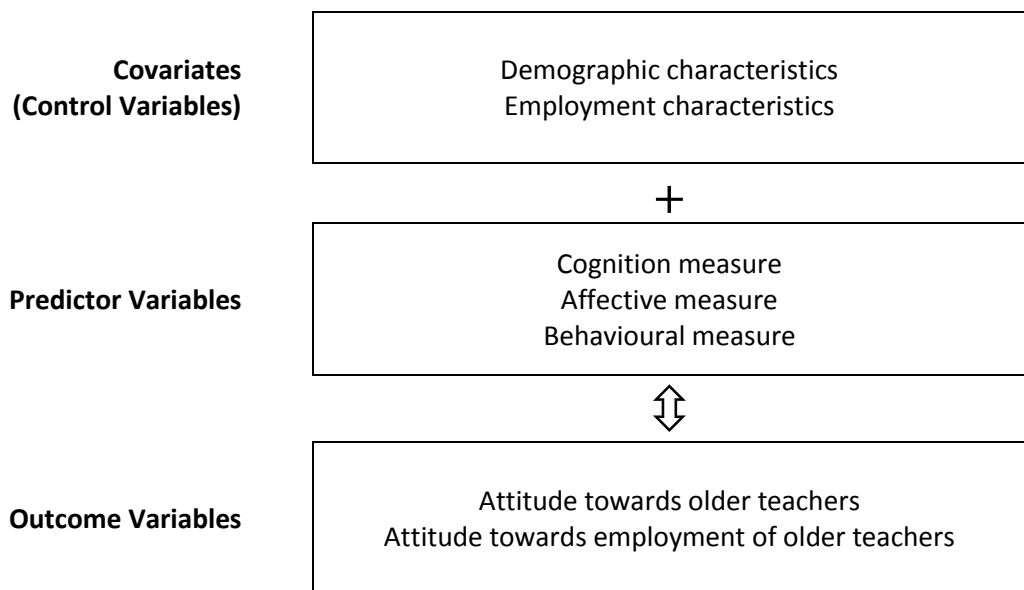


Figure 7. Research model.

*Note.* Double-headed arrow between predictor and outcome variables as causation of the outcome variables cannot be inferred from their correlation with predictor variables.

The research objectives regarding the research model are as follows:

- Research objective one (covariates): To examine demographic and employment-related variables, and their associations with attitudinal components (predictor variables) and attitudes towards older teachers and their employment (outcome variables).
- Research objective two (predictor variables): To examine the emotions, beliefs and behaviours commonly associated with older teachers. Within this objective, a specific aim was to examine whether beliefs about older teachers consist of work effectiveness and adaptability dimensions. Another aim was to examine the relationships between reported beliefs, emotions and behaviours associated with older teachers.

- Research objective three (outcome variables): To examine participants' reported attitudes toward older teachers and towards older the employment of older teachers to discover if any explicit bias was reported against older teachers or the employment of older teachers.
- Research objective four (validity of the research model): To construct a statistical model of the covariates, predictor variables and outcome variables to provide insight into the relationships between the measured variables.



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## Chapter Two Summary

This chapter discussed the research literature on the nature of age bias against older workers, before focusing on these issues in a specific occupation. The chapter was divided into two sections, which discussed (a) the psychological literature on age-related prejudice and discrimination, and (b) why age bias against older workers in the teaching profession is an important area of research. First, a psychological framework for understanding bias against older workers was advanced. Then the chapter focused on research on age bias in the teaching profession and current research gaps, and presented objectives for age bias research on teachers. The next chapter focuses on attitude research methodology, and discusses alternative empirical approaches, research methods, measurement strategies, and modes of research administration.

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### **3. Attitude Research Methodology**

This chapter discusses research methods that have been used to investigate intergroup prejudice. The structure of the chapter is displayed in figure 8. First, current empirical approaches towards prejudice research are evaluated (Section 3.1.). Then, the direct approach to prejudice research and the research methods associated with this approach are discussed (Section 3.2.). On the basis of this discussion the most appropriate and practical research method for this thesis is delineated. The rationale for the choice of this method is stated formally in Section 3.2.4.1.6. Finally, research gaps relating to attitude research methodology are identified and additional methodological research objectives are developed (Section 3.5).

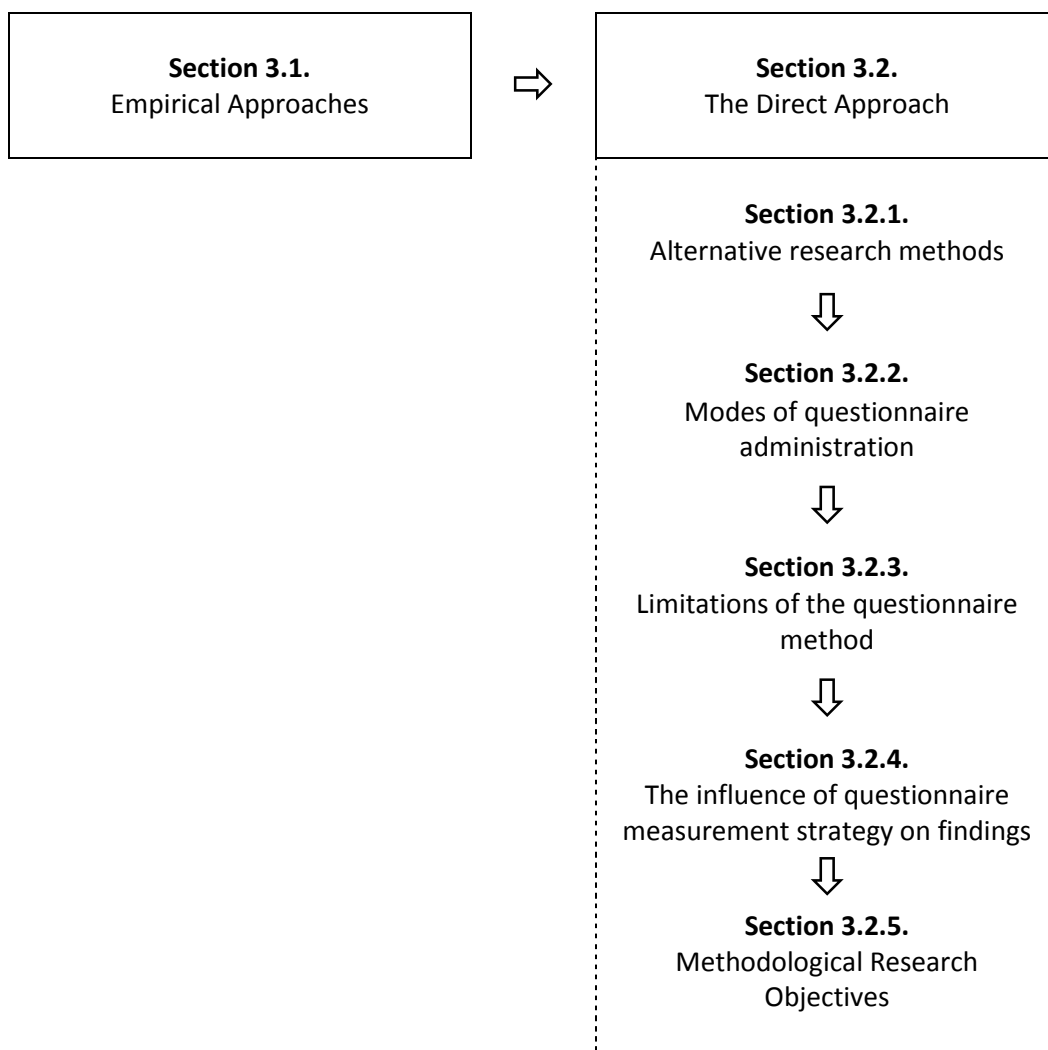


Figure 8. Chapter three structure.

### 3.1. Empirical Approaches

There are two main empirical approaches in the psychological study of prejudice (De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009; Schneider, 2005) (see Figure 9). Both approaches are predicated on a philosophical view known as *scientific realism*, which posits that empirical data should be viewed as an approximation of nonobservable entities that exist independent of the research situation (Cacioppo, Semin, & Berntson, 2004; De Houwer et al., 2009; Rescher,

2005). In other words, measured prejudice in empirical research is viewed as a reflection (if only transient or labile) of an attitude held by the research participant. On the basis of this premise, generalisations can be made about empirical findings from research samples to populations with estimated error margins (Tabachnick & Fidell, 2007).

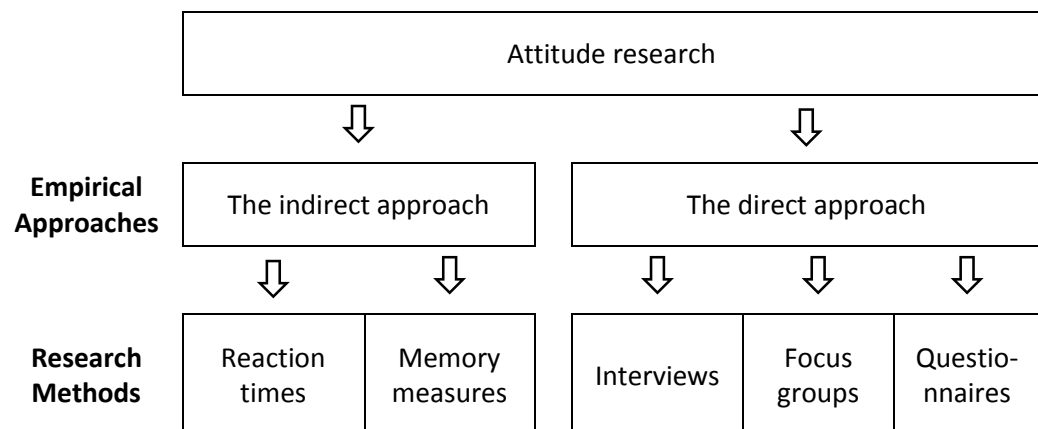


Figure 9. Empirical approaches and research methods in attitude research.

The first empirical approach to prejudice research, the *indirect approach*, assesses prejudice by recording participants' nonconscious responses to a stimulus of (or related to) a particular group. Typically, research involving indirect measures of prejudice takes place under laboratory conditions and is overseen by the researcher. Participants perform tasks such as word associations (Fazio, Jackson, Dunton, & Williams, 1995), lexical decisions (Wittenbrink, Judd, & Park, 1997), Stroop-type decision tasks (Locke, MacLeod, & Walker, 1994), or the implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998) and the speed participants complete the task is recorded. Faster times are believed to be indicative of closer associations between the target and feature (Schneider, 2005). Alternatively, participants may be

primed with stimuli relating to groups, and their ability to recall the stimuli tested explicitly (e.g. using free recall) or implicitly (e.g. using word fragment completion tasks) (e.g. Gilbert & Hixon, 1991; Perdue & Gurtman, 1990). Successful recall is believed to be associated with a close association of group and feature (Schneider, 2005). Many other techniques for measuring prejudice indirectly have been developed, including the use of physiological measures like facial electromyography (Vanman, Paul, Ito, & Miller, 1997), functional magnetic resonance imagery (Phelps et al., 1997), cardiovascular reactivity (Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001) and event-related brain potentials (Cacioppo, Crites, Berntson, & Coles, 1993). However, the use of physiological measures is much less common than reaction times and memory measures (Fazio & Olson, 2003). In all types of indirect prejudice measurement participants are usually unaware that prejudice is being measured, may or may not have conscious access to the prejudice, and usually have little or no control over the measurement outcome (De Houwer, 2005). What all indirect measurement techniques have in common is that they seek to provide an estimate of participants' prejudice without having to ask the participant directly for a verbal report.

Indirect methods for measuring prejudice are now widely used in laboratory-based psychological research. The nature of indirect methods means that participants have limited conscious control over their responses, which minimises the impact of self presentation and social desirability effects. However, questions have been raised about the use of indirect measures, particularly in organisational research. For most indirect measures, it is not entirely clear what they measure or what processes produce the behaviour (De Houwer et al., 2009). The test-retest reliability of indirect measures based priming is moderate at around  $r=.50$  (Kawakami

& Dovidio, 2001; Schneider, 2005), and the reliability of the IAT is probably around the same level (Greenwald et al., 2002). Moreover, the relationship between various indirect methods for measuring prejudice tends to be fairly low (Cunningham, Preacher, & Banaji, 2001). Few studies have examined the relationship between indirect methods for measuring prejudice and behavioural measures of discrimination. In one study, the IAT correlated modestly with behavioural measures toward the researcher, while direct methods for measuring prejudice did not correlate with the behavioural measures (McConnell & Leibold, 2001). In another study involving attitudes toward types of fruit and candy bars, direct methods for measuring attitudes predicted choices better than the IAT (Karpinski & Hilton, 2001). It has been suggested that indirect methods for measuring prejudice may best predict unconscious prejudice and automatic discrimination that are largely free of control (Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997). Correspondingly, more explicit methods for measuring prejudice may best predict deliberately chosen behaviours (Dovidio, Kawakami, & Gaertner, 2002). Overall, probably the most fundamental problem in using indirect methods for measuring prejudice relates to their practicality in different contexts. Indirect methods for measuring prejudice are cumbersome, and usually involve participants taking part in laboratory-based experiments (Schneider, 2005). Since the researcher and specialist apparatus are typically required at each testing session, indirect methods for measuring prejudice are usually considered too costly and awkward for use in large scale organisational research on prejudice.

The second empirical approach to prejudice research, the *direct approach*, assesses prejudice by explicitly asking research participants about their evaluation of a given group and recording their written or spoken responses. Typical direct

research methods include focus groups, interviews and questionnaires. Participants are usually aware of the fact that prejudice is being measured, have conscious access to the prejudice, and have control over the measurement outcome (De Houwer, 2005). Direct methods for measuring prejudice are subject to a range of methodological limitations. For example, all direct methods for measuring prejudice are prone to error resulting from cognitive and motivational biases as they are reliant on participants' self reports. Another major shortcoming of many direct methods for measuring prejudice is that they are reactive, in the sense that they can put ideas into people's heads that may not have been there before (Ehlich & Rinehart, 1965). Participants may also feel obliged to provide a response even if they do not endorse that response strongly (or at all). Moreover participants may have a clear, accessible attitude about one particular group, while their attitude about another group may be ambiguous or nonexistent. In addition, direct methods for measuring prejudice assume that the content and nature of the prejudice are consciously accessible to the research participant, which contradicts a large amount of evidence on implicit activation of attitudes. Prejudices are also known to be labile, and attitudinal responses can be easily manipulated by altering the research context (Brown, 1995). Responses to measures that attempt to assess prejudice directly may be influenced by the wording of items, as well as the beliefs, emotions and behaviours that are made salient by the research situation. Moreover, different aspects or combinations of attitudes are likely to be important in determining behaviour in different circumstances. Clearly, the typical research situation is very different from natural interactions with target group members and this will impact on the external validity of research findings.

All direct methods for measuring prejudice are also prone to artefacts resulting from participants' self presentational concerns. Research on prejudice can be emotive or embarrassing and, therefore, is prone to socially desirable responding. This raises ethical issues for research, which are addressed in due course (see sections 4.4. and 5.4.). Social desirability effects may be particularly prevalent among student participants who are the default research population for many researchers; research suggests that students are more reluctant to make contentious judgements than members of the general population (Schneider, 2005). Clearly, it is not possible to know if nonprejudiced responses in direct prejudice research reflect no underlying prejudice on the part of the participant, or if the participant was unwilling to confess underlying prejudice, or if the research did not cause the participant to activate latent prejudices and respond accordingly. In an attempt to gauge the extent of socially desirable responding in prejudice research, social desirability scales have been developed (e.g. Crowne & Marlowe, 1960). Moreover, techniques have been developed to encourage participants to respond truthfully in spite of self-presentational concerns. For example, the *bogus pipeline technique* (Jones & Sigall, 1971) encourages honest responses to questioning by leading participants to believe that their responses are being monitored by a lie-detecting machine. However, such methods can be impractical to implement, and may affect the validity of the prejudice measure (Schneider, 2005).

Despite criticism from experimental psychologists (e.g. Cunningham et al., 2001; Fazio & Olson, 2003) direct methods for measuring prejudice possess a number of inherent methodological strengths. Direct methods do not restrict research to the experimental paradigm or the laboratory setting and, therefore, are well suited to the demands of organisational research (Griffiths, 1999a). Moreover, direct methods



such as questionnaires are often well suited to organisational research, where information needs to be collected from large, geographically dispersed samples (P. Edwards et al., 2002). Questionnaires have the added advantage of being practical and financially viable. For these reasons, the direct approach to prejudice research is most appropriate for the present research purposes.

### **3.2. The Direct Approach**

A wide range of alternative research methods exist within the direct approach to attitude measurement (see section 3.2.1.). In relation to the questionnaire method in particular, there are a number of alternative modes for distributing and collecting participants' responses, which each have characteristic strengths and weaknesses (see section 3.2.2.). In addition to the limitations inherent to specific modes of administration, the questionnaire research method also has more general limitations (see section 3.2.3.). One of these limitations is considered in detail in section 3.2.4.: How research participants provide responses to questionnaire items is contingent on the measurement strategy adopted by the researcher, and different measurement strategies may influence participants' responses in a particular direction. This has implications for the conclusions that are drawn from empirical research and the theories that are developed from empirical evidence. Specific research objectives were devised in relation to the measurement strategy limitation (see Section 3.2.5.).

**3.2.1. Alternative research methods.** There are several methods of data collection available to organisational researchers measuring prejudice directly, including focus groups, interviews and questionnaires (see Tashakkori & Teddlie, 2002). Focus groups can be difficult to assemble, require much sustained

involvement from the researcher, and are geographically localised in the sense that participants have to attend the session to take part in the research. Moreover, focus groups are not fully confidential or anonymous, which may inhibit participants from providing sensitive or personal information (Gibbs, 1997). These limitations are particularly significant in age bias research in the workplace, and explain why focus groups have not been more widely used in research on prejudice. The interview technique overcomes some of the limitations inherent in focus groups. For example, telephone interviews allow research to be conducted over a geographically dispersed area with relative ease (Fife-Schaw, 2006). Nevertheless, research involving interviews still requires direct contact between a researcher and participant, which may be impractical in large scale studies. Moreover, interview data may be affected by characteristics of the interviewer or the interview situation, and many interviewees may be reluctant to disclose information verbally to another person that they consider sensitive or embarrassing (Breakwell, 2006). These limitations have often precluded interviews from being more widely used in research on prejudice. The use of questionnaires can overcome many of the limitations of the other direct methods for measuring prejudice. Questionnaires are often simple, cheap and versatile. The cost advantage of questionnaires over other methods means that many more people can be sampled for a given budget, and postal and internet surveys mean that research is not geographically constrained (Fife-Schaw, 2006). Moreover, questionnaires can eliminate the contamination of research data as a result of interviewer effects, and can be made anonymous and confidential. These characteristics have made questionnaires the most frequent and preferred method in organisational prejudice research.

**3.2.2. Modes of questionnaire administration.** A range of methods exist for distributing questionnaires and for collecting participants' responses. Interviewer-administered questionnaires (IAQs) are usually administered in person or by telephone, and require direct contact between the researcher and participants throughout the data collection phase of research (with implications for the number of participants that can be sampled). Alternatively, self-administered questionnaires (SAQs) can be sent to a sample of individuals by post or email, or they may be distributed in person. There are advantages and disadvantages to IAQs and SAQs, and to the various modes of administration of both. However, SAQs are often preferred in organisational research as they allow the largest number of individuals to be sampled at the lowest cost. Anonymity is also more easily maintained using SAQs than IAQs. Moreover, relative to interviewer administration, self administration of questionnaires reduces respondents' unwillingness to report socially undesirable behaviours (Tourangeau, Rips, & Rasinski, 2000). Therefore, much of the debate in recent times has centred on the alternative methods for distributing and collecting SAQs. There has been a particular focus on the differences between online SAQs (i.e. email or web-based SAQs) versus traditional paper-and-pencil SAQs (Tourangeau et al., 2000). For example, research suggests that participants in online SAQ surveys and paper-and-pencil SAQ surveys are demographically different, and that respondents answer questions differently using online and paper-and-pencil methods (McDonald & Adam, 2003). Online SAQ surveys cost less on average than paper-and-pencil SAQ surveys, but the response rates tend to be higher in paper-and-pencil SAQ surveys (Beck & Kristensen, 2009; Dolnicar, Laesser, & Matus, 2009). Because of the potential response rate advantage, and so as not to exclude people without access to the internet, a paper-and-pencil SAQ survey was the preferred method of questionnaire administration in the present research.

**3.2.3. Limitations of the questionnaire method.** As a research method, questionnaires have limitations beyond those common to all direct methods for measuring prejudice. For example, since the wording of questionnaire items is predetermined and unalterable, researchers have to ensure that all items are readily understandable to their target population. Otherwise, participants may experience difficulty in interpreting the meaning of an item, which may lead to biased responses, refusal to answer a specific question (*item nonresponse*), or complete refusal to participate (*unit nonresponse*) (Tourangeau et al., 2000). In other direct methods for measuring prejudice, the researcher can spend additional time explaining their questions to ensure participants' understanding. Other problems with the questionnaire method include the fact that the data collected may be particularly prone to statistical artefacts resulting from research fatigue, contextual effects, item wording, response sets and various other response errors and biases (Tourangeau et al., 2000). Furthermore, a large number of factors are known to diminish questionnaire response rates (P. Edwards et al., 2002; P. J. Edwards et al., 2008). Therefore, it can be difficult to design a questionnaire to investigate a given research topic that is likely to obtain an adequate sample from the target population. As Griffiths (1999a) noted, this trade-off between internal and external validity has become a common theme in organisational research. Despite its limitations, the questionnaire is probably the most common research tool in the social sciences (Fife-Schaw, 2006). In spite of methodological weaknesses, the advantages of using the questionnaire to investigate prejudice make it the most appropriate research method for the present research.

**3.2.4. The influence of questionnaire measurement strategy on findings.** A major limitation of the questionnaire method for assessing attitudes is that the

response format provided on a questionnaire may influence the data yielded by the research. Many people have quite diverse and often conflicting views about groups of people, which means that reported attitudes can be very sensitive to conditions of measurement (Schneider, 2005). Within the attitude measurement literature, some researchers have focused on implications of measurement strategies used to assess attitudes and attitudinal corollaries like stereotypical beliefs (Gardner, Lalonde, Nero, & Young, 1988; Haddock & Zanna, 1998c; Twenge & Zucker, 1999). It has been argued that different aspects of attitudes and their determinants or corollaries are assessed by different measurement strategies, and even that completely different attitudinal processes are associated with particular measurement strategies (Eagly, Mladnic, & Otto, 1994). This point has been demonstrated experimentally. Gardner and colleagues (Gardner et al., 1988) investigated stereotypes about a major ethnic group in Canada, French Canadians, using three different procedures for assessing stereotypes: (a) unjustified generalisations (Brigham, 1971); (b) the stereotype differential (Gardner, Kirby, & Findlay, 1973); and (c) the diagnostic ratio (McCauley & Stitt, 1978). Item-level correlations between the three measures indicated that the items contributing to the different assessments were different. Each of the three assessment procedures had different stereotypic connotations (that the beliefs were consensual, were unjustified, or were relative to the average person in a society). As a result, Gardner and colleagues argued that different assessment procedures can tap different attitudinal aspects or processes, which may have a significant impact on the conclusions that are drawn from empirical research regarding prejudice.

**3.2.4.1. Alternative measurement strategies.** Within the direct approach to attitude research, there are various measurement strategies for assessing attitudes and attitudinal corollaries (Fabrigar, Krosnick, & MacDougall, 2005). Three popular

direct measurement strategies are: (a) free-responses; (b) attribute-checking; and (c) attribute-rating. These are discussed in sections 3.2.4.1.1 to 3.2.4.1.3. Hybrid approaches are discussed in section 3.2.4.1.4. The free-response method is an open-ended measurement strategy in the sense that participants are asked to evaluate a target; attribute-checking and attribute-rating are both closed-ended measurement strategies in the sense that participants are required to evaluate a target along the dimensions predetermined by the researcher (Haddock & Zanna, 1998c). Research suggests that the data yielded by closed-ended measures are likely to differ from the data yielded by open-ended measurement strategies (Haddock & Zanna, 1998c). For example, the breadth of data yielded by open-ended measurement strategies is likely to be larger than the breadth of data yielded by closed-ended measurement strategies (Eagly et al., 1994; Ehrlich & Rinehart, 1965; Esses et al., 1993; Haddock & Zanna, 1998c). Moreover, Gardner and colleagues (Gardner et al., 1988) suggest that features identified as being salient by one particular closed-ended measure of stereotypes differ from features identified as being salient by other closed-ended measures. Despite clear evidence on the influence of measurement strategy on research findings about attitudes, and by extension the conclusions that are drawn from these research findings, there have been surprisingly few direct attempts to compare different measurement strategies within a single research design (Schneider, 2005).

*3.2.4.1.1. Free-responses.* Free-responding is the simplest measurement strategy for assessing attitudes using SAQs (Schneider, 2005). The free-response technique asks participants which features they associate with a target group, and their unabridged responses are recorded in written form. It has been suggested that responses reported early and without much mental effort are the features that the

individual most strongly associated with the target (Schneider, 2005). However, this free-response approach to assessing attitudes is fraught with complications. For example, at least some parts of our attitudes are likely to be implicit and not accessible to introspection (Greenwald & Banaji, 1995). We may not be aware of some of the features we associate with a particular group, but these associations can be important determinants of our behaviour towards that group (Schneider, 2005). In addition, research suggests that participants can have associations that are strong and explicit but that are less likely to be reported due to cognitive or motivational biases (Tourangeau et al., 2000). Another limitation of the free-response technique relates to the data it yields, as free-responses can be difficult to interpret and analyse statistically. Moreover, free-responses alone do not provide direct information about the intensity of association between a feature and a group. Therefore, free-responses alone are unsuitable for examining prejudice, a measure of intensity of association of a particular group on an evaluative dimension. Nevertheless, free-responses have proven useful in exploring the affective, behavioural and cognitive determinants of prejudice (e.g. Eagly & Mladnic, 1989; Haddock & Zanna, 1998a; Monteith & Spicer, 2000).

*3.2.4.1.2. Attribute-checking.* Attribute-checking (e.g. Katz & Braly, 1933) represents an alternative measurement technique to free-responses. Attribute-checking requires participants to indicate which features they consider to be representative of a target from a list of possible responses. As a result, attribute-checking is less taxing on participants than free-responding, as participants do not have to generate their own responses. However, this gain in ease of responding is accompanied by a major methodological limitation. Attribute checking tasks have been criticised for being “reactive”. Forced responses often reflect hearsay or

cultural norms where participants' own attitudes are ambiguous, inaccessible or nonexistent (Schneider, 2005). Therefore, it may not be possible to know whether a response reflects an internalised association between feature and target, or merely an endorsement of a consensual stereotype. Another important limitation of attribute-checking is that the list of stimuli from which participants select their responses is chosen by the investigator. Therefore, participants can only indicate features they associate with a group from a restricted list (Eagly et al., 1994). Moreover, attribute-checking alone does not allow researchers to determine how closely a feature is associated with a group, or whether that association is an important determinant of behaviour toward group members (Haddock & Zanna, 1998c).

*3.2.4.1.3. Attribute-rating.* Some of the limitations of attribute-checking can be overcome through more advanced measurement. For example, it is not much more difficult to ask participants to rate the extent that a feature applies to a target (attribute-rating) than it is for them simply to select the relevant features (attribute-checking). Many variations of attribute-rating exist in attitude research. Two of the most common attribute-rating techniques are known as rating scales and semantic differentials. Rating scales ask participants to appraise the extent that a feature is associated with a target. Providing a rating is normally a fairly easy judgement for participants to make (Haddock & Zanna, 1998c). In addition, rating scales normally provide data that is easy for researchers to analyse statistically. However, rating scales do not distinguish between attitudinal and universal ascriptions about a group. Schneider (2005) clarifies this limitation in the following way: participants would probably rate older workers more highly for the feature "Has five toes on each foot"



than the feature “Are resistant to change”, even though the latter is certainly more likely to be relevant to attitudes about older workers.

Semantic differentials ask participants to rate a target on a series of dimensions such as “not warm – warm” and “not competent – competent”. The mean rating of the dimensions is then calculated for each participant. Dimension ratings that differ significantly from the midpoint of the scale are assumed to be salient features associated with the target. Semantic differential scales have been used widely to examine the content of the affective, behavioural and cognitive antecedents of attitudes. A single-item semantic differential (the evaluation thermometer) has also been used to assess participants’ overall evaluations of groups (e.g. Haddock et al., 1993; Haddock, Zanna, & Esses, 1994; Stangor et al., 1991). These single-item measures can be as reliable as more advanced, multiple-item measures (Jacard, Weber, & Lundmark, 1975). Evidence suggests that the evaluation thermometer has high test-retest reliability, and is highly correlated with multiple-item semantic differential attitude measures (Eagly et al., 1994). Importantly, semantic differentials are purely evaluative in nature, which allows participants to make judgements solely on the basis of information that is most important to them. However, a major limitation of rating scales and semantic differentials is that researchers cannot be certain how participants arrive at a response. Different participants may use completely different strategies to arrive at an attribute rating. For example, some participants may simply respond with the figure that first comes to mind. Other participants may use an exemplar availability heuristic, and provide higher ratings on attributes if they can think of several group members associated with that particular feature. Still other participants may make an implicit probability judgement and, for example, provide a median rating on a scale if

they perceive that 50 per cent of group members are associated with the feature in question. Indeed, participants could use one or more of these heuristics, or any number of alternative decision-making strategies in providing a response to a rating scale item (Schneider, 2005).

*3.2.4.1.4. Hybrid approaches.* To circumvent some of the methodological shortcomings relating to reactivity, researchers have developed direct evaluative measures. Perhaps the easiest and crudest direct evaluative measure is to count up the number of positive and negative traits a participant ascribes to a target (Eysenck & Crown, 1948). A more refined measure was developed by Eagly and Mladnic (1989), who initially asked participants to free-respond traits that they thought described various target groups. Participants were then asked to indicate the percentage of people in the group fitting each trait, which was taken as a measure of the strength of association between the group and the feature. Participants then indicated the valence of each trait as strongly negative, negative, neutral, positive or strongly positive. A composite evaluative index was then calculated by summing the percentage measure, multiplied by the evaluative measure across all traits. Similarly, Haddock et al. (1994) asked participants to list traits they thought described a target group, and did so separately for stereotypic beliefs, symbolic beliefs and affective responses. The researchers calculated a multiplicative composite score for stereotypic beliefs, symbolic beliefs and affective responses using a two-step procedure. First, the valence of each trait was multiplied by the proportion of group members believed to possess each trait. Second, the scores resulting from step one were summed and then divided by the number of characteristics provided. Numerous replications of these methods for obtaining composite evaluative indices support their utility in predicting prejudice, as well as accounting for various effects

of participants' mood (Eagly et al., 1994; Haddock & Zanna, 1994, 1998a, 1998b, 1998c; Zanna, 1994). Moreover, composite evaluative indices provide quantitative data that is suitable for multivariate statistical analysis, while avoiding the reactivity methodological limitation. However, the use of multiplicative and additive composite scores in social and organisational psychology has been criticised on the grounds that such scores are not appropriate variables for use in many types of statistical analyses that are routinely employed (Eagly et al., 1994; Evans, 1991). Predicting a criterion from a multiplicative composite of two variables tacitly assumes an interaction between those two variables, which should not be assumed to be true in the attitudinal context (Bagozzi, 1984, 1985). Moreover, multiplicative composites are extremely unstable as they are affected by the scaling of the variables (Evans, 1991). Nevertheless, Eagly and colleagues (Eagly et al., 1994) argue that additive composites treat the subjective probabilities that participants assign to attributes and evaluations of these attributes as two independent predictors of attitudes, which is not theoretically meaningful when participants respond to listed attributes. Neither the subjective possibilities nor the evaluations represent the evaluative content of respondents' beliefs (Eagly & Chaiken, 1993).

*3.2.4.1.5. Alternative measurement strategies in practice.* Despite some of the limitations of free-responses and benefits of attribute-rating measures, researchers have argued that the free-response measurement strategy may be better suited to assessing attitudinal components than closed-ended formats (Bell, Esses, & Maio, 1996; Eagly et al., 1994; Haddock & Zanna, 1998c). Some attitude research has been conducted that supports the utility of free-responses in assessing attitudinal components (e.g. Eagly & Mladnic, 1989; Haddock et al., 1994; Stangor et al., 1991; Twenge & Zucker, 1999). In particular, the value of attribute-checking and

attribute-rating scales in determining whether beliefs determine attitudes is limited by the fact that beliefs people report on questionnaires may serve as indicants of their attitudes in the sense that they are actually determined by these attitudes (Eagly et al., 1994). Therefore, it has been suggested that researchers who elicit respondents' beliefs on evaluative rating scales and then aggregate these beliefs should be viewed as assessing attitudes, not the beliefs that underlie these attitudes (Eagly et al., 1994). In addition, the validity of methods that present respondents with separate lists of cognitive and affective reactions in the attempt to determine the differential prediction of attitudes from beliefs and emotions may be suspect. The correlations produced by these methods may reflect the ease with which attitude-consistent responses can be constructed using measures of beliefs and affect, as well as the differential level of influence on the overall nature of the attitude. Therefore, closed-ended attitude measurement strategies may actually overstate the extent to which cognitions, emotions and behaviours determine measured attitudes, as participants' responses may actually be a function of the target attitude rather than a determinant of the attitude.

The free-response measurement strategy is not immune to the criticism that reactive, attitude-consistent responses are elicited. However, it is probably much less likely to elicit such responses than forced-choice measures, as respondents are not required to construct judgements about an attitude object that would not otherwise occur naturally (Eagly et al., 1994). Moreover, if content analyses of free-responses reveal that commonly elicited responses are provided by only a small proportion of respondents, it would suggest that forced-choice measures may not be assessing features that the participants spontaneously associate with the target (Haddock & Zanna, 1998c). This hypothesis was tested by Haddock and colleagues (Haddock et

al., 1993) who reported that the most frequently elicited cognitive and affective responses about the target “homosexuals” were generated by less than 30 per cent of respondents, and that the five most frequently elicited responses accounted for less than 20 per cent of the total number of responses. These results suggest that forcing participants to evaluate groups or individuals on predetermined dimensions will often fail to capture the idiosyncratic responses that are necessary to understand properly the favourability of participants’ evaluations (Eagly et al., 1994; Ehrlich & Rinehart, 1965; Esses et al., 1993; Haddock & Zanna, 1998c). In addition, there is evidence to suggest that free-response measures of attitudinal components are less susceptible to method variance (i.e. they are less likely to introduce systematic variance into the measure) (Doty & Glick, 1998), and have better discriminant validity compared to forced-choice measures (Haddock & Zanna, 1998c). Nevertheless, the majority of research on age bias against older workers has relied on simple rating scales for assessing the determinants of components (e.g. Chiu et al., 2001; DeArmond et al., 2006; Hassell & Perrewe, 1995; Kirchner, Lindbom, & Paterson, 1952; Loretto, Duncan, & White, 2000; Maurer, Barbeite, Weiss, & Lippstreu, 2007; Redman & Snape, 2002; Rosen & Jerdee, 1976; P. Taylor & Walker, 1998; P. E. Taylor & Walker, 1994; Vrugt & Schzbracq, 1996; Warr & Pennington, 1993). Therefore, in addition to the theoretical research objects (section 2.2.3.) this research also examines a methodological research objective relating to the hypothesis that attitudes assessed by questionnaires are sensitive to the response format of the questionnaire (see section 3.2.5.).

*3.2.4.1.6. Rational for chosen method.* There are two main approaches to measuring prejudice in psychological research, known as the indirect and direct approaches. Both approaches have inherent methodological strengths and

weaknesses. Indirect methods for measuring prejudice are usually associated with the experimental paradigm and laboratory environments. Direct methods for measuring prejudice are more flexible but are reliant on self-reports. The direct approach to measuring prejudice is more appropriate for investigating workplace age bias. In particular, postal paper-and-pencil SAQ surveys have been popular in organisational research on prejudice, and are the most appropriate research method for the present study. Major advantages of the postal SAQ research method include:

- The ability to conduct research outside of the laboratory setting and requiring no specialist equipment.
- Preventing interviewer effects from influencing results.
- The ability to reach a large, geographically dispersed sample at low cost and without the need for individual contact between the researcher and participant.
- The ability for participants to respond anonymously.
- The low relative likeliness to inhibit responses that are embarrassing or socially undesirable.
- Higher response rates for postal paper-and-pencil SAQs than online SAQs.
- Postal paper-and-pencil SAQs do not restrict research participation to individuals with ability to respond via the internet.

**3.2.5. Methodological research objective.** Research evidence suggests that attitudes assessed by questionnaires are sensitive to the response format of the questionnaire. The nature of the questionnaire research method provides the opportunity to test some research questions on the effect of measurement strategies on data that are collected about attitudes and the impact of these data on models and conclusions that are derived from research findings. The theoretical research

objectives (research objectives one to four) were presented in section 2.2.3. The methodological research objective (research objective five) is as follows:

- Research objective five: To examine if there is a difference between open-ended and closed-ended strategies for measuring stereotypes in relation to the statistical model constructed in research objective four. As research suggests that closed-ended responses are more likely to represent a function rather than a determinant of an attitude, the predictive power of closed-ended measures of stereotypes on associated attitudes should be higher than open-ended measures. Within this objective, a specific aim was to examine if the patterns of responses about stereotypical beliefs about older teachers differ between open-ended and closed-ended measurement strategies and whether there was a difference in the overall valence of responses between open-ended and closed-ended measurement strategies.

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### Chapter Three Summary

This chapter discussed attitude research methodology and provided formal reasoning for the selection of a particular empirical approach, research method, and mode of research administration in this thesis. First, alternative empirical approaches to attitude research were discussed. The Direct Approach was considered the most appropriate empirical approach for the present research. Within this approach, a number of research methods, measurement strategies, modes of administration and limitations were discussed. On the basis of these discussions, an additional research objective was conceived. This research objective related specifically to measurement strategies in attitude research. In light of the methodological discussions outlined in this chapter, a research protocol was developed to investigate the two sets of research objectives described thus far. The development of the research protocol is discussed in the following chapter.

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#### **4. Research Protocol Development**

This chapter discusses the development process on which the research method is based. The structure of the chapter is displayed in figure 10. First, relevant issues pertaining to sample size and sampling strategy are discussed (section 4.1.). Then the roles of the researcher and the participating organisation in shaping the research method are clarified (section 4.2.). Next, the debate on how “older workers” should be defined is introduced, and justification is provided for the definition that is adopted in the present research. Section 4.4. discusses in detail the development of the content and form of the research questionnaires in order to examine the research objectives. This section comprises four subsections: the first three subsections (Sections 4.4.1 to 4.4.3.) relate to the outcome variables, predictor variables, and covariates of the research model, respectively; the fourth subsection (Section 4.4.4.) summarises the preceding three sections, and juxtaposes the structures of the two research questionnaires to highlight the areas of similarity and dissimilarity. Finally, section 4.5 discusses how the structures of the two questionnaires relate to the research objectives specified in previous sections.

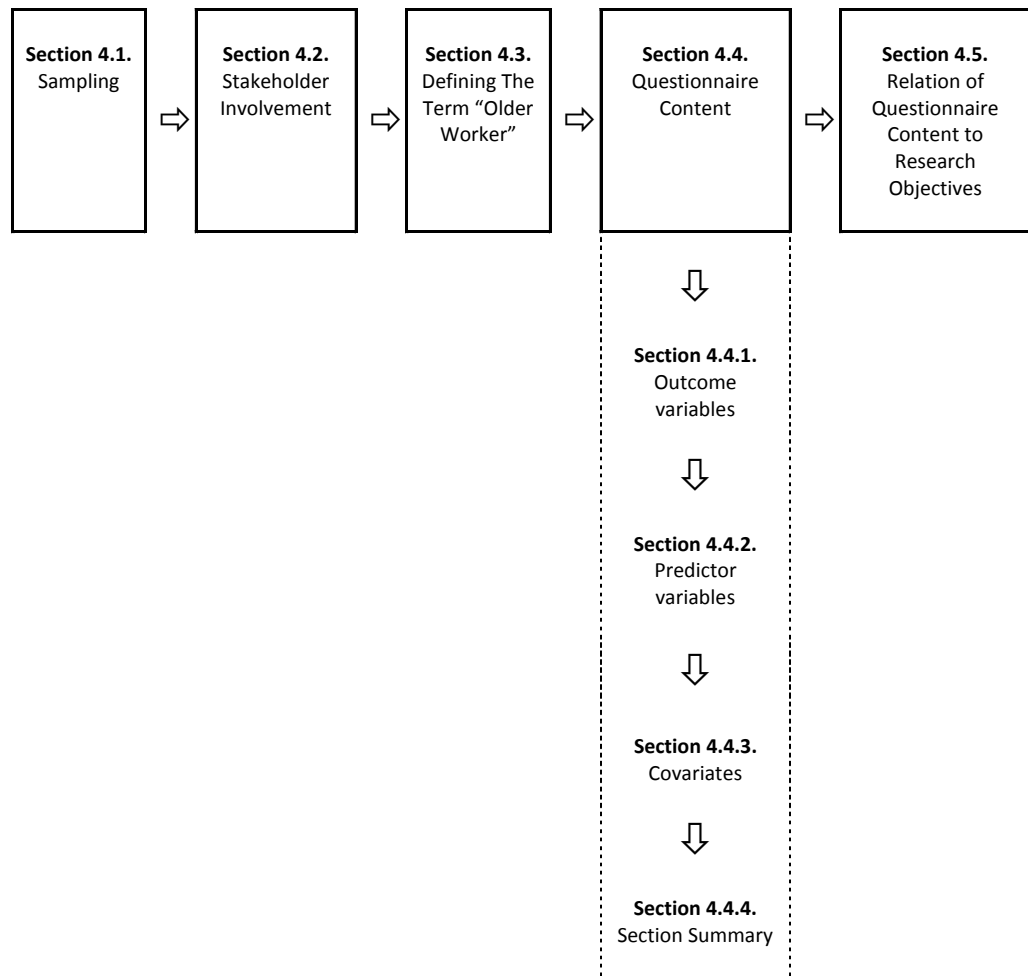


Figure 10. Chapter four structure.

#### 4.1. Sampling

In order to recruit participants, the research was conducted via an external organisation. The National Union of Teachers (NUT) was approached and invited to participate in the research. This organisation was the first choice of research population for three main reasons. First, the NUT is the largest teaching organisation in England and Wales in terms of membership, covering approximately 49.9 per cent of all teachers in England and Wales (Department for Education and Skills, 2006; General Teaching Council for Wales, 2008; J. Roberts (NUT Membership and Communications), personal communication, 8 June, 2008). Therefore, the

membership of the NUT is likely to be diverse and largely representative of the general teaching population. Second, for several years the NUT has recognised the importance of older teachers in the teaching workforce and has been promoting age-related research and age-inclusive policies. Therefore, it was thought that the subject of the research would be of interest to the organisation. Third, the NUT regularly conducts research on its members and has preexisting research facilities. Therefore, a questionnaire survey could be conducted using systems existing within the organisation. The NUT was keen to be involved in the research and agreed to allow the research to be conducted on its members. It should be noted that organisational volunteering bias is a potential threat to the external validity of the research (Cook & Campbell, 1979). In other words, organisations that volunteer to participate in research are often “the most progressive, proud, and institutionally exhibitionist” (p. 74). However, pragmatically and ethically it is only possible to conduct research in an organisation that is willing to take part in the research. Nevertheless, the volunteering bias limitation will be considered in more detail when discussing the results.

A calculation was made as to the number of questionnaires (i.e. survey size) required so that the number of questionnaires returned (i.e. sample size) would meet the requirements of subsequent statistical analyses. Similar organisational research has reported questionnaire response rates from a low rate of 11.8 per cent (Martin & Gardiner, 2007) to a high rate of 36.1 per cent (Redman & Snape, 2002). Taking these response rates as estimates of the likely upper and lower response rates for this study, it was possible to calculate the survey size required to yield a sufficient sample size based on statistical conventions. Cohen (1992) describes the relationship between four research variables: (a) sample size, (b) significance criteria ( $\alpha$ ), (c)

population effect size (ES), and (d) statistical power ( $\beta$ ). In psychological research, the significance criterion is usually taken to equal one in twenty ( $\alpha = .05$ ). Similarly, Cohen proposed a convention that statistical power should be .80 ( $\beta = .20$ ) in light of the chances of a Type II error and the resources required to recruit a sample. Cohen then defines small, medium and large ES as .02, .15 and .35 respectively. Medium ES is defined as being “likely to be visible to the naked eye of a careful observer”, small ES is defined as being “noticeably smaller than a medium ES, but not so small as to be trivial” and large ES is defined as “the same distance above medium ES as small was below it” (Cohen, 1992, p. 156).

The survey size required to yield a sample size sufficient to test the hypothesis that the population multiple correlation equals zero with a power of .80 and  $\alpha = .05$  was calculated as follows:

1. Divide the recommended sample size for medium ES for multiple regression analysis<sup>3</sup> (Table 2, Cohen, 1992) by the low estimate of questionnaire response rate (11.7 per cent);
2. Multiply the quotient from step 1 by 100; and
3. Round the product from step 2 to the next integer.

The minimum sample size required for multiple regression with a power of .80 and  $\alpha = .05$  with 10 independent variables<sup>4</sup> (IVs) is 117 (Table 1, Green, 1991), which would require a survey size of at least 325 (based on a 36.1 per cent response rate) or a survey size of at least 992 (based on an 11.8 per cent response rate) (see table 1). No data were available on expected ES, so Cohen’s conventional medium ES

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<sup>3</sup> The statistical analysis to be conducted to examine research objectives four and five.

<sup>4</sup> The estimated maximum number of predictor variables.

was adopted as the expected ES in the present research. The use of a significantly smaller survey would also have had implications for the external validity of the research findings, while the financial cost associated with a significantly larger survey was prohibitive<sup>5</sup>.

Table 1.  
*Sample size required to test the hypothesis that the population multiple correlation equals zero with a power of .80 ( $\alpha = .05$ ).*

Number of IVs	ES		
	Small (.02)	Medium (.15)	Large (.35)
2	<b>481</b> (1333, 4077)	<b>67</b> (186, 568)	<b>30</b> (84, 255)
3	<b>547</b> (1516, 4636)	<b>76</b> (211, 645)	<b>34</b> (95, 289)
4	<b>599</b> (1660, 5077)	<b>84</b> (233, 712)	<b>38</b> (106, 323)
5	<b>645</b> (1787, 5467)	<b>91</b> (253, 772)	<b>42</b> (117, 356)
6	<b>686</b> (1901, 5814)	<b>97</b> (269, 823)	<b>45</b> (125, 382)
7	<b>726</b> (2012, 6153)	<b>102</b> (283, 865)	<b>48</b> (133, 407)
8	<b>757</b> (2097, 6416)	<b>107</b> (297, 907)	<b>50</b> (139, 424)
9	<b>788</b> (2183, 6678)	<b>113</b> (314, 966)	<b>54</b> (150, 462)
10	<b>844</b> (2338, 7153)	<b>117</b> (325, 992)	<b>56</b> (156, 475)

*Note.* Bold text indicates the required sample size; Figures in parentheses indicate the survey size required to yield each sample size based on response rates of 36.1 and 11.8 per cent, respectively. Adapted from "A Power Primer" by J. Cohen, 1992, *Psychological Bulletin*, 112(1), p. 158 and "How Many Subjects Does It Take To Do A Regression Analysis?" by S. B. Green, 1991, *Multivariate Behavioral Research*, p. 503.

The NUT estimates that at least 2.5 per cent of its members are not contactable at the address listed on the NUT membership database (J. Roberts (NUT Membership and Communications), personal communication, June 8, 2008). A response rate range of 11.8 per cent to 36.1 per cent on a survey of 975 individuals (1000 minus 2.5 per cent, to account for estimated nonreceipt of questionnaires) would be within budget and would result in a sample size in the range 115-351. The lower end of this range would be considered at the bottom end of the acceptable

<sup>5</sup> Especially as the research protocol involved two different versions of the questionnaire, each of which would be required to reach the minimum required sample size.

sample size for regression and factor analysis, but would likely be adequate (Cohen, 1992; Tabachnick & Fidell, 2007). A response rate exceeding 11.8 per cent would result in a larger sample size, and would meet the minimum requirements for most common types of statistical analysis and approach a “good” sample size from a statistical perspective (Comrey & Lee, 1992).

To maximise the external validity of the research findings, known threats to external validity were considered when designing the sampling method and avoided where possible (see Cook & Campbell, 1979). For example, the most representative samples are those that are randomly chosen from a population (Cook & Campbell, 1979). Therefore, the present sample was selected at random from the population of NUT members. Another feasible way of strengthening the external validity of research is to make participation in research as convenient as possible (Cook & Campbell, 1979). Numerous factors are known to make participation more convenient and to have a positive effect on questionnaire response rate (P. Edwards et al., 2002; P. J. Edwards et al., 2008). A short questionnaire, prepaid return envelopes, and franked outward envelopes are all associated with higher response rates in postal surveys than their alternatives (P. Edwards et al., 2002; P. J. Edwards et al., 2008) and these features were implemented in the research method. Where it was not possible to avoid known threats to the external validity of the research, such threats were noted and would be used to evaluate the survey findings. For example, incentives, prenotification and follow-up contact, and personalised questionnaires are known to have a positive effect on response rates in postal surveys (P. Edwards et al., 2002; P. J. Edwards et al., 2008). Implementation of these factors was considered in the present research, but could not be justified for reasons of confidentiality or budgetary constraints. Moreover, replication of research is perhaps

the most powerful means of limiting threats to the external validity of research findings (Cook & Campbell, 1979). However, replication could not be employed in this study, due to the confidential and randomised selection of participants and due to budgetary constraints.

#### **4.2. Stakeholder Involvement**

Organisational research often involves a compromise between maximising internal validity (to confirm cause-and-effect relationships and to allow statistical prediction) and maximising external validity (for the sake of generalisability) (Griffiths, 1999a). Face validity is another important aspect of organisational research: It is important to ensure that research appears understandable, meaningful and relevant to the participants involved in the research. High face validity is important to encourage organisations and individuals to participate in research. For this reason, it can be beneficial to seek input from a participating organisation during research development (Griffiths, 1999a). Therefore, the development of the research protocol was lead by the present researcher, but involved input from the participating organisation on the construction of the questionnaire, item wording and presentation. This process was iterative, involving several stages of adding, removing and amending content and altering design and layout to ensure the final research questionnaire was as interesting, relevant and useable as possible (i.e. high face validity) while maintaining high methodological rigour (i.e. high internal validity). There is good evidence to suggest that more interesting and useable questionnaires result in higher response rates (P. Edwards et al., 2002; P. J. Edwards et al., 2008). Therefore, the high level of stakeholder engagement during questionnaire development would also potentially have a positive effect on the generalisability of the research (i.e. external validity).

### 4.3. Defining the term “Older Worker”

The issue of at what age a worker becomes an “older worker” was considered when constructing the research questionnaire. Two possible approaches toward this problem are: (a) to ask participants to complete the questionnaire in relation to what they consider to be an older worker (i.e. a subjective definition, where the chronological age at which a worker becomes an older worker is not specified); and (b) to ask participants to complete the questionnaire in relation to a specific age range of older workers (i.e. an objective definition, where a chronological age at which a person becomes an older worker is specified). Following piloting<sup>6</sup>, it became clear that participants desired a formal age definition of “older workers” to be specified. Providing a formal age definition of older workers is antithetical to the research finding that different people define “older workers” using a wide variety of metrics and spanning a large chronological age (e.g. Heier, Lyng, & Lahn, 1994). Nevertheless, it was reasoned that an age range should be specified to make the questionnaire as easy as possible for participants to understand, and to ensure that each participant would respond with regards to individuals of the same age range. The next task was to choose an appropriate “age of onset” (sic.) for the term “older worker” (Heier et al., 1994). Definitions as to the age at which a person is considered an older worker differ between countries, cultures, industries and individual jobs. This is reflected in the wide range at which workers are defined as “older workers” in published articles and reports. However, recent convention in the UK has been to define older workers as those aged 50 and above (e.g. Lewis, 2006; The Age and Employment Network, 2007). This definition of older workers was also used in a previous study on attitudes towards older teachers (Redman & Snape, 2002). For these reasons, a 50-plus definition of older workers was adopted in this research. The

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<sup>6</sup> Details of piloting process are presented in appendix 1.



implications of defining older workers in such a way are considered in the research discussions.

#### **4.4. Questionnaire Content**

Two versions of research questionnaire were developed<sup>7</sup>. Both questionnaire versions had the same general structure consisting of three main parts (figure 11), which corresponded to the three components of the research model (figure 7). The first part of the questionnaires included measures of prejudice towards older teachers and towards the employment of older teachers, which are outcome variables in the statistical model. These measures were placed first in the questionnaire so that the likelihood would be minimised of question-order influencing responses to these outcome measures. The second part of the questionnaires contained measures of cognitive, affective and behavioural components of prejudice, which are predictor variables in the statistical model. The third part of the questionnaire included demographic and employment-related measures, which are covariates in the statistical model. These measures were placed at the end of the questionnaire as there is some evidence that doing so improves response rates to postal questionnaire surveys (Jensen, 1994) although evidence in this area overall remains indeterminate (P. Edwards et al., 2002; P. J. Edwards et al., 2008).

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<sup>7</sup> Questionnaire version one is displayed in full in appendix 4. Questionnaire version two is displayed in full in appendix 5.

### Questionnaire structure

<b>Section 1</b> <b>Outcome Variables</b>	a Attitude towards older teachers b Attitude towards the employment of older teachers
<b>Section 2</b> <b>Predictor Variables</b>	c Cognitive component d Affective component e Behavioural component
<b>Section 3</b> <b>Covariates</b>	f Demographic information g Employment-related information

Figure 11. General structure of questionnaire versions one and two.

The two questionnaire versions differed in relation to the measurement strategy of the cognitive component of prejudice. The specific structure of questionnaire versions one and two is displayed later in figure 12. First, the following sections describe the content in each of the parts of the questionnaires, and the development process that underpinned the content of these parts.

**4.4.1. Outcome variables.** The first outcome variable of interest was overall prejudice towards older teachers. Single item evaluative measures such as “the evaluation thermometer” (Haddock et al., 1993) have been used many times in research on intergroup prejudice. An advantage of this measure is that it is purely evaluative in nature and contains no specific dimensions on which a group is to be rated (Haddock et al., 1993). Moreover, research suggests that measures that are purely evaluative are as reliable as multiple item measures, yield the same results as multiple item measures, and have high test-retest reliability (Jaccard, Weber, & Lundmark, 1975). Finally, a single item prejudice measure would facilitate the aim of producing a succinct questionnaire that was convenient for participants. The 101-point evaluation thermometer (see appendix 2) described by Haddock and colleagues

(Haddock et al., 1993) was piloted. Following discussions with the pilot participants, it was concluded that the 101-point scale with anchors at every tenth point represented an excessive level of detail; the difference between, for example, “quite favourable” and “fairly favourable” was considered too subjective and may result in spuriously accurate reports of prejudice. It was considered more appropriate to ask participants to indicate their overall evaluation of older teachers on a rating scale with a neutral midpoint, two negative points, and two positive points (i.e. -2, -1, 0, +1, and +2). This 5-point scale would still allow statistical analyses to be performed on the data, would have clear distinctions between each level of response, and would match the five-point response format throughout much of the rest of the questionnaire.

The second outcome variable of interest was attitude towards the employment of older teachers. Redman and Snape (2002) previously examined attitudes towards the employment of older teachers using four items they termed “discriminatory attitudes”. Responses to these items were on a five-point scale from “strongly disagree” (1) to “strongly agree” (5), with a midpoint “neither agree nor disagree” (3). Following piloting, an additional item (“Overall, older teachers’ contributions at work are less valuable than younger teachers’ contributions”) was appended to the scale. This question differed from the other four items, which focused on training, working with older teachers on a daily basis, opportunities for younger versus older teachers, and teacher layoffs. In addition, the rating scale was changed to match the rating scale used in other sections of the questionnaire (1 → -2, 2 → -1, 3 → 0, 4 → 1, 5 → 2), and the labels were reversed so that negatively valenced responses related to more biased beliefs (i.e. “strongly agree” and “agree”)

and positively valenced responses related to more unbiased beliefs (i.e. “strongly disagree” and disagree”).

**4.4.2. Predictor variables.** The research literature suggested that three main classes of information are important in determining prejudice (cognitive, affective and behavioural information) and that there may be two relevant types of cognitions (stereotypical beliefs and symbolic beliefs). Of these attitudinal determinants, stereotypical beliefs alone have been investigated extensively in workplace age bias research. One aim of this study was to examine the contribution of stereotype and nonstereotype information in predicting reported prejudice toward older teachers. In line with this aim, the content of the research questionnaire included measures relating to all three classes of attitudinal determinants.

**4.4.2.1. Stereotypical beliefs.** Stereotypical beliefs about older teachers were assessed using a closed-ended measurement strategy in questionnaire version one and an open-ended measurement strategy in questionnaire version two. Several rating scales already exist for assessing participants’ stereotypical beliefs about older workers. One of these scales was developed by Warr and Pennington (1993) using a sample of managers, and adapted by Redman and Snape (2002) using a sample of UK teachers. This scale is concise (15 short items), and has been used to assess stereotypical beliefs among teachers and other professions, both in the UK and other countries (Chiu et al., 2001; D. Smith, 1997). For these reasons, Redman and Snape’s adapted stereotypical beliefs about older workers scale was chosen as the closed-ended stereotype measure to be included in questionnaire version one.

The free-response method for assessing stereotypical beliefs developed by Eagly and Mladnic (1989) and Haddock and colleagues (1994) (described previously in section 3.2.4.1.4.) was piloted. Pilot participants were able to complete the free-response section of these tasks without difficulty. However, the subsequent percentage task was more problematic, and participants had difficulty understanding how to respond. Following discussion with stakeholders in the participating organisation, and consideration of alternative methods, it was decided that simplified free-response tasks could yield useable, meaningful data for subsequent statistical analyses. The percentage task was omitted from the stereotypical beliefs measure. Including the percentage task in the questionnaire may have resulted in data that could more easily be transformed into composite scores for statistical analysis. However, it was a concern that asking participants to complete tasks they considered vague or difficult may have an adverse effect on the responses that was not justifiable in light of the additional information that would be provided. Content analyses and frequency counts could be easily conducted on the simplified free-response tasks, and these data could be used in the place of the composite affective scores in subsequent analyses.

**4.4.2.2. Symbolic beliefs.** Preexisting symbolic belief scales are much less common than stereotypical beliefs. Zanna and colleagues have made use of the free-response method for examining symbolic beliefs held by students in relation to attitudinal targets including capital punishment, women, homosexuals, and native peoples (Esses et al., 1993; Haddock & Zanna, 1994, 1998a, 1998b; Haddock et al., 1993, 1994; Zanna, 1994). Although the free-response method has been used successfully to elicit responses about symbolic beliefs relating to a variety of attitudinal targets, in all cases the free-response method was conducted using

samples of psychology students. Prejudice research conducted on samples of psychology students may have relatively low external validity as the participants are likely to have high levels of relevant knowledge and practice in participating in research. For this reason, the free-response method for assessing symbolic beliefs was piloted on a small sample of teachers. These individuals considered the free-response method for assessing symbolic beliefs to be too vague and abstract to be workable on a larger sample of their peers. This may highlight a difference in the ability of student and working samples to provide answers for certain attitudinal items. Alternatively, it may highlight a difference in people's prejudice towards older people compared to other stigmatised outgroups. As noted by Greenberg and colleagues, older people are a unique outgroup in the sense that they were once young and, barring premature death, everyone will eventually join that outgroup (Greenberg et al., 2004). Because of the special status of older people as a transitory outgroup, it may not make practical sense to extrapolate onto older targets prejudice measures that were developed for assessing prejudice against other outgroups. For example, people may find it easier to talk about value-incongruence compared to a religious outgroup than compared to older people, as this type of information may be more contextually salient. The fact that participants in the pilot study found it so difficult to provide symbolic beliefs about older workers may be a reflection of this asymmetry in attitudinal determinants across outgroups.

As the free-response method for assessing symbolic beliefs about older workers seemed unfeasible, a more user friendly attribute-checking method (c.f. Katz & Braly, 1933) of assessing symbolic beliefs was developed, based on Rokeach's (1967) value survey. However, the number of items in Rokeach's unabridged value survey was too high for practical implementation in the present research, and many

items were outdated or otherwise inappropriate. Abridged versions of the Rokeach value survey and alternative value lists were also considered (e.g. Elizur & Sagie, 1999; George & Jones, 1997; Hofstede, 1998), but none proved sufficiently comprehensive so as to be considered exhaustive, while remaining sufficiently concise so as to be practical. No practical method for examining symbolic beliefs could be found that met both the research requirements and the face validity and convenience criteria. However, research suggests that symbolic beliefs contribute little additional predictive power in relation to group evaluations across a variety of ethnic and sexual orientation outgroups above that already provided by stereotypical and affective information (Zanna, 1994). Therefore, the inclusion of a symbolic beliefs scale may not have provided any useful additional information for predicting participants' evaluations of older teachers. Future research should aim to examine the role of symbolic beliefs in determining attitudes towards older people, and should consider usability as a key factor in scale development.

**4.4.2.3. Affective reactions.** Questionnaire research assessing the affective determinants of prejudice is relatively uncommon. Studies that have attempted to examine this class of information often ask participants to free respond emotions they associate with a target group. The free-response method described in section 4.3.2.1. (Eagly et al., 1994; Haddock et al., 1994) has also been used to assess participants' affective reactions towards various target groups. This method for assessing affective reactions towards a target group was piloted on a small sample of teachers. Generally, participants were able to complete the free-response section of these tasks easily. However, the subsequent valence and percentage tasks were more problematic. Participants had difficulty understanding how to respond both to the valence task and to the percentage task. Following discussion with stakeholders

in the participating organisation, and consideration of alternative methods, it was decided that simplified free-response tasks could yield usable, meaningful data for subsequent analysis. The valence and percentage tasks were omitted from the affective measure. Content analyses and frequency counts could be conducted on the simplified free-response measure instead of using valence and percentage information for each response to calculate a composite affective score.

**4.4.2.4. Behavioural associates.** Haddock and Zanna (1998c) stated that “the behavioural component of attitude is particularly well suited for the use of open-ended measurement strategies” (p. 140). However, the number of studies conducting open-ended assessments of behavioural associates of attitudes is low, and those that have done so have focused on student samples. Therefore both questionnaire versions contained a closed-ended and an open-ended measurement strategy for assessing the behavioural associates of attitudes towards older teachers. The free-response method for assessing behavioural associates of an attitude developed by Eagly and Mladnic (1989) and Haddock and colleagues (1994) was piloted. Pilot participants were generally able to complete the free-response and valence sections of this task without difficulty, but struggled with the subsequent percentage tasks. Participants were confused as to the task of providing percentage estimates in relation to describing memorable or important experiences with older teachers. Therefore, the percentage task was omitted from the behavioural measure.

An additional method for assessing behavioural associates of an attitude about a particular target group is to ask participants about the quality and quantity of contact they have with group members (Dovidio, Gaertner, & Kawakami, 2003; Haddock et al., 1994; Pettigrew, 1998; Pettigrew & Tropp, 2006). Intergroup contact



has rarely been investigated in any detail on age groups in organisations. To assess various aspects of intergroup contact, a number of items on the quality and quantity of contact with older teachers were piloted, based upon those presented in Islam and Hewstone's "quantitative aspects of contact" and "qualitative aspects of contact" with outgroup scales (Islam & Hewstone, 1993). Islam and Hewstone's seven-point semantic differential measurement scales were used to assess these items. Following piloting, it became clear that certain items that are meaningful in intergroup contact situations in one context (e.g. inter-ethnic-group contact) could not meaningfully be extrapolated onto age-group contact in organisations. Some items (e.g. "amount of contact with the outgroup at college") could not meaningfully be rephrased to suit the work context. Where possible, these items were substituted for equivalent items (e.g. "amount of contact with older teachers at work"). Other items were too ambiguous or difficult to answer (e.g. "is contact perceived as equal?") and had to be excluded from the intergroup contact part of the questionnaire. On the basis of feedback from the pilot participants, additional items that were more relevant to teachers were incorporated into the contact measure (e.g. "amount of contact with older teachers in social settings unrelated to work"). Existing contact scales are mostly concerned with intergroup contact either in the workplace or outside the workplace, not both. Since attitudes towards a group in the workplace may be influenced by contact with group members both inside and outside of the workplace, research participants should be able to respond differentially about contact that is related to work and contact that is unrelated to work.

Although both the free-response and the attribute rating approaches assess behavioural information regarding experiences with older teachers, the two

approaches appear to assess different aspects of the behavioural component of attitudes. The free-response approach assesses the most *available* information, while the attribute-rating approach assesses information that is both *accessible* and *available* (Haddock & Zanna, 1998c). Although Haddock and colleagues (1998c) recommend the use of open-ended measurement strategies for assessing the behavioural component of attitudes, little research to date has done so. Moreover, the present researcher was not aware of any research that has compared the information provided by participants using open-ended and closed-ended measurement strategies for assessing behavioural information regarding a target group. Therefore, the decision was made to include both the free-response and the attribute-rating measurement strategies in the research questionnaire.

**4.4.3. Covariates.** A variety of demographic and employment-related items were included in the questionnaire so that characteristics of the respondents could be analysed. The content and response formats of these items were developed following advice from the NUT so that the phraseology and wording of profession-specific terms were correct. By asking for respondents' age and sex, it would be possible to make direct comparisons between the age and sex characteristics of the sample and population, and if there was any evidence for age-related or sex-related response tendencies. By asking for respondents' location and school type, it would be possible to check if the respondents represented a diverse sample, and if certain locations or types of school were overrepresented or underrepresented in the research sample. Additional potentially relevant work-related variables were also included in this part of the questionnaire, specifically participants' length of service as a teacher and their employment-level.

**4.4.4. Section summary.** As a result of the preceding discussions, it is now possible to summarise in detail content of the research questionnaires (see figure 12). The high level of specificity in figure 12. contrasts with the low level of specificity in figure 11., which displayed the general structure intended for the research questionnaire. The increased specificity between figures 11 and 12 reflects (and is the result of) this development process. For clarity, the next section describes how the detailed structures of the questionnaires relate to the present research objectives (and by extension the research model displayed in figure 7).

	Questionnaire version one	Questionnaire version two
<b>Section 1. Outcome variables</b>	a Attitude towards older teachers (1) b Attitude towards employment of older teachers (5)	a Attitude towards older teachers (1) b Attitude towards employment of older teachers (5)
<b>Section 2. Predictor variables</b>	c * Stereotypical beliefs measure (15) d Affective reactions measure (oe) e (i) Behavioural associates measure (oe) e (ii) Contact measure (7)	c * Stereotypical beliefs measure (oe) d Affective reactions measure (oe) e (i) Behavioural associates measure (oe) e (ii) Contact measure (7)
<b>Section 3. Covariates</b>	f (i) Age (1) f (ii) Sex (1) f (iii) Location (1) g (i) School type (1) g (ii) Employment-level (1) g (iii) Length of service (1)	f (i) Age (1) f (ii) Sex (1) f (iii) Location (1) g (i) School type (1) g (ii) Employment-level (1) g (iii) Length of service (1)

Figure 12. Detailed structure of questionnaire versions one and two.

*Note.* Figures in brackets refer to the number of items for each measure. oe = open-ended (i.e. no minimum or maximum number of responses). \* indicates the section where the measurement strategy of two questionnaire versions is different.

#### 4.5. Relation of Questionnaire Content to Research Objectives

The purpose of the various sections of the research questionnaire was to allow research objectives one to four to be assessed. The purpose of developing two equivalent versions of the questionnaire with the same general structure was to allow research objective five to be assessed. The general way that each research objective was assessed is presented in table 2. Details of the specific data analyses are presented in section 6.

Table 2.

*General strategy for analysing research objectives one to five.*

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RO	Analytic strategy
1	Examine the descriptive statistics of the covariates; examine the relationships among the covariates, between covariates and predictor variables, and between covariates and outcome variables.
2	Examine the descriptive statistics of the predictor variables; examine whether free-response and forced-choice stereotypical beliefs conform to the hypothesised two-dimensional structure using quantitative and qualitative analysis methods; examine intercorrelations between the predictor variables.
3	Examine the descriptive statistics of the outcome variables; examine the intercorrelations between the outcome variables and predictor variables.
4	Construct a statistical (regression) model of the covariates, predictor variables and outcome variables.
5	Compare the amount of variance accounted for in outcome measures in the regression model between the stereotypical beliefs measures of questionnaires version one and two; compare the descriptive statistics of the closed-ended responses from the stereotypical beliefs section of questionnaire version one with descriptive statistics of the open-ended responses from the stereotypical beliefs section of questionnaire version two

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*Note.* RO = Research Objective.

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## Chapter Four Summary

Much work went into the development of the research method and questionnaire, which was summarised in this chapter. The aim of the research protocol development phase was to ensure that the research had high face validity and was convenient for participants, without compromising scientific rigour. First, issues relating to participant sampling were discussed (see Section 4.1.). Next, the reasoning for the high level of stakeholder involvement during the research protocol development was provided (see Section 4.2.). The definition of the term “older worker” was described in section 4.3. Then the processes of determining the questionnaire content and measurement strategies were described (see Section 4.5.). Finally, the reflection of the research objectives in the design of the two questionnaires was described in section 4.5. Following on from this development phase, the next chapter reports the implementation of the research protocol.

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## 5. Method

This chapter discusses in detail the precise method used to conduct the present research. The structure of the chapter is displayed in figure 13. First, the sampling strategy and characteristics of the research sample are described (Section 5.1.). Next, the materials that were used to conduct the research are described, along with specifics of the measures that were included in the research questionnaire (section 5.2.). The procedure that was followed for conducting the research is described in section 5.3. Finally, acknowledgement of the ethical implications of the research and procedures that were taken to ensure the research was conducted in an ethically defensible way are presented in section 5.4.

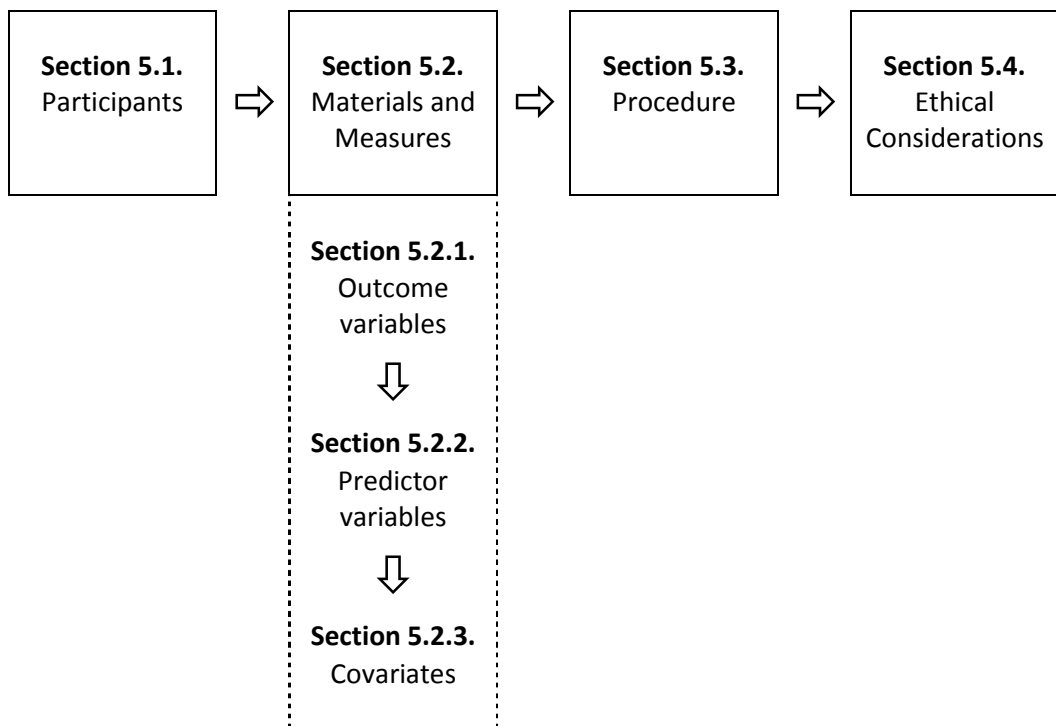


Figure 13. Chapter five structure.

## 5.1. Participants

Two thousand individuals were selected from the NUT membership database using *simple random sampling* (i.e. participants were selected from a list containing all members of the population using a computerised random number generator). Sampling without replacement was conducted to avoid the possibility of any individual being selected more than once. Responses were received from 285 of these individuals. Three of these responses contained blank questionnaires. Of the remaining 282 responses, 58.5 per cent contained questionnaire version one (n=165) and 41.5 per cent contained questionnaire version two (n=117). The overall response rate of the survey was 14.1 per cent (the response rate for questionnaire version one was 16.5 per cent, while the response rate for questionnaire version two was 11.7 per cent). Adjusted for the estimated proportion of incorrect contact details (2.5 per cent of cases) the effective response rate of the survey overall was likely to be at least 14.6 per cent (at least 16.9 per cent for questionnaire version one, and at least 12 per cent for questionnaire version two). The adjusted response rates were within the expected range (see Section 4.2). Demographic characteristics of the research population and sample are presented in table 3. The data in table 3 confirm that the research sample was roughly representative of the population in terms of the geographical distribution of participants, work type and school type. However, there was a noticeable but small underrepresentation of males in the sample compared to the population and an overrepresentation of females in the sample compared to the population. Aside from the lower proportion of males in the sample than in the population, other major differences between the characteristics of the population and sample were artefacts resulting from the different categories used by the NUT and the present researcher to assess individuals' demographic and employment status. For example, the NUT records and the present questionnaire recorded

different information about some variables (e.g. school type), while some population data were not available from NUT about their members (e.g. location, job role).



Table 3.  
*Demographic and work characteristics (percentages) of the research population, the research sample, questionnaire version one respondents (Q1) and questionnaire version two respondents (Q2).*

	Population (N=243411)	Sample (n=285)	Q1 (n=165)	Q2 (n=117)
<b>Sex</b>				
Female	76.7	82.3	81.8	82.9
Male	23.3	14.5	15.8	12.8
Did not specify	0	3.2	2.4	4.3
<b>Location</b>				
London	10.3	11.7	9.7	14.5
South East England	24.2	22.7	24.2	20.5
South West England	7.9	6.7	6.7	6.8
Wales	5.1	2.5	3.6	.9
West Midlands	-	8.9	7.9	10.3
East Midlands	-	7.1	7.3	6.8
East Anglia	-	5.3	5.5	5.1
North West England	11.3	10.3	11.5	8.5
Yorkshire and Humber	-	9.9	9.1	11.1
North East England	6.4	3.2	3.6	2.6
Did not specify	0	11.7	10.9	12.8
Other	41.9	0	0	0
<b>Work Type</b>				
Part time	11.0	30.1	31.5	28.2
Full time	62.5	64.2	63.0	65.8
Did not specify	0	5.7	5.5	6.0
Other	26.5	0	0	0
<b>Job Role</b>				
Supply teacher	7.6	9.2	10.9	6.8
Class Teacher	-	31.6	32.1	30.8
AR	-	21.3	20.6	22.2
Head of department	-	12.4	11.5	13.7
SMT	-	10.6	10.3	11.1
Other	-	10.6	10.9	10.3
Did not specify	-	4.3	3.6	5.1
<b>School Type</b>				
Primary	43.1	50.0	52.1	47.0
Secondary	36.4	39.0	41.2	35.9
Other	20.5	5.3	3.1	8.6
Did not specify	0	5.7	3.6	8.5

*Note.* SMT = Senior Management Team. AR = Teacher with additional responsibility. Dash indicates data were unavailable.

Of the 285 participants, 12 participants did not disclose their age. The mean age of the remaining 273 participants was 45.44 years (SD 11.07). A comparison of the age structures of the research population and sample is displayed in figure 14. The age structures of the population and sample differ in an important, systematic way: NUT members in age categories 36-40 and above are overrepresented in the research sample compared to the population. Conversely, NUT members in age categories 21-25, 26-30, and 31-35 are underrepresented in the research sample compared to the population. A Chi-square goodness-of-fit test was conducted to examine the difference between the observed (sample) age structure and the expected (population) age structure. The two age structures were found to differ significantly:  $\chi^2(9) = 42.314$ ;  $p < .01$ . Implications of the differences in the age structures of the sample and population are discussed in section 7.2.1.

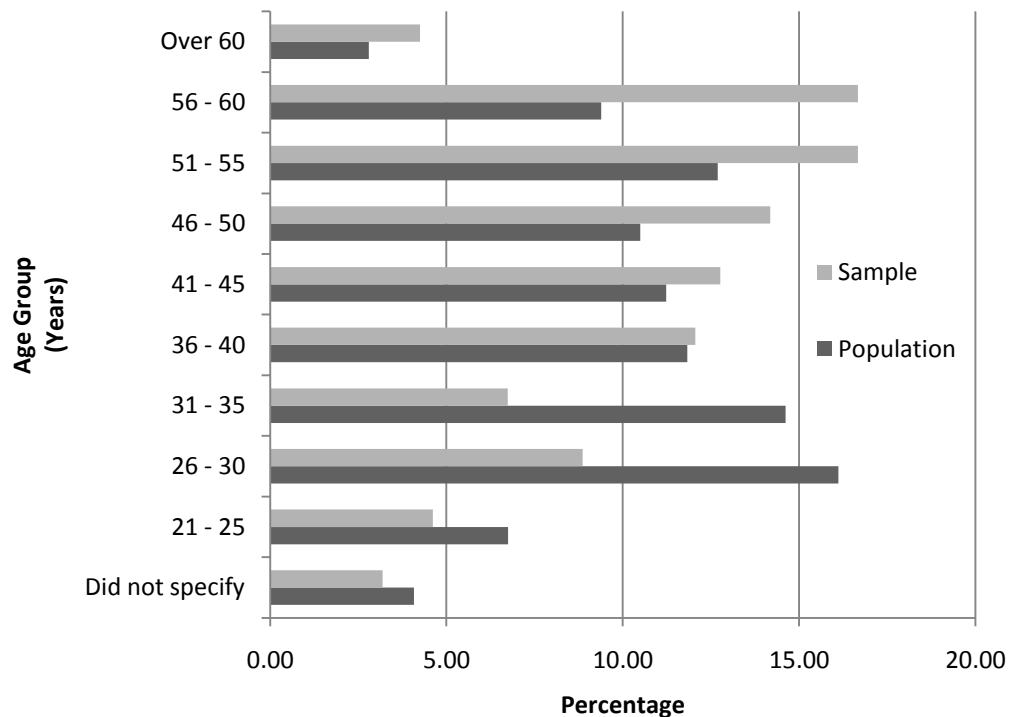


Figure 14. Age structure of research population and research sample.

Respondents to questionnaire version one specifying their age (n=161) had a mean age of 45.27 (SD 11.73). Respondents to questionnaire version two specifying their age (n=112) had a mean age of 45.69 (SD 10.12). A comparison of the age structures of the respondents to questionnaire versions one and two is displayed in figure 15. There were a greater proportion of respondents to questionnaire version one than questionnaire version two in the age categories 21-25, 26-30, 31-35, 51-55, 56-60 and over 60. There were a greater proportion of respondents to questionnaire version two than questionnaire version one in the age categories 36-40 and 41-45. A Chi-square goodness-of-fit test was conducted to examine the difference between the age structure of respondents to questionnaire version one (expected) and the age structure of respondents to questionnaire version two (observed). The two age structures were found to differ significantly:  $\chi^2(9) = 27.953$ ;  $p < .01$ .

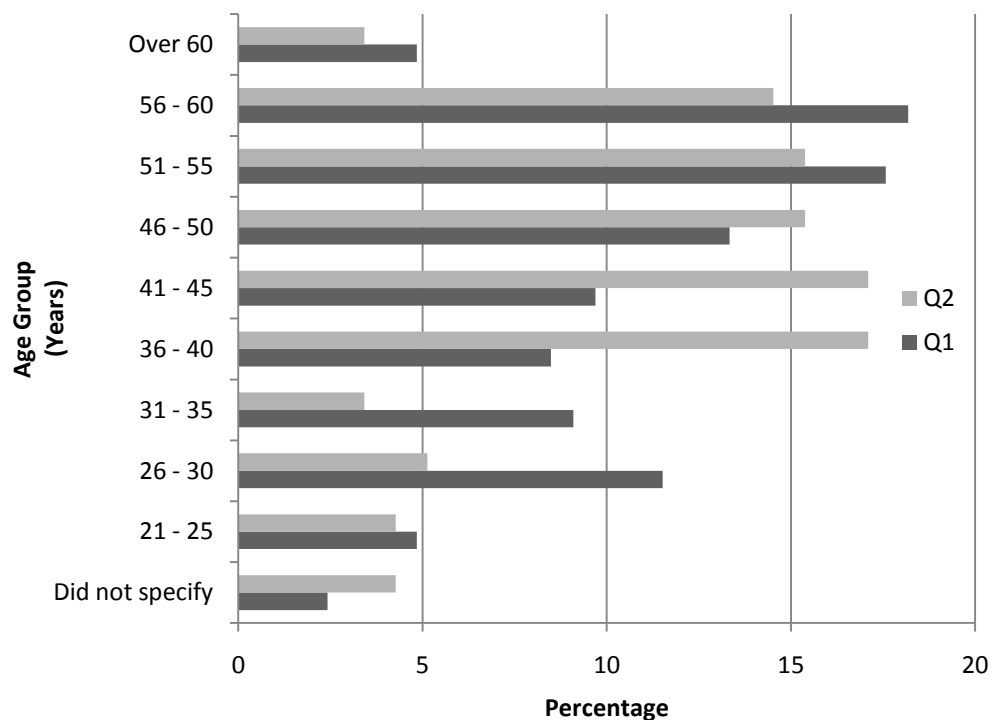


Figure 15. Age structure of research sample organised by questionnaire version one respondents (Q1) and questionnaire version two respondents (Q2).

Overall mean tenure was 18.841 years (SD 12.09). Mean tenure for questionnaire version one respondents was 19.06 years (SD 12.94) and for questionnaire version two respondents was 18.53 years (SD 10.82).

## **5.2. Materials and Measures**

Materials sent to each research participant were the following: (a) one cover sheet explaining the research and informed consent (shown in appendix 3); (b) one research questionnaire (either version one or version two) (see appendices 4 and 5); and (c) one postage-paid preaddressed envelope to return the completed questionnaire to the researcher. At the beginning of the questionnaire, older teachers were defined as those aged 50 and above, and it was made clear that responses regarding older teachers should be made in line with this definition. The questionnaire comprised three sections, which are described in sections 5.2.1 to 5.2.3.

**5.2.1. Outcome variables.** The first section of both versions of the questionnaire contained two measures that corresponded to outcome variables in the research model. The first outcome measure related to respondents' overall evaluation of older teachers. Participants were asked to respond to the question "How would you describe your overall attitude towards older teachers?". Responses to this measure were marked on a five-point scale, with positive scores indicating favourable overall evaluations of older teachers. The response scale had the following labels: (-2) "very unfavourable"; (-1) "unfavourable"; (0) "neutral"; (+1) "favourable"; and (+2) "very favourable". The second outcome measure related to views about older teachers' employment, and was adapted from Redman and Snape

(2002) “discriminatory attitudes towards older teachers” scale. The measure contained five items. The items were: (a) “It is a better investment to train younger teachers rather than older teachers”; (b) “Given a choice, I would prefer not to work with an older teacher on a daily basis”; (c) “Older teachers should step aside to give more opportunities for younger teachers”; (d) “In general, I think that younger teachers should be given priority to stay if there is a need to cut jobs”; and (e) “Overall, older teachers’ contributions at work are less valuable than younger teachers’ contributions”. Responses to these items were marked on a five-point scale where negative scores indicated unfavourable beliefs about the employment of older teachers compared to younger teachers. The response scale had the following labels: (-2) “Strongly Agree”; (-1) “Agree”; (0) “Neither agree nor disagree”; (+1) “Disagree”; and (+2) “Strongly Disagree”.

**5.2.2. Predictor variables.** The second section of the questionnaires comprised three parts that corresponded to predictor variables in the research model. The content of these parts are described in sections 5.2.2.1 to 5.2.2.3.

**5.2.2.1. Stereotypical beliefs.** Different measurement strategies were employed to assess stereotypical beliefs about older teachers in the two versions of the questionnaire. These different measurement strategies are described separately in sections 5.2.2.1.1. and 5.2.2.1.2.

**5.2.2.1.1. Questionnaire version one.** Questionnaire version one assessed stereotypes of older teachers using a scale that was adapted from Redman and Snape’s (2002) stereotypical beliefs scale. The scale contained 15 items (see table 4). Participants were asked to respond according to their perception of older teachers

compared to younger teachers. Responses were on a five-point scale, where higher scores indicated more favourable beliefs about older teachers compared to younger teachers. The response scale had the following labels: (-2) “Much less so than younger teachers”; (-1) “Less so than younger workers”; (0) “No different from younger teachers”; (+1) “More so than younger teachers”; and (+2) “Much more so than younger teachers”.

Table 4.  
*Items assessing stereotypes of older teachers (questionnaire version one only).*

Item No.	Item wording
	Compared to younger teachers, those over the age of 50:
1	Are conscientious
2	Are reliable
3	Work hard
4	Are effective in their job
5	Think before they act
6	Are loyal to the organisation
7	Have interpersonal skills
8	Take things easy
9	Work well in teams
10	Are able to grasp new ideas
11	Adapt to change
12	Accept the introduction of new technology
13	Learn quickly
14	Are interested in being trained
15	Are receptive to direction

*5.2.2.1.2. Questionnaire version two.* Questionnaire version two assessed stereotypes of older teachers using an open-ended measure that was adapted from Haddock and colleagues’ (1993) stereotypical beliefs free-response measure. Participants were asked to free-respond a list of characteristics (or short phrases) they would use to describe older teachers. No minimum or maximum number of responses was specified, and participants were asked to provide as many responses as necessary to convey adequately their impressions of older teachers. Ten blank

spaces were provided for participants' responses<sup>8</sup>. Following this free-response task, participants were asked to provide a rating for each characteristic they had responded using a five-point scale. The scale ranged from -2 to +2 and had the following labels: (-2) "very negative"; (-1) "negative"; (0) "neutral"; (+1) "positive"; and (+2) "very positive".

**5.2.2.2. Affective Reactions.** The second part of section two related to affective reactions towards older teachers. This section was adapted from the free-response method of assessing affective reactions described by Eagly and Mladnic (1989) and Esses and colleagues (Esses et al., 1993). Participants on both versions of the questionnaire were asked to list the feelings or emotions they experience when they see, meet or think about older teachers. No minimum or maximum number of responses was specified, and participants were asked to provide as many responses as necessary to convey how older teachers made them feel.

**5.2.2.3. Behavioural associates.** The third part of section two related to the behavioural component of attitudes. Both questionnaire versions assessed behavioural associates of older workers in two separate ways. The first method was adapted from a free-response scale for assessing behavioural associates of a target group developed by Eagly and Mladnic (1989). Participants were asked to list their most memorable or important professional or personal experiences with older teachers. No minimum or maximum number of responses was specified, and

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<sup>8</sup> Empirical evidence suggested an average number of free-responses of 3.54 for stereotypical beliefs and 3.14 for affective reactions (Haddock & Zanna, 1998c). No data were available on the average number of free-responses in relation to behavioural associates. While being aware of the possible effect of the amount of space provided for answers on the number of responses that are provided by participants, offering participants the opportunity to provide up to 10 responses was considered appropriate and unrestrictive both by the researcher and the pilot participants. For this reason, each of the free-response measures in both questionnaires provided 10 spaces for participants' responses.

participants were asked to provide as many responses as necessary to convey adequately their memorable or important experiences with older teachers. Following this free-response task, participants were asked to provide a rating for each characteristic they had provided using a five-point scale. The scale ranged from -2 to +2 and had the following labels: (-2) “very negative”; (-1) “negative”; (0) “neutral”; (+1) “positive”; and (+2) “very positive”.

The second method for assessing behavioural associates of attitudes toward older teachers was a rating scale measure assessing quantity and quality of contact with older teachers. In relation to the quantity of contact, responses were on a seven-point scale, where higher scores indicated a higher amount of contact with older teachers. The lower end of the response scale (1) was anchored with the phrase “none at all” and the higher end of the scale (7) was anchored with the phrase “a great deal”. The four items related to amount of contact with older teachers: (a) at work; (b) as close friends; (c) in social settings related to work; and (d) in social settings unrelated to work. In relation to the quality of contact, responses were on a seven-point scale, where higher scores indicated better quality of contact with older teachers. The lower and higher ends of the response scales were anchored with different labels depending on the item. In total there were 3 items, each with two parts (the first part of each item regarded contact related to work and the second part of each item regarding contact unrelated to work). The items assessed whether the majority of contact the participant had with older teachers was usually: (a) superficial or in-depth (lower anchor=“very superficial”, higher anchor “very in-depth”); (b) experienced as pleasant (lower anchor=“not at all pleasant”, higher anchor=“very pleasant”); and (c) competitive or cooperative (lower anchor=“very competitive”, higher anchor=“very cooperative”).



**5.2.3. Covariates.** The third section of the questionnaire related to participants' demographic and employment characteristics. Participants were asked to provide information on their age, sex, tenure, the type of school in which they work, the location of their school, and their employment-level. Age was a free-response item (\_\_\_ years); sex was a dichotic checkbox (male or female); tenure was a free-response item (\_\_\_ years, \_\_\_ months); type of school was a trichotomic checkbox (primary, secondary, or special/other); location of school was a free-response item (responses were coded into regions during data entry); and employment-level was a checkbox item with 6 possible responses (supply teacher; class teacher; teacher with additional responsibility; head of department; senior management team; and other).

### **5.3. Procedure**

Questionnaire packs were sent to the home address of the individuals selected to participate in the research. The questionnaire included in half of the questionnaire packs contained questionnaire version one, while the other half contained questionnaire version two. Questionnaire packs were sent out during May 2008 and completed questionnaires were returned to the researcher between May and December 2008. Each participant was sent an explanatory cover letter along with the other research materials (see appendix 3). This letter made clear the following points: (a) the purpose of the research; (b) the involvement of the NUT; (c) how participants were selected; (d) the anonymity and confidentiality of participation and all responses; (e) the voluntary nature of the research and the right of each person not to participate; (f) the typical length of time required to complete the

questionnaire; (g) contact details of the researcher; and (h) the procedure for returning completed questionnaires to the researcher.

#### **5.4. Ethical Considerations**

This research focused on the potentially sensitive issue of age prejudice so it was important to ensure that the research was conducted in an ethically sound way. The research was conceived, designed and conducted in light of the ethical principles specified by the British Psychological Society (British Psychological Society, 2006) and the University of Nottingham. The research proposal was also cleared by a departmental ethics committee. The research was fully explained to NUT prior to seeking their participation. Moreover, informed consent was sought from each individual invited to participate in the research, each of whom received a detailed explanation of the research and assurances of the confidentiality and anonymity of their participation and questionnaire responses. Participants were not asked to provide any personally identifiable information. All questionnaire data were stored securely in a locked filing cabinet within the university department, and in protected storage on a university computer.

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## Chapter Five Summary

This chapter described in full the research protocol that was implemented to conduct the present questionnaire survey. First, the sampling method and the characteristics of the research sample were described (section 5.1.). Next, the materials used in the research were described, along with the nature of the measures which formed the content of those materials (section 5.2.). The procedure by which the research was conducted was described in section 5.3. Finally, the ethical considerations on which the research method was constructed were described in section 5.4. The next chapter proceeds to describe the results of the questionnaire survey.

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## 6. Results

This chapter discusses the results of questionnaire survey that was conducted to examine the present research objectives. The structure of this chapter is displayed in figure 16. The first section describes the process of data screening that was carried out (Section 6.1.). Specifically, the accuracy checks of the computerised data compared to the original paper-based responses are described in section 6.1.1. In this research, the patterns and proportions of missing data are results in themselves. For this reason, a thorough missing value analysis was conducted and is described in detail in Section 6.1.2. Analyses of the research objectives are described in section 6.2., which contains four subsections corresponding to the four main research objectives of this thesis.

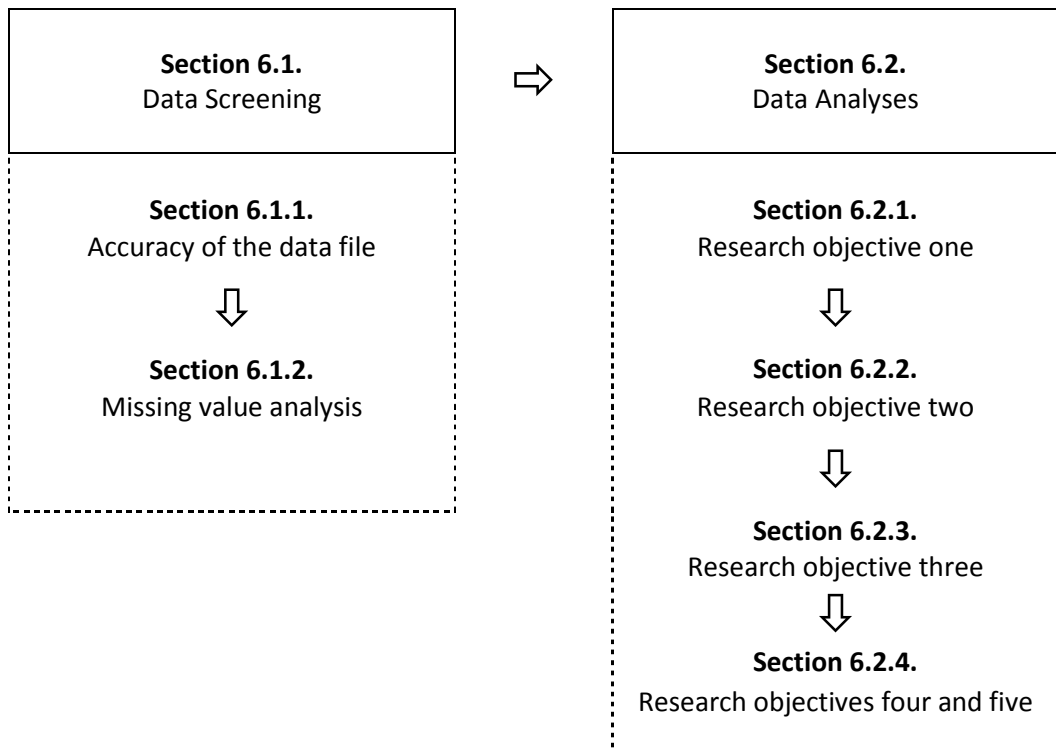


Figure 16. Chapter six structure.

## **6.1. Data Screening**

**6.1.1. Accuracy of the data file.** Questionnaire data were transcribed manually into an SPSS data file. The first stage of accuracy checking was proofreading the original data against the computerised data file. The second stage of accuracy checking was examining univariate descriptive statistics using SPSS FREQUENCIES. Each discrete variable in the data file was checked for out-of-range numbers, continuous variables were checked for implausible values, and means and standard deviations were also checked for plausibility. Incorrectly transcribed data items identified through these analyses were checked against the original data items on the questionnaire and the items in the SPSS data file were corrected.

**6.1.2. Missing data.** Visual inspection of the data file suggested that some questionnaire measures had moderate proportions of missing data, while other sections had very low proportions of missing data. To analyse the amount and patterns of missing data, SPSS MISSING VALUE ANALYSIS (MVA) was conducted in accordance with the guidelines specified by Tabachnick and Fidell (2007). As the research objectives were not only inferential in nature but also descriptive (c.f. research objective two), it was important that completed data cells were preserved for analysis where possible. Therefore, as recommended by Pallant (2007) pairwise data deletion was preferred over casewise data deletion where possible and appropriate. MVA was conducted separately for each discrete questionnaire section and, where appropriate, MVA was conducted to analyse systematic patterns of missing data across questionnaire sections. The results of the MVA are described in section 6.1.2.1., but the discussion of the MVAs is presented separately in section 7.2.

**6.1.2.1. Missing value analyses.** In relation to questionnaire version one, two data cases were excluded from all subsequent analyses as they did not contain any completed data points (questionnaire 94 and 247). In relation to questionnaire version two, four data cases were excluded from all subsequent analyses as they did not contain any completed data points (questionnaires 49, 189, 199 and 259). The analyses that follow relate to the remaining 276 cases (or specifically to questionnaire version one or two respondents where noted).

*6.1.2.1.1. Overall evaluation of older teachers rating scale (both questionnaire versions).* SPSS MVA revealed that the overall proportion of missing data was 6.9 per cent (n=19). The proportion of missing data on this item was low in questionnaire version two at 4.4 per cent (n=5). Moreover, separate variance t-tests showed no systematic relationship between missingness of data points on this item and any of the other predictor, outcome or control variables. Little's Missing Completely At Random (MCAR) test was not statistically significant, suggesting missing data points occurred completely at random:  $\chi^2(46) = 51.971$ ;  $p = .253$ . However, the proportion of missing data on this item in questionnaire version one was above the maximum 5 per cent level of missing data points recommended by Tabachnick and Fidell (2007) at 8.5 per cent (n=14). Nevertheless, separate variance t-tests showed no systematic relationship between missingness of data points on this item in questionnaire version one and any missingness of data points in any other predictor, outcome or control variables. Moreover, Little's MCAR test was not statistically significant, suggesting missing data points occurred completely at random:  $\chi^2(595) = 627.43$ ;  $p = .173$ . Therefore, pairwise deletion of missing data from this item was used in subsequent analyses.

*6.1.2.1.2. Attitude towards the employment of older teachers rating scale (both questionnaire versions).* SPSS MVA revealed that the proportion of missing data points was low for all items in this measure (between .4 per cent and 1.1 per cent). Questionnaire number 34 had missing data for all five items in this measure and was excluded from subsequent analyses involving this measure. The maximum number of missing data points was one for all other cases with missing data. Pairwise deletion of missing data was used in subsequent analyses involving this scale.

*6.1.2.1.3. Stereotypical beliefs about older teachers rating scale (questionnaire version one only).* SPSS MVA revealed that there were no missing data points in the stereotypical beliefs scale for 5 of the items, and a single missing data point for the remaining 10 items. Eight data cases had single missing data points and one data case had two missing data points. Therefore, pairwise deletion of missing data was used in subsequent analyses involving this measure.

*6.1.2.1.4. Affective reactions toward older teachers and behavioural associates free-response scales (questionnaire version one only).* SPSS MVA revealed that the proportion of cases with zero data points was 16 per cent (n=26) for the affective scale and 11 per cent (n=18) for the behavioural scale. Missingness of data on the two scales is displayed in table 5. This level of item nonresponse was higher than the 3-5 per cent level reported on similar scales completed by university students (see Haddock & Zanna, 1998c). Separate variance t-tests revealed that a systematic relationship existed between missingness on the behavioural associates scale and missingness on the affective reactions scale:  $t(5.6) = 2.5, p = .47$ . Little's MCAR test revealed that the data were not missing completely at random:  $\chi^2(2) = 4.813; p = .9$ . The combination of statistically significant separate variance t-tests and

statistically nonsignificant Little's MCAR test suggests that the data were missing at random (MAR) (i.e. ignorable nonresponse) but not MCAR (see Tabachnick & Fidell, 2007). Although data imputation is recommended for missing data where the data are not MCAR (see Garson, 2008) the data here were free-response and open-ended in nature, so methods for estimating missing data points could not be applied. Therefore, casewise data deletion of the cases with missing data was used in subsequent analyses involving these measures.



Table 5.  
*Missing value analysis of affective reactions measure and behavioural associates measure (questionnaire version one only).*

Questionnaire No.	1	2
10	X	-
111	X	-
119	X	-
136	X	-
205	X	-
237	X	-
110	X	X
9	X	X
160	X	X
173	X	X
86	X	X
207	X	X
209	X	X
225	X	X
242	X	X
246	X	X
256	X	X
275	X	X
157	-	X
14	-	X
212	-	X
220	-	X
164	-	X
226	-	X
228	-	X
233	-	X
92	-	X
26	-	X
174	-	X
192	-	X
266	-	X
145	-	X

*Note.* 1 = affective reactions scale; 2 = behavioural associates scale. Dash indicates data were not missing. X indicates item nonresponse.

6.1.2.1.5. *Stereotypical beliefs, affective reactions and behavioural associates free-response scales (questionnaire version two only).* Following the systematic pattern of missing data between open-ended measures in questionnaire version one (see section 6.1.2.1.4.), MVA was conducted on the three open-ended measures of questionnaire version two. A systematic pattern of missing data was discovered

between the three measures. The proportion of cases with zero data points was 5.3 per cent (n=6) for the stereotypical beliefs scale, 17.7 per cent (n=20) for the affective reactions scale, and 8 per cent (n=9) for the behavioural associates scale. Item nonresponse (i.e. absence of data on entire measure) on these scales was sufficiently high to warrant further investigation. Separate variance t-tests revealed that a systematic relationship existed between missingness on the affective reactions scale and both the stereotypical beliefs scale ( $t(23.7) = 3.8, p < .001$ ) and the behavioural associates scale ( $t(73.8) = 5.4, p < .001$ ). Missingness of data across these measures is shown in table 6.

Table 6.  
*Missing values analysis of the stereotypical beliefs measure, affective reactions measure and behavioural associates measure (questionnaire version two only).*

Questionnaire No.	1	2	3
2	-	-	X
31	-	-	X
38	-	-	X
60	-	-	X
102	-	-	X
115	-	-	X
134	-	-	X
150	-	-	X
155	-	-	X
223	-	-	X
224	-	-	X
227	-	-	X
231	-	-	X
22	-	X	X
34	-	X	X
255	-	X	X
187	-	X	-
106	-	X	-
124	-	X	-
139	X	-	-
231	X	-	-
122	X	-	X
89	X	X	X
221	X	X	X
99	X	X	X

*Note.* 1 = Stereotypical beliefs scale. 2 = Affective reactions scale. 3 = Behavioural associates scale. Dash indicates data were not missing. X indicates item nonresponse.

Little's MCAR test revealed that missing data in the three predictor variable measures were not MCAR:  $\chi^2(8) = 13.299$ ;  $p = .102$ . The combination of statistically significant separate variance t-tests and statistically nonsignificant Little's MCAR test suggests that the data were MAR. As described in section 6.1.2.1.4., data imputation is recommended for missing data where the data are not MCAR but this was not possible in the present case. Therefore, casewise data deletion of the cases with missing data was used in subsequent analyses involving these measures. Item

nonresponse to open-ended measures is discussed in more detail in sections 7.2.2. and 7.2.3.

*6.1.2.1.6. Quality and quantity of contact with older teachers scale (both questionnaire versions).* SPSS MVA revealed that the number of missing data points in the quality and quantity of contact with older teachers scale was low for all items, with the number of missing data points ranging from 2 to 10 (.7 per cent to 3.6 per cent). Both questionnaire versions one and two had similar levels and patterns of missing data. Two cases (questionnaire numbers 34 and 256) did not contain any data points, and were excluded from subsequent analyses involving the contact scale. One other case (questionnaire number 174) had more than 50 per cent missing data on this measure and was excluded from subsequent analyses. For the remaining cases with missing data on this measure, pairwise deletion of data was used in subsequent analyses involving this measure.

*6.1.2.1.7. Demographic and employment information.* Some participants did not provide responses to certain demographic and employment items, as often occurs in survey research (see Tourangeau et al., 2000). The numbers (and proportions) of participants who did not respond to the demographic and employment items were as follows: (a) age – 4 (1.4 per cent); (b) sex – 3 (1.1 per cent); (c) tenure – 5 (1.8 per cent); (d) type of school – 10 (3.6 per cent); (e) location – 27 (9.8 per cent); (f) work type – 10 (3.6 per cent); and (g) employment-level – 6 (2.2 per cent). Both questionnaire versions one and two had similar levels and patterns of missing data. Missingness of data on the demographic and work-related items is displayed in table 7.

Table 7.  
*Missing value analysis of demographic and employment-related characteristics (both questionnaire versions).*

Questionnaire No.	1	2	3	4	5	6	7
20	-	-	-	-	-	X	-
115	-	-	-	-	-	X	-
252	-	-	-	-	-	X	-
255	-	-	-	-	-	X	-
182	-	-	-	-	X	X	-
179	-	-	-	-	X	-	-
188	-	-	-	-	X	-	-
191	-	-	-	-	X	-	-
186	-	-	-	-	X	-	X
56	-	-	-	-	-	-	X
71	-	-	-	-	-	-	X
131	-	-	-	-	-	-	X
133	-	-	-	-	-	-	X
146	-	-	-	-	-	-	X
150	-	-	-	-	-	-	X
167	-	-	-	-	-	-	X
173	-	-	-	-	-	-	X
23	-	-	-	-	-	-	X
51	-	-	-	-	-	-	X
31	-	-	-	-	-	-	X
192	-	-	-	-	-	-	X
209	-	-	-	-	-	-	X
218	-	-	-	-	-	-	X
226	-	-	-	-	-	-	X
22	-	-	-	-	-	-	X
261	-	-	-	-	-	-	X
284	-	-	-	-	-	-	X
285	-	-	-	-	-	-	X
216	-	-	-	-	-	X	X
26	-	-	-	-	X	X	X
86	-	-	-	X	X	-	X
99	-	-	-	X	-	-	X
250	-	-	-	X	-	-	-
65	-	-	X	-	-	-	-
219	-	-	X	-	-	-	-
265	-	X	-	-	-	-	-
34	X	X	X	X	X	X	X
9	X	X	X	X	X	X	X
14	X	X	X	X	X	X	X

*Note.* 1 = Sex; 2 = Age; 3 = Tenure; 4 = Employment level; 5 = Work type; 6 = School type; 7 = Region. Dash indicates data were not missing. X indicates item nonresponse.

Apart from the location item, the proportion of missing data for all demographic and employment-related information was relatively low (< 5 per cent). However, separate variance t-tests revealed a systematic relationship between missingness on the employment-level item and the region item ( $t(23.3) = 2.2, p < .05$ ). Three cases (questionnaire numbers 9, 14 and 34) did not disclose any demographic or employment-related information. These cases were excluded from all analyses involving demographic and employment data. All other cases with missing data had a maximum of 50 per cent missing data points and pairwise data deletion was used on these cases in subsequent analyses involving the covariates.

## **6.2. Data Analyses**

The qualitative and quantitative analyses that were conducted on the questionnaire data are presented in sections 6.2.1 to 6.2.5. These five sections correspond to the five research objectives of this thesis.

**6.2.1. Research objective one.** Research objective one aimed to examine the nature of the demographic and employment-related variables, and their associations with predictor variables and outcome variables. Descriptive statistics relating to the covariates were presented and interpreted in section 5.1. Implications of those descriptive statistics are discussed in section 7.2.1. In order to examine associations among the covariates, and between the covariates and the other variables, a series of quantitative analyses were conducted. This section outlines and discusses those analyses.

As the descriptive statistics revealed only minor differences in the covariates between the questionnaire versions, correlation analyses were not split by

questionnaire type, but were conducted on data from both questionnaire versions simultaneously. The intercorrelations between the covariates are displayed in table 8. Correlations between continuous variables were calculated using Pearson's product-moment correlation coefficient ( $r$ ). Correlations between continuous and dichotic variables were calculated using point-biserial correlation coefficient ( $r_{pb}$ ). Correlations between continuous and nominal variables were calculated using eta ( $\eta$ ) as recommended by Garson (2008). Correlations between two pairs of nominal variables (e.g. region and job type) were not calculated.

Table 8.  
*Correlations between demographic variables, employment-related variables and outcome variables (both questionnaire versions).*

Variable	1	2	3	4	5	6	7
1. Age	-						
2. Tenure	$r=.861^{***}$	-					
3. Sex	$r_{pb}=-.052$	$r_{pb}=-.073$	-				
4. Region	$\eta=.143$	$\eta=.136$	nc	-			
5. W-type	$\eta=.179$	$\eta=.146$	nc	nc	-		
6. E-level	$\eta=.357$	$\eta=.364$	nc	nc	nc	-	
7. A1	$r=.307^{***}$	$r=.251^{***}$	$r_{pb}=.020$	$\eta=.153$	$\eta=.115$	$\eta=.069$	-
8. A2	$r=-.122^*$	$r=-.078$	$r_{pb}=.156^*$	$\eta=.256$	$\eta=.094$	$\eta=.120$	$r=-.361^{***}$

*Note.* W-type = Work type. E-level = employment-level. A1 = Rating on attitude towards older teachers item. A2 = Attitude towards employment of older teachers score. nc = Not calculated. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

The correlational analyses suggested an association between age and tenure, age and attitude to older teachers, and attitude to employment of older teachers. Other significant correlations were found between tenure and attitude to older teachers, and attitude to older teachers and attitude to older teachers' employment, and sex and attitude to older teachers' employment. One-way ANOVA revealed that females reported significantly more positive attitudes towards the employment of older teachers than did men:  $F(1, 268) = 6.729$ ;  $p \leq .01$ .

Correlations between covariates and predictor variables were also examined. Only age was found to correlate significantly with predictor variables. The correlation coefficients between respondent age and the predictor variables are displayed in table 9. Intercorrelations between the predictor variables are presented separately in section 6.2.2.4.

Table 9.  
*Correlations between respondent age and predictor variables.*

	S	A	B	Quan	Qual
Age	.408***	.256***	.301***	.427***	.239***

*Note.* S = Stereotypical beliefs score. A = Affective reactions score. B = Behavioural associates score. Quant = Quantity of contact with older teachers score. Qual = Quality of contact with older teachers score. \*\*\* p < .001.

The results of the correlational analyses on age and the predictor variables suggested that age was significantly positively correlated with all predictor variables. Overall, the correlational analyses reported in this section indicated that age, tenure and gender would need to be controlled-for when constructing a regression model of the covariates, predictor variables and outcome variables.

**6.2.2. Research objective two.** Research objective two aimed to examine the beliefs, emotions and behaviours commonly associated with older teachers. Stereotypical beliefs about older teachers are examined in section 6.2.2.1, affective reactions to older teachers are examined in section 6.2.2.2., and behavioural associates of older teachers are examined in section 6.2.2.3. Relationships between the valences of responses in relation to beliefs, emotions and behaviours commonly associated with older teachers are examined in section 6.2.2.4.



**6.2.2.1. Stereotypical beliefs.** Two analyses were conducted to examine the structure of reported stereotypical beliefs regarding older teachers. First, a confirmatory factor analysis (CFA) was conducted on data from the stereotypical beliefs rating scale of questionnaire version one (see section 6.2.2.1.1.). Next, an inductive content analysis was conducted on data from the free-response stereotypical beliefs measure of questionnaire version two (see section 6.2.2.1.2.). Then, the patterns of responses between the forced-choice and free-response stereotype measures were compared by conducting a deductive content analysis on the free-response measure of questionnaire version two using the fifteen stereotype categories from the rating scale of questionnaire version one as the coding framework (see section 6.2.2.1.3.). In addition to comparing the patterns of responses between the two stereotypical beliefs measures, a Mann-Whitney U-test was conducted to compare the valence of responses between the two stereotypical beliefs measures (see section 6.2.2.1.4.).

*6.2.2.1.1. Confirmatory factor analysis of forced-choice stereotypical beliefs measure (questionnaire version one only).* Descriptive statistics for each scale item are displayed in table 10. As recommended by Ferguson and Cox (1993) dimension reduction was accomplished using CFA rather than exploratory factor analysis, as the research objective was to determine if Redman and Snape's (2002) latent dimensions of stereotypes of older teachers (work effectiveness and adaptability) were borne out by the present research data. Since CFA is highly sensitive to deviations from its statistical assumptions (see Tabachnick & Fidell, 2007) the forced-choice stereotypical beliefs data were screened rigorously prior to analysis. SPSS MVA revealed that 8 cases contained 1 missing data point (questionnaire numbers 14, 26, 137, 145, 149, 214, 243 and 250) and one case (questionnaire number 198)

contained two missing data points. In addition, SPSS EXPLORE box plots revealed 11 cases (questionnaire numbers 55, 57, 92, 101, 138, 145, 158, 165, 181, 198 and 211) that were univariate outliers on at least one item response. Multivariate normality was evaluated through AMOS. No cases of multivariate outliers were detected using Mahalanobis distance, indicating that the observations were within an acceptable distance from the centroid under the hypothesis of normality ( $p > .001$ ) (Garson, 2008). All cases containing univariate outliers and missing data points were deleted casewise prior to analysis. The remaining number of cases was 145, which was low but within acceptable limits for CFA (Tabachnick & Fidell, 2007). Skewness and kurtosis values for all items indicated that the distribution of responses did not deviate from the normal distribution to an extent that warranted data transformation ( $< \pm 2.0$ ; Ferguson & Cox, 1993).

Table 10.  
*Descriptive statistics of responses to the stereotypical beliefs items (questionnaire version one only).*

Item	Descriptive Statistics			Item Responses (percentages)				
	n	M	SD	-2	-1	0	1	2
1	162	0.36	.777	1.2	5.6	58.6	25.3	9.3
2	163	0.54	.780	0.6	1.8	54.6	28.8	14.1
3	162	0.19	.784	1.2	11.1	63.0	16.7	8.0
4	163	0.43	.824	1.8	4.3	54.6	27.6	11.7
5	163	0.77	.806	0.6	4.3	30.1	47.9	17.2
6	162	0.59	.868	0.6	6.8	42.6	33.3	16.7
7	163	0.48	.877	2.5	6.1	44.2	35.0	12.3
8	162	-0.06	.809	4.9	17.9	58.6	15.4	3.1
9	162	0.07	.752	1.2	14.8	65.4	12.3	6.2
10	162	-0.29	.745	3.7	32.7	54.9	6.2	2.5
11	162	-0.45	.705	4.9	41.4	48.8	3.7	1.2
12	163	-0.60	.682	7.4	48.5	40.5	3.7	0.0
13	162	-0.21	.635	1.2	27.2	64.8	4.9	1.9
14	162	-0.39	.733	4.3	38.9	50.0	4.9	1.9
15	162	-0.27	.705	3.7	29.0	59.9	5.6	1.9

*Note.* M = Mean response valence (response range was -2 to +2).

CFA was conducted using AMOS 16. The hypothesised two-factor model (i.e. work effectiveness and adaptability) was tested against an independence model (i.e. no underlying relationships amongst variables), a one-factor model, and a three-factor model. The three factor model was created using exploratory factor analysis with varimax factor rotation of the scale items, where the factor extraction method (principal components analysis) was set to extract three factors. In relation to this factor analysis, Bartlett’s test of sphericity was found to be statistically significant:  $\chi^2(105) = 765.983$ ;  $p < .001$ . However, Bartlett’s test is known to be sensitive to sample size, which can cause a finding of significance even for very small departures from independence (Garson, 2008). Moreover, the Kaiser-Meyer-Olkin measure of sampling adequacy was high at .876 (see Ferguson & Cox, 1993; Tabachnick & Fidell, 2007), so the significant Bartlett’s test was not viewed as being problematic. The reliability of the new third factor was adequate ( $\alpha = .662$ ). Factor loadings for the three-factor model are displayed in appendix 6. The results of the CFA are displayed in table 11.

Table 11.  
*Goodness-of-fit indicators of models for stereotypical beliefs (questionnaire version one only, n = 145).*

mod	$\chi^2$	df	$\Delta\chi^2$	GFI	AGFI	NFI	NNFI	CFI	RMSEA
i	798.323	105	-	.395	.309	-	-	-	.214
1-f	261.947	90	536.376***	.752	.669	.672	.711	.752	.115
2-f	386.508	92	411.815***	†	†	.516	.515	.575	.149
3-f	118.523	87	679.800***	.901	.863	.852	.945	.955	.050

*Note.* mod = model. GFI = goodness of fit index. AGFI = adjusted goodness of fit index. NFI = normed fit index. NNFI = non-normed fit index. CFI = comparative fit index. RMSEA = root mean square error of approximation. i = independence model; 1-f = one-factor model; 2-f = two-factor model; 3-f= three-factor model. \*\*\*  $p < 0.001$ . † indices were not provided as the solution was not admissible.

Maximum likelihood estimation was employed to estimate all models. The independence model testing the hypothesis that all variables are uncorrelated was

easily rejectable,  $\chi^2(105) = 798.323$ ;  $p < .001$ . The one-factor model was tested next. A Chi-square goodness-of-fit test indicated a significant improvement in fit between the independence model and the one-factor model, but the CFI and NFI values below .9 indicated that the model was not a statistically acceptable fit (Garson, 2008). The hypothesised two-factor model was not admissible, due either to (a) the model being wrong, or (b) the sample size being too small (Jöreskog & Sörbom, 1984). Accordingly, the NFI, NNFI, CFI and RMSEA values indicated that the two-factor model provided a worse fit for the data than the one-factor model (but better than the independence model)<sup>9</sup>. However, the three-factor model provided a very good fit for the data. The GFI and NFI values were sufficient to allow the model to be accepted ( $> .09$ ). The RMSEA of the model also indicated that the model was a good fit for the data (Garson, 2008). The AGFI and NFI values were marginally outside of the conventionally accepted range, but this may have been due to the relatively low sample size. On the basis of these findings, it is not possible to support the hypothesised two-factor model, but support is provided for a three-factor model ( $p = .014$ ).

*6.2.2.1.2. Inductive content analysis of free-response stereotypical beliefs measure (questionnaire version two only).* Inductive (i.e. data-driven) content analysis was conducted on responses to the free-response stereotypical beliefs scale of questionnaire version two. A content analysis was conducted in line with the “conventional content analysis” strategy specified by Hsieh and Shannon (2005, pp.

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<sup>9</sup> Closer inspection of the fit indices cited by Redman and Snape (2002) suggest that the two-factor model in their confirmatory factor analysis was not an acceptable fit for the data, based on current goodness-of-fit indices conventions. The reported GFI, AGFI, NFI, NNFI and CFI of their two factor model are all below recommended .9 cutoff level, and the RMSEA is above the recommended .05 cutoff level (Garson, 2008). Moreover, Redman and Snape did not test properly an alternative three-factor model: the three-factor model they tested included an additional, separate scale relating to attitude towards employment of older teachers.

1279-1281). The aim of this analysis was to establish a categorical structure of participants' free-responses regarding stereotypes of older teachers. Categories were bipolar so that all responses relating to a particular characteristic were coded into the same category whether negatively or positively valenced. Following establishment of a coding scheme by the present researcher, the number of responses falling into each category was counted independently by (a) the present researcher, and (b) a disinterested second rater, who was an experienced applied psychology researcher specialising in qualitative research. The categories were induced by the present researcher due to his familiarity with the stereotype literature and the questionnaire responses, and the amount of time that would be required of an independent rater to induce his or her own categories from the questionnaire responses. This strategy is common in inductive content analyses where knowledge of the research literature is an important part of category development (e.g. Barringer, Jones, & Neubaum, 2005). Each response was coded into a single category. Where a response was perceived as relating to more than one category it was coded into the single most relevant category. A conservative approach towards coding was taken, so that if a response did not clearly fit into a category it was left uncoded. Responses that were coded differentially by the two raters were discussed by the two raters until agreement was reached as to the most suitable coding. Subsequently, the raters discussed clustering the categories into themes (i.e. middle-level categories), and grouping together the themes into more general categories (i.e. top-level categories). A total of 645 responses were provided by 107 of the 117 respondents. The mean number of responses was 6.03 for those who completed this measure. The proportion of respondents who did not provide any responses was 8.5 per cent (n=10). The proportion of responses that were perceived by both raters as not fitting into any category was low at 5.6 per cent

(n=36). Of these 36 uncoded responses, the raters determined that 17 were incorrect responses (i.e. were not stereotypical beliefs) and 19 were uncategorisable due to ambiguity or illegibility. Therefore, the mean number of coded responses per participant was 5.91. Interrater reliability was substantial ( $\kappa = .732$ ) (see Landis & Koch, 1977). The categorical structure of responses and the frequency and proportion of responses in each category are displayed in table 12.

Table 12.

*Descriptive statistics of the inductive content analysis of freely-responded stereotypical beliefs about older teachers (questionnaire version two only).*

A	B	C	%	M	SD
<b>Work characteristics (n=407)</b>			<b>63.11</b>	<b>0.76</b>	<b>1.30</b>
<i>Effectiveness (n=166)</i>			<i>25.74</i>	<i>1.19</i>	<i>1.03</i>
		Reliability (n=49)	7.60	1.51	0.54
		Effectiveness (n=35)	5.43	1.09	0.95
		Conscientiousness (n=22)	3.41	1.09	1.11
		Hard-working (n=17)	2.64	0.65	1.62
		Professional (n=12)	1.86	0.67	1.37
		Focused on education (n=12)	1.86	1.00	1.13
		Dedicated (n=11)	1.71	1.45	0.82
		Teamwork and leadership (n=8)	1.24	1.88	0.35
<i>Adaptability (n=138)</i>			<i>21.40</i>	<i>-0.37</i>	<i>1.19</i>
		Flexibility (n=57)	8.84	-0.23	1.30
		Resistance to change (n=29)	4.50	-0.59	0.98
		Struggle with new technology (n=17)	2.64	-0.94	0.90
		Out of touch (n=13)	2.02	-0.15	1.21
		Willingness to try new things(n=10)	1.55	0.10	1.45
		Openness to new ideas (n=8)	1.24	-0.13	1.25
		Slow to learn (n=4)	0.62	-0.75	0.50
<i>Age-related knowledge and status (n=103)</i>			<i>15.97</i>	<i>1.57</i>	<i>0.67</i>
		Experience (n=79)	12.25	1.67	0.50
		Subject knowledge (n=10)	1.55	1.60	0.52
		Respected (n=10)	1.55	1.20	1.32
		Seniority (n=4)	0.62	0.50	0.58
<b>Personal characteristics (n=202)</b>			<b>31.32</b>	<b>0.87</b>	<b>1.39</b>
<i>Skills, abilities and disposition (n=149)</i>			<i>23.10</i>	<i>0.95</i>	<i>1.37</i>
		Supportive (n= 47)	7.29	1.51	0.88
		Interpersonal skills (n= 32)	4.96	0.88	1.43
		Confident (n= 18)	2.79	1.28	0.96
		Cynical (n= 16)	2.48	-1.00	1.13
		Prosocial (n= 13)	2.02	1.08	1.44
		Enthusiastic (n= 8)	1.24	0.38	1.77
		Interesting (n= 6)	0.93	0.67	1.37
		Creative (n= 5)	0.78	1.20	1.30
		Reflective (n= 3)	0.47	2.00	0.00
		Think before they act (n= 1)	0.16	1.00	-
<i>Physical and mental ability (n=53)</i>			<i>8.22</i>	<i>0.64</i>	<i>1.44</i>
		General knowledge (n= 27)	4.19	1.74	0.59
		Energy (n= 14)	2.17	-0.64	1.08
		Unhealthy (n= 10)	1.55	-0.30	1.16
		Cognitive decline (n= 2)	0.31	-0.50	2.12
<b>Uncoded Responses (n=36)</b>			<b>5.58</b>	<b>0.26</b>	<b>1.54</b>
<i>Uncategorisable responses (n=19)</i>			<i>2.95</i>	<i>0.37</i>	<i>1.38</i>
<i>Incorrect responses (n=17)</i>			<i>2.64</i>	<i>0.13</i>	<i>1.75</i>

Note. A = Top-level category. B = Middle-level category. C= Bottom-level category. Bold text indicates top-level category. Italic text indicates middle-level category. Plain text indicates bottom-level category. M = Mean response valence (response range was -2 to 2).

Data-driven categorisation of freely responded stereotypical beliefs of older teachers suggests that stereotypical beliefs do not cluster into work effectiveness and adaptability dimensions. Moreover, the content analysis suggested that work effectiveness and adaptability may not even be the two most important categories of stereotypical beliefs of older teachers. The present data suggest that personal characteristics relating to skills, abilities and disposition were reported more frequently than beliefs regarding older teachers' adaptability. The findings reported in this section are consistent with the finding reported in section 6.2.2.1.1. and cast doubt on the validity of the two-factor model of stereotypical beliefs associated with older teachers.

*6.2.2.1.3. Deductive content analysis of free-response stereotypical beliefs measure (questionnaire version two only).* To compare the categorical structures of older teacher stereotypes elicited through a free-response and a forced-choice measurement strategy, a deductive (i.e. theory-driven) content analysis was conducted on responses to the free-response stereotypical beliefs scale of questionnaire version two. This content analysis was conducted in line with the "directed content analysis" strategy specified by Hsieh and Shannon (2005, pp. 1281-1283). The codes used in the deductive content analysis were the 15 stereotypical beliefs about older workers used in the stereotypical beliefs measure in questionnaire version one (see Redman & Snape, 2002). These categories were viewed as bipolar so that both positively and negatively valenced responses about a characteristic were coded into the same category. The number of responses falling into each category was counted independently by (a) the present researcher, and (b) a disinterested second rater, who was an experienced applied psychology researcher specialising in qualitative research. The second rater was a different individual from



the second rater who took part in the inductive content analysis for pragmatic reasons. Each response was coded into a single category. Where a response was perceived as relating to more than one category it was coded into the single most relevant category. A liberal approach towards coding was taken, so responses were only left uncoded if they could not be fitted into any of the specified categories. Responses with a partial match to a stereotype category were coded into that category. Responses that were coded differentially by the two raters were discussed by the two raters until agreement was reached as to the most suitable coding. The proportion of responses that were perceived by both raters as not fitting into any category was very high at 49.6 per cent (n=320). Therefore, the mean number of coded responses per participant was 3.04. Interrater reliability was substantial ( $\kappa = .666$ ) (see Landis & Koch, 1977). The structure of responses and descriptive statistics for each category (frequencies and proportions of responses, and means and standard deviations) are displayed in table 13.

Table 13.

*Descriptive statistics of the deductive content analysis of freely-response stereotypical beliefs about older teachers (questionnaire version two only).*

Stereotypical Beliefs (n=645)	%	M	SD
Compared to younger workers, those over the age of 50:			
Adapt to change (n= 78)	12.1	-0.46	1.12
Are effective in their job (n= 75)	11.6	1.19	1.15
Are reliable (n= 60)	9.3	1.25	0.91
Are conscientious (n= 23)	3.6	1.13	1.10
Work hard(n= 17)	2.6	1.06	1.48
Have interpersonal skills (n= 15)	2.3	0.80	1.42
Are receptive to direction (n= 13)	2.0	-0.08	1.26
Take things easy (n= 11)	1.7	0.64	1.36
Work well in teams (n= 8)	1.2	1.75	0.46
Are loyal to the organisation (n= 6)	.9	1.17	0.75
Are able to grasp new ideas (n= 6)	.9	-0.17	0.98
Accept the introduction of new technology (n= 6)	.9	-1.17	0.41
Learn quickly (n= 4)	.6	-1.00	0.00
Think before they act (n= 2)	.3	1.00	0.00
Are interested in being trained (n= 1)	.2	-1.00	-
All coded responses (n= 325)	50.4	0.62	1.34
All uncoded responses (n=320)	49.6	0.92	1.34

*Note.* M = Mean response valence (response range was -2 to 2).

A Chi-square goodness-of-fit test was conducted to examine if the observed distribution of open-ended stereotypical belief responses across forced-choice categories conformed to the normative (expected) distribution of responses in the forced-choice stereotypical beliefs scale. The two distributions were found to differ significantly:  $\chi^2(12) = 357.040$ ;  $p < .001$ . This suggests that the patterns of responses are significantly different between the forced-choice and the free-response measures. In other words, the stereotypical beliefs that were elicited by the forced-choice stereotype measure were not a good fit for the stereotypical beliefs that occurred naturally and spontaneously through free-responses. This finding has important implications for the comprehensiveness and validity of the forced-choice stereotypical belief measure.

6.2.2.1.4. Comparing the valence of stereotypes elicited with forced-choice and free-response stereotypical beliefs measures (questionnaires version one and two). The fact that the uncoded items in the deductive content analysis had a higher mean valence than the mean valence of the coded items suggested that there may also be a difference in response valences between naturally elicited stereotypical beliefs and stereotypical beliefs elicited by a reactive, closed-ended stereotypical belief measure such as forced-choice responses. To compare the overall valence of the stereotypes elicited by the open-ended and closed-ended stereotypical belief measures, a stereotype score was computed for each participant. For questionnaire version one, the stereotype score was computed as the mean rating provided for the forced-choice stereotype items. For questionnaire version two, the stereotype score was computed as the mean valence provided for the freely responded stereotype items. Descriptive statistics of the stereotype scores for questionnaire versions one and two are presented in table 14.

Table 14.

*Descriptive statistics of stereotypical beliefs scores.*

	n	<i>Mdn</i>	M	5% M	SD	Skewness	Kurtosis
Q1	163	0.000	0.0797	0.0637	0.4658	.488	2.761
Q2	107	0.833	0.7971	0.8237	0.7498	-.250	-.054

*Note.* Q1 = Questionnaire version one. Q2 = Questionnaire version two. 5% M = Five per cent trimmed mean. M = Mean response valence (response range was -2 to 2).

Statistical analysis was conducted to examine the significance of the difference in stereotype score and the effect size between the two questionnaire versions. Levene's test revealed that the variances of stereotype scores for the two questionnaire versions were not equal. Moreover, following removal of univariate outliers, homogeneity of variance could not be brought to a satisfactory level (i.e. where the significance level of the Levene's statistic was .05 or higher) using any of

the following data transformations: natural log, 1/square root, reciprocal, square root, square, or cube transformation. For this reason, a nonparametric statistical test for comparing two independent conditions (the Mann-Whitney test) was selected. The nonasymptotic exact method for executing the Mann-Whitney was preferred over the default asymptotic method owing to the poor distribution of scores in questionnaire version one (Field, 2009). The Mann-Whitney test revealed that stereotype scores in questionnaire version one ( $Mdn = 0.000$ ) were significantly lower than stereotype scores in questionnaire version two ( $Mdn = 0.833$ ),  $U = 3417.5$ ,  $z = -8.462$ ,  $p < .001$ ,  $r = -0.515$ . Moreover, the effect size of questionnaire version on mean stereotype score was very large from a statistical perspective (Cohen, 1992). Therefore, the hypothesis that the method for assessing stereotypical beliefs affects the valence of responses was supported. On average, respondents to the questionnaire with the forced-choice stereotype measure reported less positive stereotypical beliefs about older teachers than respondents to the questionnaire with the free-response stereotype measure, at a level of probability very unlikely to have been caused by chance (less than one in a thousand). This is the first time that such an effect has been observed.

**6.2.2. Affective reactions to older teachers (questionnaire versions one and two).** Inductive content analysis was conducted on responses to the free-response affective reactions scale of questionnaire versions one and two using the same method as described in section 6.2.2.1.2. The aim of this analysis was to establish if there was an underlying structure to participants' free-responses regarding the emotions they associate with older teachers. Category labels were derived from Cowie and Cornelius' (2003) summary of research on emotion words used in speech. Following establishment of a coding scheme by the present researcher, the number

of responses falling into each category was counted independently by (a) the present researcher, and (b) a disinterested second rater, who was an experienced applied psychology researcher specialising in qualitative research. The second rater was a different individual from the second rater who took part in the previous content analyses for pragmatic reasons. Each response was coded into a single category. Where a response was perceived as relating to more than one category it was coded into the single most relevant category. A conservative approach towards coding was taken, so that if a response did not clearly fit into a category it was left uncoded. Responses that were coded differentially by the two raters were discussed by the two raters until agreement was reached as to the most suitable coding. Emotion categories were then roughly clustered into positive and negative emotions. A total of 839 responses were provided by 230 of the 282 respondents. The mean number of responses was 3.87 for individuals who completed this measure. The proportion of respondents that did not provide any responses was high at 18.4 per cent ( $n=52$ ). The proportion of responses that were perceived by both raters as not fitting into any category was high at 31.5 per cent ( $n=281$ ). Of these uncoded responses, the raters determined that the vast majority were incorrect responses (i.e. were not emotions) and only a few were uncategorisable due to ambiguity or illegibility. Two distinct types of incorrect responses were provided by participants: (a) relative comparisons with older teachers (e.g. I feel young compared to them); and (b) opinions about older teachers expressed using the term "feel" (e.g. I feel they are undervalued). The mean number of coded responses per participant was 2.43. Interrater reliability was substantial ( $\kappa = .784$ ) (see Landis & Koch, 1977). The categorical structure of responses and descriptive statistics of responses (percentage and response frequency rank) are displayed in table 15.

Table 15.

*Descriptive statistics of the inductive content analysis of freely-responded affective reactions towards older teachers (questionnaires version one and two).*

Rank	Positive emotions	Negative emotions	%
1	Respect (n=186)		22.17
2=	Content (n=60)	Anger (n=60)	7.15
4	Compassion (n=35)		4.17
5	Happiness (n=30)		3.58
6	Relaxed (n=26)		3.10
7		Anxiety (n=24)	2.86
8	Secure (n=22)		2.62
9	Optimism (n=19)		2.26
10	Interested (n=18)		2.15
11	Confident (n=17)		2.03
12		Insecure (n=12)	1.43
13	Amused (n=9)		1.07
14	Curious (n=8)		0.95
15=	Surprise (n=6)	Bored/indifferent (n=6) Sadness (n=6)	0.72
18	Pride (n=5)		0.60
19		Pity (n=3)	0.36
20		Disappointed (n=3)	0.36
21	Relief (n=2)		0.24
22		Disrespect (n=1)	0.36
<b>All coded responses (n=558)</b>			<b>66.51</b>
<i>Positive emotions (n=443)</i>			<i>79.39</i>
<i>Negative emotions (n=115)</i>			<i>20.61</i>
<b>All uncoded responses (n=281)</b>			<b>33.49</b>

*Note.* Rank = Response frequency rank. % = Percentage of responses.

The patterns of affective reaction responses for questionnaire versions one and two are displayed in table 16. Pearson's Chi-square test revealed that the pattern of responses did not differ significantly between the two version of the questionnaire:  $\chi^2(23) = 241.372$ ;  $p < .068$ . To compare the valence of affective reaction responses between questionnaire versions, an affective reactions score was computed for each participant by assigning all negative emotions a valence of -1, and all positive emotions a valence of +1, and calculating the mean valence of all responses provided. A Mann-Whitney U-test revealed that the difference in valence

of affective reactions scores between questionnaire versions was not statistically significant,  $U = 5566$ ,  $z = -1.73$ ,  $p = .084$ ,  $r = -0.114$ .

Table 16.  
*Percentages of responses per category on the affective reactions to older teachers measure, organised by questionnaire type.*

Response category	Q1	Q2
All uncoded responses	32.26	34.83
Respect	19.35	23.01
Anger	10.56	4.89
Content	5.87	8.15
Anxiety	4.11	2.04
Compassion	4.11	4.28
Happiness	3.81	3.46
Optimism	3.52	1.43
Interested	3.23	1.43
Relaxed	2.93	3.26
Insecure	2.05	1.02
Secure	1.47	3.46
Sadness	1.17	0.41
Disappointed	0.88	0.00
Confident	0.88	2.85
Amused	0.59	1.43
Bored/indifferent	0.59	0.81
Pity	0.59	0.20
Surprise	0.59	0.81
Curious	0.59	1.22
Relief	0.29	0.20
Pride	0.29	0.81
Disrespect	0.29	0.00

*Note.* Q1 = Questionnaire version one. Q2 = Questionnaire version two.

### **6.2.2.3. Behavioural associates of older teachers (questionnaires version**

**one and two).** There were two measures assessing the behavioural component of respondents' attitude towards older teachers. Both questionnaire versions contained both of these measures. The first measure was the free-response measure of behavioural associates of older teachers (see section 6.2.2.3.1.). The second measure was the quality and quantity of contact with older teachers rating scale (see section 6.2.2.3.2.).

#### *6.2.2.3.1. Free-response behavioural associates of older teachers*

*(questionnaire versions one and two)*. Inductive content analysis was conducted on responses to the free-response behavioural associates scale of questionnaire versions one and two using the same method as described in section 6.2.2.1.2. The aim of this analysis was to establish if there was a categorical structure underlying participants' free-responses regarding the behaviours they associate with older teachers. Categories were bipolar so that all responses relating to a particular characteristic were coded into the same category whether negatively or positively valenced. Following establishment of a coding scheme by the present researcher, the number of responses falling into each category was counted independently by (a) the present researcher, and (b) a disinterested second rater, who was an experienced applied psychology researcher specialising in qualitative research. The second rater was a different individual from the second rater who took part in the previous content analyses for pragmatic reasons. Each response was coded into a single category. Where a response was perceived as relating to more than one category it was coded into the single most relevant category. A conservative approach towards coding was taken, so that if a response did not clearly fit into a category it was left uncoded. Responses that were coded differentially by the two raters were discussed individually by the two raters until agreement was reached as to the most suitable coding. A total of 1011 responses were provided by 249 of the 282 respondents. The mean number of responses was 4.06 for individuals who completed this measure. The proportion of respondents that did not provide any responses was high at 11.7 per cent (n=33). The proportion of responses that were perceived by both raters as not fitting into any category was also high at 10.3 per cent (n=104). Of these 104 uncoded responses, the raters determined that the vast majority were



uncategorisable due to response ambiguity or illegibility, or insufficient detail to code the response. Therefore, the mean number of coded responses per participant was 3.64. Interrater reliability was substantial ( $\kappa = .784$ ) (see Landis & Koch, 1977). The categorical structure of responses and descriptive statistics for each category (frequencies and proportions of responses, and means and standard deviations) are displayed in table 17.

Table 17.

*Descriptive statistics of the inductive content analysis of freely-responded behavioural associates of older teachers (questionnaires version one and two).*

Category	%	M	SD
Support (n=243)	24.04	1.59	0.77
Were effective in their job (n=126)	12.46	1.10	1.42
Worked alongside (n=108)	10.68	1.19	1.14
Advice (work-related) (n=102)	10.09	1.51	0.77
Sharing knowledge/resources (n=92)	9.10	1.61	0.76
Were negative/rude (n=86)	8.51	-1.24	1.13
Social occasion/friendship (n=60)	5.93	1.77	0.53
Advice (general) (n=55)	5.44	1.41	1.06
Dealing with new technology (n=35)	3.46	0.37	1.37
All coded responses (n=907)	89.71	1.15	1.29
All uncoded responses (n=104)	10.29	0.86	1.32

*Note.* % = Percentage of responses. M = Mean valence response (response range was -2 to 2).

The patterns of behavioural associates responses for questionnaire versions one and two are displayed in table 18. Pearson's Chi-square test revealed that the pattern of responses did not differ significantly between the two versions of the questionnaire:  $\chi^2(81) = 90.0$ ;  $p = .231$ . To compare the valence of responses between questionnaire versions, a behavioural associates score was computed for each participant in the same way that stereotype scores were computed for stereotypical belief responses in questionnaire version two (see section 6.2.2.1.4.). A Mann-

Whitney U-test revealed that the difference in valence of behavioural associates scores between questionnaire versions was not statistically significant,  $U = 7141.5$ ,  $z = -.355$ ,  $p = .723$ ,  $r = -0.023$ .

Table 18.

*Percentages of responses per category on the behavioural associates of older teachers measure, organised by questionnaire type.*

Response category	Q1	Q2
Were effective in their job	22.65	30.26
Were negative/rude	12.57	9.74
Worked alongside	11.86	9.21
Social occasion/friendship	10.62	0.00
Sharing knowledge/resources	10.44	8.68
Support	10.09	12.37
Dealing with new technology	8.32	10.26
Advice (general)	5.13	8.16
Advice (work-related)	4.42	7.89
All uncoded responses	3.89	3.42

*Note.* Q1 = Questionnaire version one. Q2 = Questionnaire version two.

6.2.2.3.2. *Contact with older teachers scale (questionnaire versions one and two).* Parallel analysis (PA) (Horn, 1965) was conducted on the quality and quantity of contact with older teachers scale using O'Connor's SPSS syntax (O'Connor, 2000) to examine the latent structure of the contact with older teachers scale items. PA is now often regarded as the best method to assess the true number of factors in a set of variables (Ferguson & Cox, 1993; Garson, 2008). PA indicated that the scale comprised two factors. A two-factor model was created using exploratory factor analysis with varimax factor rotation of the scale items, where the factor extraction method (principal components analysis) was set to extract two factors. The factor loadings of the scale items are displayed in table 19.

Table 19.

*Factor loadings for exploratory factor analysis with varimax-rotation of quality and quantity of contact with older teachers items (questionnaire versions one and two).*

Item No.	Component 1	Component 2
1	.381	<b>.384</b>
2	.224	<b>.847</b>
3	.206	<b>.780</b>
4	.114	<b>.877</b>
5a	<b>.576</b>	.342
5b	.320	<b>.693</b>
6a	<b>.762</b>	.244
6b	<b>.744</b>	.331
7a	<b>.874</b>	.132
7b	<b>.829</b>	.102

*Note.* Bold text indicates primary factor loadings.

The EFA revealed that items 1-4 (amount of contract) loaded onto a single factor. Similarly, items 5a, 6a, 6b, 7a and 7b (quality of contact) loaded onto another single factor. However, the primary factor loading for item 5a (a quality of contact item) was onto the same factor as the four amount of contact items. Statistically, item 5b had a high crossloading onto component 2. Moreover it was conceptually problematic to remove item 5b from the quality of contact scale and place it into the quantity of contact scale. Therefore, item 5b was excluded from subsequent analyses. The exclusion of item 5b did not have an adverse effect on the scale reliability of either the quality of contact measure ( $\alpha = .853$ ) or the quantity of contact measure ( $\alpha = .807$ ), both of which were good (Tabachnick & Fidell, 2007). On the basis of these analyses, a quality of contact score was computed for each case as the mean rating of items 1-4, and a quantity of contact score was computed for each case as the mean rating of items 5a, 6a, 6b, 7a and 7b. Descriptive statistics of these scores are displayed in table 20.

Table 20.

*Descriptive statistics of quality and quantity of contact with older teacher scores (questionnaire versions one and two).*

	n	M	SD	Skewness	Kurtosis
Quantity of contact score	274	4.318	1.146	-.050	-.687
Quality of contact score	273	5.548	1.072	-.823	1.009

*Note.* M = Mean response (response range was 1 to 7).

Mann-Whitney U-tests revealed that the difference in valence of responses between questionnaire versions one and two was not significant in relation both to the quantity of contact with older teachers score ( $U = 8551.5, z = -.808, p = .419, r = -.0049$ ) and in relation to the quality of contact with older teachers score ( $U = 8555, z = -.720, p = .471, r = -.0044$ ).

**6.2.2.4. Relations between cognitive, affective & behavioural measures.** To examine interrelations, scale reliability ( $\alpha$ ) and interitem correlation analyses were conducted on the computed scores (stereotypical beliefs score, affective reactions score, behavioural associates score, quality of contact with older teachers score, and quantity of contact with older teachers score). Scale reliability of the five scores was good ( $\alpha = .709$ ). The results of the correlational and reliability analyses are reported in table 21.

Table 21.  
*Correlations and reliability analyses of attitudinal component scores (questionnaires version one and two).*

Measure	$\alpha$ if item deleted	1	2	3	4
1. Stereotypical beliefs score	.679	-			
2. Affective reactions score	.704	.213**	-		
3. Behavioural associates score	.617	.427***	.413***	-	
4. Quantity of contact score	.696	.249***	.214**	.321***	-
5. Quality of contact score	.592	.261***	.247***	.522***	.533***

*Note.* \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

The relatively high values of Cronbach's alpha suggested that the computed scores for the predictor variables correlated highly with each other. Bivariate correlation analyses confirmed strong associations between all five of the predictor variables. However, the Durbin-Watson coefficient calculated for the five measures ( $d = 2.225$ ) was within the conservative estimate for independence of observations of (between 1.5 and 2.5) (Garson, 2008). This and the reduction in the scale alpha value achieved by removing any one of the measures suggested that the measures were not redundant (see "α if item deleted" column, table 21). The contribution of each computed score for the five predictor variables in predicting attitudes towards older teachers and towards older teachers' employment is examined in section 6.2.4.

**6.2.3. Research objective three.** The aim of research objective three was to examine respondents' attitudes toward older teachers and towards older teachers' employment and to discover if there is evidence for explicit bias against older teachers. To explore this research objective, descriptive statistics and response patterns of the outcome variable measures and items were analysed. Table 22 displays these figures. Reliability of the attitudes towards older teachers' employment scale was good ( $\alpha = .793$ ). Moreover, the scale alpha could not be improved significantly by removing any items from the measure: Removing item 1

from the scale increased the scale alpha marginally to 0.795, while removing any of items 2 through 5 decreased the scale alpha significantly.

Table 22.

*Descriptive statistics and item response percentages for attitude measures and individual attitude items (questionnaires version one and two).*

Measure	Item	Descriptive Statistics			Item Responses (percentages)				
		n	M	SD	-2	-1	0	1	2
A1	-	257	1.04	0.80	0.4	2.3	20.6	46.3	30.4
A2	1-5	272	1.05	0.69	1.3	6.3	19.6	31.2	41.6
A2	1	275	0.41	0.93	0.7	16	37.8	32.7	12.7
A2	2	273	1.19	0.90	1.1	2.9	16.8	33.7	45.4
A2	3	274	1.23	0.90	1.1	4.4	11.7	36.5	46.4
A2	4	275	0.99	1.03	2.2	6.5	20.7	30.9	39.6
A2	5	275	1.46	0.85	1.5	1.5	10.9	22.2	64.0

*Note.* A1 = Attitude towards older teachers. A2 = Attitude towards the employment of older teachers. M = Mean valence response (response range was -2 to 2).

Item responses to the measures assessing attitudes towards older teachers were heavily weighted in the positive direction, but the nonzero percentages in the negatively valenced columns of table 22 (i.e. those that indicate explicit bias against older workers) indicated that a minority of participants were willing to respond to the questionnaire in a way that is indicative of explicit bias against older workers. It is noticeable that the proportion of negative responses is relatively low for the “overall evaluation of older teacher” item, and higher for items assessing attitude towards the employment of older teachers.

**6.2.4. Research objectives four and five.** The aim of research objective four was to construct a statistical model of the covariates, predictor variables, and outcome variables. The demographic and employment-related items described in section 6.2.1. were covariates in a regression models. The predictor variables in the regression models were the stereotypical beliefs score, the affective reactions score,

the behavioural associates score, the quality of contact score and the quantity of contact score. The attitude towards older teachers item and attitude towards the employment of older teachers score were the outcome variables in the regression models.

**6.2.4.1. Statistical assumptions of multiple regression analysis.** In view of the number of predictor variables, the ratio of cases to IVs in this survey was easily sufficient to conduct multiple regression based on a medium-sized relationship between IVs and DV,  $\alpha = .05$  and  $\beta = .20$  (Green, 1991). Each variable in the regression model was screened for univariate outliers using SPSS EXPLORE prior to analysis. Univariate outliers for each outcome variable are displayed in table 23. The skewness and kurtosis values were within an acceptable range for all of the continuous variables ( $< \pm 2.0$ ; Ferguson & Cox, 1993).

Table 23.

*Univariate outliers excluded from regression analyses.*

Variable	Outliers (Questionnaire No.)
Stereotypical beliefs score	126, 138, 181, 255, 269, 271, 285
Behavioural associates score	181, 217
Attitude to older teachers item	59, 138, 165, 181, 239
Attitude to employment of older teachers score	181, 270
Quality of contact score	12, 181, 187

The remaining 264 cases were screened for multivariate outliers through SPSS REGRESSION using RESIDUALS=OUTLIERS(MAHAL) syntax. The criterion for multivariate outliers was Mahalanobis distance at  $p < .001$ . Mahalanobis distance was evaluated as  $\chi^2$  with the degrees of freedom equal to the number of variables, in this case 7: overall evaluation, attitude to employment score, stereotypical beliefs score, affective reactions score, behavioural associates score, quantity of contact

score and quality of contact score. Any case with a Mahalanobis distance greater than  $\chi^2(7) = 24.322$  was a multivariate outlier. Questionnaire number 270 had a Mahalanobis distance of 24.523 and was excluded from subsequent analyses. The variables were examined for compliance with the assumption of absence of multicollinearity using variance inflation factor (VIF) in the SPSS REGRESSION collinearity diagnostics. The VIF statistic for the 7 variables was in the range 1.214 - 1.800 and so were well below the conservative cutoff criterion of  $VIF \geq 4$  (Garson, 2008) and liberal cutoff criterion of  $VIF \geq 10$  (Field, 2009). Levene's test was conducted to examine the assumption of homoscedasticity of residuals. All variables except for the stereotype score met this assumption. Although heteroscedasticity of this variable would not invalidate regression analysis, it would weaken it. Therefore, the variable was transformed by adding the value of 3 to all item scores (thus making all scores a positive integer in the range 1-5), recalculating the mean stereotype score, and performing a reciprocal transformation on this score. As a result, the Levene's statistic was reduced to 4.172, and the Levene's test approached nonsignificance ( $p = .042$  based on the mean,  $p = .05$  based on the median, and  $p = .053$  based on the five per cent trimmed mean). In relation to the statistical assumption of independence of errors, the Durbin-Watson statistic ( $d = 1.975$ ) indicated a very small positive autocorrelation, but one that was well within the liberal cutoff range of 1-3 (Field, 2009) and the conservative cutoff range of 1.5-2.5 (Garson, 2008). As a result of these statistical checks, exclusions and transformations, the present researcher was confident that the survey data were compliant with the statistical assumptions of regression analysis (Field, 2009; Garson, 2008; Tabachnick & Fidell, 2007) notwithstanding the marginally significant Levene's test on the transformed stereotype score item, which was tolerable. Hierarchical (sequential) regression analyses were then conducted with overall evaluation of older teachers



and the employment of older teachers scores as the outcome variables. In all regression analyses, age, sex and tenure were entered in step one. The affective reactions score, behavioural associates score, quality of contact score, quantity of contact score, and transformed stereotypical beliefs score were entered in step two.

***6.2.4.2. Hierarchical regression analyses examining the utility of noncognitive predictor variables in predicting attitude towards older teachers and attitude towards the employment of older teachers (both questionnaire versions).***

Two hierarchical regression models were constructed to examine the utility of noncognitive predictor variables in predicting reported attitude towards older teachers and attitude towards the employment of older teachers. Both of the regression models had three steps. Covariates were entered in the first step of the analysis. The correlations between the covariates and outcome measures displayed in table 8 indicated that only the age, tenure and sex variables had significant associations with the outcome variables. Therefore, only the age, tenure and sex covariates were entered into the first step of the regression. Stereotypical beliefs score was entered in the second step of the analysis. The second step of the model allowed the contribution of stereotypical beliefs scores to be assessed in predicting attitudes towards older teachers and towards the employment of older teachers beyond that afforded by the covariates. Affective reactions score, behavioural associates score, quality of contact score and quantity of contact score were entered in the third step of the analysis. The third step of the models allowed the contribution of the noncognitive predictor variables to be assessed in predicting attitudes towards older teachers and towards the employment of older teachers beyond that afforded by the covariates and by stereotypical beliefs. A summary of the regression analysis on attitude to older teachers is displayed in table 24, and a

summary of the regression analysis on the employment of older teachers score is displayed in table 25<sup>10</sup>.

Table 24.  
*Hierarchical multiple regression analysis predicting attitude towards older teachers (both questionnaire versions).*

Model	B	SE B	$\beta$
<b>Step 1</b>			
Constant	-.112	.322	
Age	.025	.009	.349*
Sex	.078	.146	.035
Tenure	.000	.001	-.048
<b>Step 2</b>			
Constant	.191	.313	
Age	.016	.009	.221
Sex	.063	.139	.028
Tenure	.000	.001	-.054
Stereotypical beliefs score	.379	.079	.327***
<b>Step 3</b>			
Constant	-.902	.368	
Age	.011	.008	.150
Sex	.038	.125	.017
Tenure	.000	.001	-.124
Stereotypical beliefs score	.236	.075	.203*
Affective reactions score	.220	.103	.133*
Behavioural associates score	.137	.103	.143†
Quantity of contact score	.066	.040	.117
Quality of contact score	.170	.056	.228**

Note.  $R^2 = .096$  for Step 1.  $R^2 = .185$  for Step 2 ( $\Delta R^2 = .089$ ,  $p < .001$ ).  $R^2 = .354$  for Step 3 ( $\Delta R^2 = .169$ ,  $p < .001$ ). †  $p < .06$ . \*  $p < .05$ . \*\*  $p < .01$ .

<sup>10</sup> Rather than presenting the results of multiple regression analyses as recommended by the American Psychological Association (APA) (2009, Table 5.13.) regression analyses are presented here as recommended by Field (2009, p. 252). The reason for this choice of reporting style is that the APA guidelines recommend reporting only standardised betas, their significance values, and general statistics about the model (e.g.  $R^2$ ). The more comprehensive reporting style recommended by Field allows the interested reader to reconstruct the regression model if needed.

Table 25.

*Hierarchical multiple regression analysis predicting attitude towards employment of older teachers score (both questionnaire versions).*

Model	B	SE B	$\beta$
<b>Step 1</b>			
Constant	.305	.284	
Age	.013	.008	.207
Sex	.308	.128	.161*
Tenure	.000	.001	-.088
<b>Step 2</b>			
Constant	.529	.280	
Age	.006	.008	.096
Sex	.297	.124	.155*
Tenure	.000	.001	-.093
Stereotypical beliefs score	.280	.070	.282***
<b>Step 3</b>			
Constant	-.210	.339	
Age	.004	.008	.062
Sex	.254	.115	.133*
Tenure	.000	.001	-.128
Stereotypical beliefs score	.160	.069	.161*
Affective reactions score	.223	.095	.157*
Behavioural associates score	.138	.066	.168*
Quantity of contact score	-.043	.037	-.089
Quality of contact score	.158	.052	.246**

*Note.*  $R^2 = .044$  for Step 1.  $R^2 = .110$  for Step 2 ( $\Delta R^2 = .066$ ,  $p < .001$ ).  $R^2 = .254$  for Step 3 ( $\Delta R^2 = .144$ ,  $p < .001$ ). †  $p < .06$ . \*  $p < .05$ . \*\*  $p < .01$ .

The hierarchical regression analysis summarised in table 24 suggests that respondents' age and stereotypical beliefs score were significant predictors of attitude towards older teachers. Prediction of attitude towards older teachers was improved significantly following the addition of the remaining predictor variables to the regression model in step 3. After step 3, with all covariates and predictor variables in the model the adjusted  $R^2$  value of .330 indicates that almost a third of the variability in reported attitude towards older teachers is predicted by the covariates and predictor variables. This compares to an  $R^2$  value of .185 after step two, where only the covariates and the stereotypical beliefs score had been entered into the model. The hierarchical regression analysis summarised in table 25 suggests

that respondents' sex and stereotypical beliefs were significant predictors of attitude towards the employment of older teachers. Prediction of attitude towards employment of older teachers was improved significantly following the addition of the remaining predictor variables to the regression model in step 3. After step 3, with all covariates and predictor variables in the model the adjusted  $R^2$  value of .225 indicates that almost a quarter of the variability in reported attitude towards the employment of older teachers is predicted by the covariates and predictor variables. This compares to an  $R^2$  value of .093 after step two, where only the covariates and the stereotypical beliefs score had been entered into the model.

**6.2.4.3. The contribution of the stereotypical beliefs scores in the two versions of the questionnaire.** To examine the contribution of the stereotypical beliefs score to the prediction of the outcome measures separately for the two versions of the questionnaire, two additional pairs of regression models were constructed. The aims of the first pair of regression models were to determine if the stereotype score derived from the forced-choice rating scale measure of stereotypical beliefs in questionnaire version one improved the prediction of attitudes towards older teachers, and towards the employment of older teachers beyond that afforded by the covariates (section 6.2.4.3.1). The aims of the second pair of regression models were identical to the aims of the first pair, but this time for the open-ended free-response stereotypical beliefs measure of questionnaire version two (section 6.2.4.3.2). A summary of the comparisons between the models is presented in section 6.2.4.3.3. For all regression models age, sex and tenure variables were entered in the first step of the model. Stereotypical beliefs score was entered in the second step of the model. Affective reactions score, behavioural associates score, quality of contact with older teachers score, and quantity of contact with older

teachers score were entered in the third step of the analysis. Outcome variables were attitude towards older workers in the first model and attitude towards the employment of older teachers score.

*6.2.4.3.1. Hierarchical regression analyses examining the utility of noncognitive predictor variables in predicting attitude towards older teachers and attitude towards the employment of older teachers (questionnaire version one only).*

The regression analyses were conducted as described in section 6.2.4.2. but only data from questionnaire version one were used. Summaries of the regression analyses on attitude to older teachers and the employment of older teachers score are displayed in table 26 and table 27, respectively.

Table 26.

*Hierarchical multiple regression analysis predicting attitude towards older teachers (questionnaire version one only).*

Model	B	SE B	$\beta$
<b>Step 1</b>			
Constant	.088		
Age	.015	.013	.214
Sex	.226	.187	.104
Tenure	.000	.001	.094
<b>Step 2</b>			
Constant	.701	.420	
Age	.001	.012	.015
Sex	.195	.174	.090
Tenure	.000	.001	.071
Stereotypical beliefs score	.728	.161	.422***
<b>Step 3</b>			
Constant	-.522	.513	
Age	.003	.011	.047
Sex	.112	.159	.052
Tenure	.000	.001	-.113
Stereotypical beliefs score	.475	.157	.275**
Affective reactions score	.366	.145	.209*
Behavioural associates score	.150	.088	.163
Quantity of contact score	.078	.052	.134
Quality of contact score	.132	.074	.076

*Note.*  $R^2 = .100$  for Step 1.  $R^2 = .230$  for Step 2 ( $\Delta R^2 = .130$ ,  $p < .001$ ).  $R^2 = .391$  for Step 3 ( $\Delta R^2 = .161$ ,  $p < .001$ ). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 27.

*Hierarchical multiple regression analysis predicting attitude towards employment of older teachers score (questionnaire version one only).*

Model	B	SE B	$\beta$
<b>Step 1</b>			
Constant	.478	.396	
Age	.005	.012	.078
Sex	-.383	.173	.196*
Tenure	.000	.001	.040
<b>Step 2</b>			
Constant	1.033	.390	
Age	-.008	.011	-.122
Sex	.355	.161	.181*
Tenure	.000	.001	.017
Stereotypical beliefs score	.659	.150	.425***
<b>Step 3</b>			
Constant	.360	.496	
Age	-.006	.011	-.100
Sex	.273	.153	.139
Tenure	.000	.001	-.069
Stereotypical beliefs score	.468	.152	.301**
Affective reactions score	.276	.140	.175†
Behavioural associates score	.159	.085	.191
Quantity of contact score	-.022	.050	-.044
Quality of contact score	.101	.071	.144

*Note.*  $R^2 = .051$  for Step 1.  $R^2 = .182$  for Step 2 ( $\Delta R^2 = .131$ ,  $p < .001$ ).  $R^2 = .299$  for Step 3 ( $\Delta R^2 = .117$ ,  $p = .001$ ). †  $p < .06$ . \*  $p < .05$ . \*\*  $p < .01$ .

The hierarchical regression analysis summarised in table 26 suggests that respondents' stereotypical beliefs score was a significant predictor of attitude towards older teachers. Prediction of attitude towards older teachers was improved significantly following the addition of the remaining predictor variables to the regression model in step 3, in which affective reactions was a significant predictor of attitude towards older workers. After step 3, with all covariates and predictor variables in the model the adjusted  $R^2$  value of .350 indicates that almost a third of the variability in reported attitude towards older teachers is predicted by the covariates and predictor variables. This compares to an  $R^2$  value of .204 after step two, where only the covariates and the stereotypical beliefs score had been entered

into the model. The hierarchical regression analysis summarised in table 27 suggests that respondents' sex and stereotypical beliefs score were significant predictors of attitude towards the employment of older teachers. Prediction of attitude towards employment of older teachers was improved significantly following the addition of the remaining predictor variables to the regression model in step 3. After step 3, with all covariates and predictor variables in the model the adjusted  $R^2$  value of .251 indicates that almost a quarter of the variability in reported attitude towards the employment of older teachers is predicted by the covariates and predictor variables. This compares to an  $R^2$  value of .155 after step two, where only the covariates and the stereotypical beliefs score had been entered into the model.

*6.2.4.3.2. Hierarchical regression analyses examining the utility of noncognitive predictor variables in predicting attitude towards older teachers and attitude towards the employment of older teachers (questionnaire version two only).*

The regression analyses were conducted as described in section 6.2.4.2. but only data from questionnaire version two were used. Summaries of the regression analyses on attitude to older teachers and the employment of older teachers score are displayed in table 28 and table 29, respectively.



Table 28.

*Hierarchical multiple regression analysis predicting attitude towards older teachers (questionnaire version one only).*

Model	B	SE B	$\beta$
<b>Step 1</b>			
Constant	-.298	.508	
Age	.037	.013	.474*
Sex	-.139	.236	-.060
Tenure	-.001	.001	-.192
<b>Step 2</b>			
Constant	-.143	.466	
Age	.028	.013	.355*
Sex	-.123	.216	-.053
Tenure	-.002	.001	-.275
Stereotypical beliefs score	.464	.108	.436***
<b>Step 3</b>			
Constant	-1.241	.566	
Age	.021	.012	.270
Sex	-.058	.203	-.025
Tenure	-.001	.001	-.242
Stereotypical beliefs score	.350	.117	.329*
Affective reactions score	-.049	.156	-.031
Behavioural associates score	.028	.132	.028
Quantity of contact score	.074	.067	.128
Quality of contact score	.194	.087	.276*

*Note.*  $R^2 = .121$  for Step 1.  $R^2 = .274$  for Step 2 ( $\Delta R^2 = .153$ ,  $p < .001$ ).  $R^2 = .121$  for Step 3 ( $\Delta R^2 = .161$ ,  $p = .004$ ). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 29.

*Hierarchical multiple regression analysis predicting attitude towards employment of older teachers score (questionnaire version two only)*

Model	B	SE B	$\beta$
<b>Step 1</b>			
Constant	.123	.416	
Age	.023	.011	.364*
Sex	.185	.193	.101
Tenure	-.001	.001	-.255
<b>Step 2</b>			
Constant	.232	.392	
Age	.016	.011	.259
Sex	.196	.181	.106
Tenure	-.002	.001	-.329
Stereotypical beliefs score	.325	.091	.388**
<b>Step 3</b>			
Constant	-.666	.482	
Age	.014	.010	.230
Sex	.231	.173	.125
Tenure	-.001	.001	-.289
Stereotypical beliefs score	.215	.100	.256*
Affective reactions score	.092	.133	.074
Behavioural associates score	.013	.112	.017
Quantity of contact score	-.064	.057	-.140
Quality of contact score	.222	.074	.400**

*Note.*  $R^2 = .055$  for Step 1.  $R^2 = .176$  for Step 2 ( $\Delta R^2 = .121$ ,  $p = .001$ ).  $R^2 = .294$  for Step 3 ( $\Delta R^2 = .118$ ,  $p = .011$ ). \*  $p < .05$ . \*\*  $p < .01$ .

The hierarchical regression analysis summarised in table 28 suggests that respondents' age and stereotypical beliefs score was a significant predictor of attitude towards older teachers. Prediction of attitude towards older teachers was improved significantly following the addition of the remaining predictor variables to the regression model in step 3, in which quality of contact with older teachers score was a significant predictor of attitude towards older teachers. After step 3, with all covariates and predictor variables in the model the adjusted  $R^2$  value of .336 indicating that over a third of the variability in reported attitude towards older teachers is predicted by the covariates and predictor variables. This compares to an adjusted  $R^2$  value of .240 after step two, where only the covariates and the

stereotypical beliefs score had been entered into the model. The hierarchical regression analysis summarised in table 29 suggests that respondents' age and stereotypical beliefs score were significant predictors of attitude towards the employment of older teachers. Prediction of attitude towards employment of older teachers was improved significantly following the addition of the remaining predictor variables to the regression model in step 3, in which quality of contact with older teachers score was a significant predictor. After step 3, with all covariates and predictor variables in the model the adjusted  $R^2$  value of .294 indicating that over a quarter of the variability in reported attitude towards the employment of older teachers is predicted by the covariates and predictor variables. This compares to an  $R^2$  value of .176 after step two, where only the covariates and the stereotypical beliefs score had been entered into the model.

*6.4.2.3.3. Comparison of hierarchical regression analyses on questionnaire versions one and two.* By conducting separate hierarchical analyses on questionnaire versions one and two it was possible to examine differences in the overall amount of variance in outcome measures predicted by the measures in the two questionnaires. For example, the adjusted  $R^2$  values after 3 steps in the hierarchical regression analyses on questionnaire version one were .350 (attitude towards older teachers) and .251 (attitude towards the employment of older teachers). The same figures for questionnaire version two were .336 and .294. Therefore, the two questionnaire versions predicted roughly the same amount of variance in the outcome measures as one another, with questionnaire version one predicting slightly more variance than questionnaire version two in relation to attitude towards older workers, and slightly less variance than questionnaire version two in relation to attitude towards the employment of older teachers.

## 7. Discussion

This section discusses the results and implications of the research. The structure of this chapter is displayed in figure 17. First, a brief summary of the main research findings is presented (Section 7.1.). Since participation in the research was voluntary, the pattern of participation and nonparticipation was one type of empirical finding that is discussed (Section 7.2). Next, the empirical findings relating to the research objectives are discussed in section 7.3. The implications of the research findings are highlighted in section 7.4., and section 7.5. concludes the thesis by summarising the contributions made by the present research.

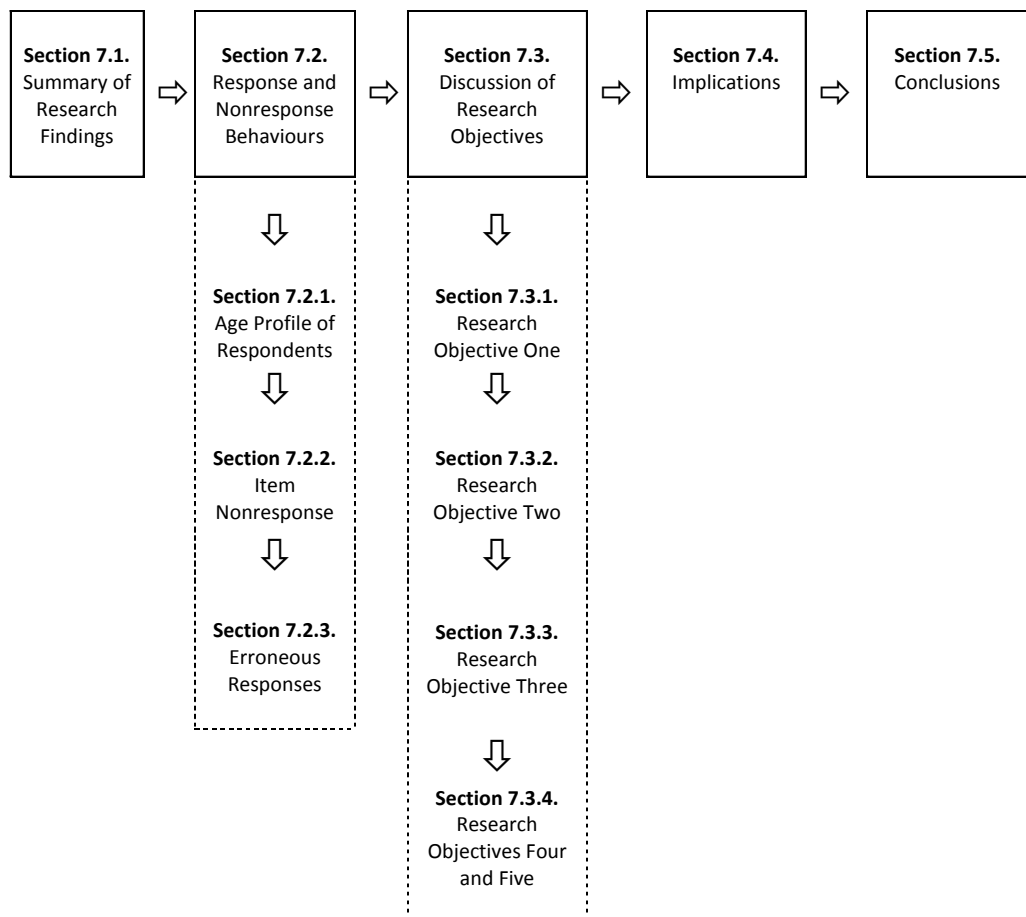


Figure 17. Chapter seven structure.

## 7.1. Summary of Research Findings

The results of the research described in this thesis suggested that stereotypical beliefs of older teachers, affective reactions towards older teachers, and information relating to past behaviours associated with older teachers were interrelated, directionally consistent, and independently predictive of attitudes towards older teachers and their employment. The predominance of the multidimensional model of attitudes over the unidimensional model of attitudes was supported by the present research finding that affective and behavioural information about the target group improved prediction of attitudes toward that group beyond the level afforded by stereotypical beliefs alone. The research findings also suggested that the measurement strategy selected to assess stereotypical beliefs in an attitude questionnaire can have a statistically significant impact on the valence of stereotypical beliefs that are elicited. On average, stereotypical beliefs that were reported in a free-response measure were positively valenced, while stereotypical beliefs reported on a forced-choice rating scale were neutrally valenced. Data from open-ended measures of attitudinal components allowed the research participants to describe a complex pattern of characteristics, roles and relationships they associated with older teachers, in much more detail than afforded by simple rating scales. The hypothesis that stereotypical beliefs of older teachers comprise two latent dimensions relating to work effectiveness and adaptability was refuted. Consistent evidence from independent qualitative and quantitative measures suggested that a more complex factorial structure underlying respondents' stereotypical beliefs about older teachers. In addition to work effectiveness and adaptability, the present research data suggest that other work-related and personal characteristics are important aspects of the older teacher stereotype.

## **7.2. Response and Nonresponse Behaviours**

This section discusses issues relating to response and nonresponse in the present research. First, response patterns and participants' ages are discussed (section 7.2.1.). Next, the relatively high level of item nonresponse in certain questionnaire measures is examined (section 7.2.2.). Finally, the problem of erroneous responses in open-ended measures is discussed, and explanations for this finding are advanced (section 7.2.3.).

**7.2.1. Age profile of respondents.** As highlighted in section 5.1., a noticeable characteristic of the research sample was the age profile of respondents. The age range (22-68) and mean age of respondents (45.45 years) was concordant with figures reported in a similar survey on attitudes towards older teachers (where the mean age was 44.42 years and the age range was 22-66) (Redman & Snape, 2002). However, unlike the previous survey, the age profile of the research population was available to the present researcher (J. Roberts (NUT Membership and Communications), personal communication, 8 June, 2008). On comparing the age profiles of the research sample and the research population, it became clear that the two differed significantly, with an overrepresentation in the research sample of teachers in the 36-40 age group and older and an underrepresentation in the research sample of teachers in the 31-35 age group and younger. Since participants were recruited using simple random sampling and the survey size was relatively large (over 0.8 per cent of the entire population of NUT members, equivalent to 0.4 per cent of all teachers in England and Wales) it was unlikely that questionnaires were sent to a selection of participants whose age profile differed significantly from that of the population overall. It was more likely that the proportion of individuals who

returned questionnaires was higher among those in the older age groups and was lower among those in the younger age groups. A higher proportion of responses from older age groups than younger age groups may have been due to the fact that issues relating to older teachers, ageing and age-related prejudice were more self-relevant and consequently more interesting to older teachers (Tourangeau et al., 2000). There is strong empirical evidence that questionnaires that are more interesting and relevant to the recipient have higher response rates than those that are considered less interesting and relevant (P. Edwards et al., 2002; P. J. Edwards et al., 2008).

Numerous questionnaires contained unsolicited comments from respondents, expressing suspicion of the research and its aims (although every effort was made to ensure that the research and its aims were clearly explained to participants). The research cover sheet stated that the aim of the research was “to explore teachers’ perceptions of those who are over the age of 50” and that “the data are for research purposes only”, yet some individuals may have been motivated to participate in the research through suspicion that the results of the survey could in some way reflect or impact negatively on their ingroup. As described in section 4.1., *volunteering bias* could not be controlled in this research, and the implications of this bias are an important caveat to note when interpreting results. In essence, those individuals who chose to participate in voluntary research might be a specific subset of the research population who have a particular interest in the research and who have a characteristic pattern of responses (Cook & Campbell, 1979). However, organisational research is inherently fraught with difficulty, and the results of organisational research should not be dismissed simply because the research method had particular limitations (Griffiths, 1999a). The motivations underlying participants’

response or nonresponse cannot be discerned through a voluntary questionnaire, so one simply has to be cautious when extrapolating the conclusions of that research beyond the research setting. For example, one may tentatively generalise the results of the present research to the wider NUT population (and by extension and association, to teachers in England and Wales), but it would be far less safe to extrapolate the present research findings beyond the teaching occupation.

**7.2.2. Item nonresponse.** Item nonresponse (i.e. participants not providing a response to an item on the research questionnaire) was not a significant problem in relation to most questionnaire items, but was a major issue in relation to a specific minority of questionnaire items. Item nonresponse was very low overall for most attitudinal rating-scale items. However, item nonresponse was higher in relation to free-response items assessing attitudinal components, and in relation to specific demographic and employment-related items. Shoemaker and colleagues (Shoemaker, Eichholz, & Skewes, 2002) distinguished two types of item nonresponse, termed “don’t knows” and “refusals”, which are associated with sensitive questions and mentally effortful questions, respectively. Item nonresponse in the present research may be understood in relation to these two different types of motivations. Free-response items that had high levels of nonresponse (e.g. location) might have suffered from nonresponse as participants felt that providing such information could have allowed them to be identified and for their responses to be traced back to them (Tourangeau et al., 2000). This hypothesis also accounts for simultaneous item nonresponse of multiple demographic items such as employment level and location, as participants may have believed that by providing multiple pieces of demographic and employment-related information, there would be an increased chance of them being identifiable and for their questionnaire responses to be linked to them. Despite



assurances of confidentiality, some participants will always be reluctant to disclose personal information (Tourangeau et al., 2000).

In relation to free-response attitudinal items, item nonresponse may have been caused more by “don’t know” nonresponse than “refuse” nonresponse. In other words, if an item was cognitively effortful some participants may not have provided a response, either due to not knowing what response to provide, or due to not wishing to spend time thinking of a response. For some free-response items in the present research, nonresponse was much higher than the level cited by Haddock and colleagues (Haddock & Zanna, 1998c) as an estimate of the proportion of the general population unable to articulate responses to free-response items (3-5 per cent). It seems likely that item nonresponse in these cases may have been caused by the fact that the items required more cognitive effort than some participants were willing to expend. This explanation may also account for: (a) the systematic pattern of free-response item nonresponse among certain participants; and (b) the lower questionnaire response rate of questionnaire version two, which contained more free-response items than questionnaire version one. There is strong evidence to support the suggestion that response rates are lower in postal questionnaire surveys with more open-ended items than for similar surveys with fewer open-ended items (P. Edwards et al., 2002; P. J. Edwards et al., 2008). While item nonresponse was a limiting factor in relation to open-ended attitudinal items, it is possible that noncompliance with the questionnaire took another form among closed-ended attitudinal items, which may be more difficult to discern than simple nonresponse. Acquiescence, response sets, untruthful or otherwise inaccurate responses may have been more likely to occur on closed-ended items than open-ended attitudinal items, but such effects can be difficult or impossible to prove (Tourangeau et al., 2000):

responding to a closed-ended item can be as simple as circling a number on a rating scale, so some participants may have provided inaccurate responses rather than providing no responses at all.

**7.2.3. Erroneous responses.** In addition to nonresponse, the raters who conducted the content analyses of the responses to the open-ended measures remarked on the high levels of responses that appeared to be “erroneous” on certain measures. That is, responses on a measure that suggested the participant had not properly understood the task or had misinterpreted the aim of the measure (e.g. responding “I feel they are undervalued” when referring to affective reactions towards older teachers). One interpretation of the high level of erroneous responses, particularly in the open-ended attitudinal measure assessing affective reactions, is that the measure was not worded in a way that was understandable by the participants. However, the open-ended measures for assessing attitudinal components have been employed successfully numerous times in the past without any reports of high levels of erroneous responding. Moreover, on the basis of suggestions made during the piloting process, the wording of the open-ended measures was made clearer and simpler than the wording that had been used previously. Another possibility is that the present sample had difficulty using the open-ended measures while the samples on which the open-ended measures were developed did not have the same difficulty. Studies that used open-ended measures for assessing attitudinal components in the past have been conducted on samples of students (usually psychology undergraduates) (Eagly & Mladnic, 1989; Esses et al., 1993; Gardner et al., 1988; Haddock & Zanna, 1994, 1998a, 1998b, 1998c; Haddock et al., 1993, 1994; Zanna, 1994; Zanna & Rempel, 1988). Therefore, erroneous responding among the present sample may highlight a difference in the ability to

understand and respond correctly to open-ended attitudinal measures between student samples and professional samples. The notion that student samples differ in important ways from samples of employees in organisations is not a new one, and students are often much more used to taking part in psychological research and have high relatively high levels of familiarity with psychological terminology and research methods (M. E. Gordon, Slade, & Schmitt, 1987). This hypothesis would also help to explain why measures of symbolic beliefs have been used routinely in research on students' attitudes towards outgroups, but were considered too vague and difficult to answer by the pilot participants.

Another interpretation of the high levels of erroneous responses is that different measurement strategies may be more appropriate for assessing different psychological constructs. However, all measurement strategies for assessing constructs like emotions have characteristics limitations, and each strategy in isolation provides only an incomplete picture of the underlying processes (Larsen & Fredrickson, 1999). Nevertheless, one of the driving forces behind the development of applied psychology has been pragmatism (Schönpflug, 1993). For the purposes of a specific piece of research, one particular measurement strategy may prove advantageous over the alternatives. For example, while open-ended measures of affective reactions towards a target group may seem preferable to researchers as it reduces the influence of response reactivity relative to some alternative methods. However, an attribute-rating approach (or similar) to assessing affective reactions towards a target may actually be preferable due to fewer instances of nonresponse than would occur through assessing the same construct using a different measurement strategy.

### **7.3. Discussion of Research Objectives**

This section interprets and evaluates the results of the research with specific reference to the research objectives specified earlier in the thesis. Research objectives one, two and three are discussed in sections 7.3.1., 7.3.2., and 7.3.3., respectively. Research objectives four and five are then discussed concurrently in section 7.3.4.

**7.3.1. Research objective one.** The first research objective related to the relationships between covariates, predictor variables and outcome variables of the research model. Analysis of correlations among the covariates revealed a close association between age and tenure. This correlation was expected and was not investigated further. Analysis of the correlations between the covariates and the predictor variables revealed significant positive associations between participants' age and score on each of the five covariate measures (stereotypical beliefs, affective reactions, behavioural associates, quality of contact with older teachers and quantity of contact with older teachers). Moreover, correlations of covariates and outcome variables revealed associations between participants' age and both attitude towards older teachers and attitude towards the employment of older teachers. This correlation is concordant with social identity theory (Ashforth & Mael, 1989; Tajfel & Turner, 1979), which proposes that people identify with their ingroup to maintain a positive self-image and enhance their self-esteem. It follows, therefore, that older teachers should report more positive attitudes towards the target "older teachers". Another significant correlation between demographic and outcome variables was discovered between sex and attitude towards the employment of older teachers. Men reported significantly less positive attitudes towards the employment of older teachers than women – a finding that was not expected and has not been reported

previously in the research literature on attitudes towards older workers. Nevertheless, the present sex-prejudice correlation is not without precedent. Research evidence suggests that sex-differences exist in relation to attitudes towards people with physical and mental disabilities, with women providing more positive ratings than men (e.g. Farina, 1981; Morrison, de Man, & Drumheller, 1994; Stovall & Sedlacek, 1983). It is interesting to note that while sex was a significant predictor of attitude towards the employment of older teachers, it was not a significant predictor of overall attitude towards older teachers. Conflicting attitudes with respect to a single target are not irreconcilable with current theorising on attitudes, and a significant amount of research has been conducted on attitude ambivalence, the situation where an individual may simultaneously endorse positive and negative aspects with respect to an attitude target (Maio, Esses, & Bell, 2000). Moreover, mixed positive and negative elements are an intrinsic part of Fiske and colleagues' stereotype content model (Fiske et al., 2002). However, attitude and stereotype ambivalence do not offer any clues as to the underlying cause of the reported sex-related difference in relation to attitudes towards the employment of older teachers. Additional research is required to explain this finding.

**7.3.2. Research objective two.** The second research objective was to examine the beliefs, emotions and behaviours commonly associated with older teachers, as well as to test the two-factor model of older worker stereotypes (work effectiveness and adaptability), and to examine the relationships between the predictor variables. First, qualitative and quantitative analyses were conducted to examine the latent structure of the responses to the open-ended stereotypical beliefs measure and the forced-choice stereotypical beliefs measure. The results of these two analyses were consistent, and were contrary to the hypotheses that

people judge others along two fundamental cognitive dimensions, and that in relation to older workers these dimensions are work effectiveness and adaptability (Abele et al., 2008; Redman & Snape, 2002; D. Smith, 1997; Warr & Pennington, 1993). The two-factor model in the confirmatory factor analysis on forced-choice stereotypical beliefs items did not fit the data. Moreover, the inductive content analysis suggested that work-related stereotypes comprised three primary dimensions, and a significant proportion of the total number of freely responded stereotypical beliefs regarding older workers related to their older workers' personal characteristics rather than their work-related characteristics.

A major weakness of forced-choice attitudinal measures as commonly used in research is that each item tends to be weighted equally, which is tantamount to assuming equivalence in cognitive availability of the stereotypical beliefs that are assessed by the measurement scale. Researchers using open-ended measures to assess stereotypical beliefs question the logic of assigning each belief response an equal weighting, by reporting that even the most commonly responded stereotypes associated with a target group often account for only a small proportion of the total number of responses (Haddock & Zanna, 1998c). The stereotypical beliefs included in the forced-choice response scale were compared with the freely-responded stereotypical beliefs by content analysing the free-responses and observing how many of the responses could be categorised into each of the forced-choice response scale categories. The forced-choice stereotypical beliefs scale used in this research accounted for a roughly half of the total range of stereotypical beliefs that people freely associated with older teachers. While one of the forced-choice stereotypical belief categories accounted for 12 per cent of the freely-responded stereotypical beliefs, another category accounted for just 0.2 per cent of the freely-responded

stereotypical beliefs. While not an unexpected result, the extent that the forced-choice stereotypical beliefs measure lacked representativeness of the freely-responded stereotypical beliefs in the present research sample was striking. This finding suggests that research that has been conducted used the present forced-choice stereotypical beliefs scale, and other scales that have been constructed in a similar fashion, are probably not assessing adequately assessing the range of characteristics that individuals associate with target groups.

Subsequently, the forced-choice and the free-response stereotypical beliefs measures were compared in relation to overall valence of stereotypical beliefs provided by respondents. The mean valence of forced-choice stereotypical beliefs was negligibly positive. In contrast, the mean valence of freely-responded stereotypical beliefs was significantly positive. This finding suggests that previous research employing this forced-choice stereotypical beliefs measure will have understated the positivity of stereotypical beliefs associated with the target group. It is not possible to ascertain whether the difference in valence between the free-response and rating scale is a reflection of the particular rating scale used in this study, or a more fundamental difference between free-responses and rating scales. If the former scenario is true then, at the very least, the validity of the rating scale and research that has used it should be called into question. If the latter is true then there may be important implications for prejudice research involving questionnaires: if rating scales are less positive than free-responses about an attitude object, then a systematic bias is being introduced into the research and the characterisation of the attitude object that results may be distorted from the truth. In any case, the rating scale used in the present research was associated with less positive average valences

with respect to stereotypical beliefs about older teachers than the free-response measure, and only additional research will be able to elucidate matters.

The types of responses and the valences of responses did not differ between questionnaire versions one and two with respect to the free-response measures of affective reactions of behavioural associates. In relation to affective reactions associated with older teachers, responses were mostly positive in terms of the overall proportion of responses. Moreover, approximately twice as many positive emotions were responded compared to negative emotions. Respondents' principal affective reaction towards older teachers was respect. Other major positive emotions associated with older teachers were contentment, compassion, happiness and relaxation. Only two negative emotions were reported in high proportions, and those were anger and anxiety. The pattern of freely-responded behavioural associates of older teachers was mostly positive in terms of the proportion of total responses. Nine broad categories of behavioural associates were derived from inductive content analysis, of which seven were significantly positively valenced (support, effectiveness, working alongside, work-related advice, sharing knowledge/resources, social occasion/friendship, and general advice), one was marginally positively valenced (dealing with new technology), and one was significantly negatively valenced (negative/rude). Like the affective reactions and behavioural associates scales, mean response valences to the quality and quantity of contact with older teachers scales were significantly positive.

Correlations between the five covariates (stereotypical beliefs score, affective reactions score, behavioural associates score, quality of contact with older teachers score, and quantity of contact with older teachers score) were significant



and positive, supporting the theory that attitudinal components are interrelated and directionally consistent (Breckler, 1984; Zanna & Rempel, 1988). Moreover, when all five scores were treated as a scale, removal of any single score resulted in diminished scale reliability. This finding suggests that although interrelated, the different measures of attitudinal components are not redundant, providing support for the multidimensional model of attitudes (Esses et al., 1993; Zanna & Rempel, 1988).

**7.3.3. Research objective three.** The third research objective was to examine participants' reported attitudes towards older teachers and the employment of older teachers to discover if there was evidence for explicit bias against older teachers. Overall, attitudes toward older teachers and towards the employment of older teachers were strongly positively valenced. However, although uncommon, negative evaluations were present in the results both in relation to overall attitude towards older teachers overall and attitude towards the employment of older teachers. These negative evaluations provide support for anecdotal and empirical evidence that age bias is still present among the teaching workforce of England and Wales (Graham, 2006; Holmes, 2001; Leaback, 2005; Milne, 2008; Troman, 1996; Young, 1982; Young & McMurry, 1986). In view of age profile of respondents, volunteering and social desirability biases (Cook & Campbell, 1979; Tourangeau et al., 2000), and the fact prejudices can operate without conscious awareness (Hedge et al., 2006; Levy & Banaji, 2004) it seems likely that the proportion of individuals reporting explicit prejudice against older teachers is an underestimation of the true level of prejudice.

Research on prejudice towards older workers often takes uses a single attitude measure, and extrapolates from attitudes of the target (e.g. dislike-like) to contextual attitudes involving the target (e.g. do not want to employ-want to

employ). However, research has shown that attitudes can be highly labile and context dependent (Schneider, 2005). The present results suggest that attitude towards older teachers is highly correlated with attitude about the employment of older teachers, but that the two measures of attitude are redundant. The nonredundancy of attitudes of older teachers and of older teachers' employment is demonstrated by the large discrepancies in responses towards the two types of attitudinal item (see table 22). In general, more participants held negative attitudes towards the employment of older teachers than held negative attitudes about older teachers themselves. While only 2.7 per cent of participants were willing to respond explicitly that they were prejudiced or very prejudiced against older teachers, as many as 17 per cent of participants agreed or strongly agreed that it is a better investment to train younger teachers than older teachers, and only 12.7 per cent of respondents strongly disagreed with the latter statement. This significant proportion of NUT members who believe younger teachers are a better investment than older teachers is in direct contrast with the NUT's organisational stance on age inclusiveness, and is antithetical to the aim of increasing recruitment of older individuals. Moreover, for the reasons outlined in the previous paragraph, the proportion of individuals who believe younger teachers to be a better investment than older teachers probably represents an underestimation of the true proportion of individuals in the population that would endorse this statement.

**7.3.4. Research objectives four and five.** The fourth research objective was to construct a statistical model of the covariates, predictor variables and outcome variables. The regression models reported in section 6.2.4.2. support the multicomponent model of attitudes, as the cognitive, behavioural and affective measures are each independently predictive of attitudes toward older teachers and

attitude towards the employment of older teachers. Stereotypical beliefs were not the strongest predictor of attitudes: quality of contact with older teachers (a measure relating to the behavioural component of attitudes) was the strongest overall predictor for both attitude measures. Separate regression analyses were then conducted for the data relating specifically to questionnaire versions one and two, to examine if there were any major differences in the statistical models for the two sets of questionnaire data. For the most part, the regression models were similar between the different versions of the questionnaire. In relation both to attitude towards older teachers and attitude towards the employment of older teachers, the predictor variables in questionnaire version one offered better prediction of the outcome variables than did the predictor variables of questionnaire version two. This finding was concordant with expectations, as it was hypothesised that forced-choice item response may reflect a function rather than a determinant of attitude, and so would be more closely associated with the outcome measure (Eagly et al., 1994). Owing to the between-participants design, it was not possible to establish whether the variance accounted for in the outcome measures in these regression models was unique or shared by the alternative stereotypical beliefs measurement strategies. It is possible that the two stereotypical beliefs measures tap different underlying constructs or processes, and account for a unique proportion of the variance in the outcome variables (Gardner et al., 1988). Additional research would be required to test this possibility, although a within-participants design may prove problematic in its current format. In a within-participants survey, it would be difficult to ensure that one type of stereotypical beliefs measure was not contaminated by the content of the other stereotypical beliefs measure.

#### **7.4. Implications**

The implications of the research findings presented in this thesis relate to different aspects of research and practice. From a theoretical perspective, the results suggest that the multidimensional model of attitudes better represents the attitude concept in research on age-related prejudice than more simplistic attitude models such as the unidimensional model. The results also suggest that by examining stereotypical beliefs alone, as had been traditional convention in laboratory psychology and remains convention in some areas of applied psychology, one gains at best a restricted view of the causes of prejudice. A large amount of psychological evidence suggests that stereotypes can be an effect rather than the cause of an attitude (e.g. Darley & Gross, 1983) yet many researchers neglect other important psychological constructs that are known to be important determinants of attitudes. In addition, the two-dimensional model of older worker stereotypes (Redman & Snape, 2002; Warr & Pennington, 1993) was not supported either by quantitative analysis of the stereotypical beliefs rating scale, or by content analysis of freely-responded stereotypical beliefs.

At a methodological level, the results of this research suggest that rating scales of stereotypes of older workers may be inadequate measures of stereotypical beliefs for in a number of ways. First, the number and range of stereotypes that a rating scale can assess are restricted. Deductive content analysis of the freely-responded stereotypical beliefs showed that the stereotypical beliefs rating scale covered at best approximately half of the commonly reported stereotypes associated with older teachers. Second, the statistical equivalence of each item on a stereotype rating scale is tantamount to assuming that each stereotype is of equal import to each individual in determining an attitude. Deductive content analysis revealed that

some rating scale stereotype categories were endorsed by only 0.2 per cent of respondents when assessed using free-responses, while others were endorsed by as many as 12.1 per cent of respondents. Third, rating scales are reactive and force respondents to provide ratings for stereotypes they do not necessarily associate with the target group. Fourth, the evidence presented in this thesis suggested that the typical valence associated with stereotypical belief responses was significantly less positive for rating scale items than for free-response items. This means that the overall representation of participants' stereotypes may be systematically biased in the negative direction, with implications for the validity of the conclusions that are drawn from the research and the theoretical models that are constructed on the basis of cumulative research evidence.

At a practical level, the results of this research form provisional evidence for certain procedures that could be tested for efficacy for challenging age-related norms and prejudice. For example, in several of the regression models, the most important predictor of overall attitude towards older teachers was the quality of contact that the individual experiences with older workers. Promoting interactions between younger and older workers that are cooperative, in-depth and relaxed may go some way to countering pernicious ways of thinking about older teachers. A large number of research participants reported that some of the good qualities of the older teachers they know relate to older teachers' sharing of knowledge and resources, as well as the professional and personal support older teachers offer to younger teachers. Along these lines, some of the questionnaire respondents remarked on positive experiences with older teachers as informal mentors when they were newly qualified teachers. Encouraging positive interactions between younger and older teachers like this mentoring program could be beneficial to all parties involved, by

providing support for those who are less experienced and by challenging age norms with the potential for reducing age-related discrimination.

## **7.5. Conclusions**

Like in many professions in the UK, the contributions of older workers in the teaching profession are becoming increasingly important in light of the skills shortages and the ageing of the workforce (Chartered Institute of Personnel and Development, 2008b). Therefore, the retention of older teachers and the recruitment of mature adults into the profession for the first time are high priorities for policymakers. Nevertheless, research evidence suggests that prejudice and discrimination against older workers are a major cause of withdrawal from the workforce, which undermine attempts to attract and retain older workers (Chartered Institute of Personnel and Development, 2008a; National Union of Teachers, 2001). In order to make workplaces more age-inclusive, it is necessary to develop a comprehensive understanding of the causes, mechanisms and consequences of age bias. And in order to develop a comprehensive understanding of age bias, it is necessary to examine the theories and methods that underpin our understanding of the phenomena of age prejudice and discrimination. The validity of scientific theories and methods in prejudice research are central to ensuring an accurate understanding of age bias. Yet precious little research has actually examined the validity of theory and method in age bias research. The contribution made by this thesis to the understanding of age bias lies in its examination of some of the fundamental principles of age bias research.

This thesis has presented evidence to challenge existing theory on the structure of stereotypical beliefs of older teachers. While some researchers have

focused on cognitive antecedents of age prejudice, this thesis presented evidence suggesting that other psychological constructs are central in determining attitudes towards older teachers. In so doing, this thesis has demonstrated the utility of the multidimensional model of attitudes in understanding attitudes in the work context. Moreover, this thesis has presented evidence suggesting that the strategy used to assess beliefs about older teachers influences the outcome of the measurement. The most common measurement strategy, the questionnaire rating scale was associated with significantly less positive ratings of older teachers than a more naturalistic, spontaneous free-response task. In addition, the rating scale gave undue prominence to certain characteristics that people rarely spontaneously associate with older workers. Moreover, evidence was found that statistical analyses of questionnaire data may overstate the centrality of the inaccurate beliefs in determining attitudes towards older workers. To the extent that empirical research can and does influence national and organisational policy, the continued use of stereotype rating scales in attitude research may actually be reinforcing the constructs they seek to measure. This thesis argues that by asking research participants to respond freely, using natural language, researchers can gain a more accurate impression of the way that people think about older workers, and that this impression is more positive than the impression that is presented in many research and media articles.

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## **Appendix 1**

### Piloting Process

The research protocol and questionnaire were developed by examining whether research materials and methods that have been used in previous laboratory and organisational research were appropriate for investigating age prejudice by postal SAQ on a sample of teachers. Prototype research materials and procedures were piloted on small samples of NUT employees who were teachers themselves and who were experienced in conducting survey research on NUT members. This piloting process was conducted using electronic mail communication, telephone conferences, and face-to-face meetings/focus groups.

## Appendix 2

The "Evaluation Thermometer", reproduced from "On the nature of prejudice"  
by M. Zanna, 1994, *Canadian Psychology*, 35(1), p. 13.

Please provide a number between 0° and 100° to indicate your overall evaluation of:

---

Typical French Canadians		
Positive	100°	Extremely favourable
	90°	Very favourable
	80°	Quite favourable
	70°	Fairly favourable
	60°	Slightly favourable
	50°	Neither favourable nor unfavourable
	40°	Slightly unfavourable
	30°	Fairly unfavourable
	20°	Quite unfavourable
	10°	Very unfavourable
Negative	0°	Extremely unfavourable

---

## **Appendix 3**

### Questionnaire Cover Sheet



## Older and Wiser? Teachers' Perceptions of Older Staff

In co-operation with the National Union of Teachers (NUT), the University of Nottingham has commissioned research to explore teachers' perceptions of those who are over the age of 50 in the profession. A summary of the results of this survey will be provided to the NUT when all the completed questionnaires have been analysed.

You have been randomly selected from the NUT's membership database to participate in this research. In completing the questionnaire, please be honest and frank – there are no right or wrong answers. All of your responses are anonymous and confidential – no names or personally identifiable information are required. The data are for research purposes only. We would greatly appreciate your help, which is entirely voluntary. To ensure your rights to confidentiality and anonymity are protected, only the research team will have access to your completed questionnaire.

The questionnaire should only take 10 minutes or less to complete. Please complete all sections of this questionnaire.

After you have completed the questionnaire, please seal it in the envelope provided and return it to the research team.

We hope that you find the questionnaire interesting. Thank you for your time and assistance.

If you require further information, please contact the research team (details below).

### RESEARCH TEAM & CONTACT DETAILS

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## **Appendix 4**

Questionnaire version one

# QUESTIONNAIRE

**OLDER TEACHERS ARE DEFINED AS TEACHERS AGED 50 OR ABOVE.  
PLEASE KEEP THIS IN MIND WHEN ANSWERING THE FOLLOWING SECTIONS.**

## SECTION 1: YOUR OVERALL EVALUATION OF OLDER TEACHERS

There is one item to answer in this section.

*Based upon your overall attitude to older teachers, please assign the following item a score between -2 and +2.  
Circle the appropriate score using the scale shown below.*

-2 = *Very unfavourable*  
-1 = *Unfavourable*  
0 = *Neutral*  
+1 = *Favourable*  
+2 = *Very favourable*

Very unfavourable  
Unfavourable  
Neutral  
Favourable  
Very favourable

1.	How would you describe your overall attitude towards older teachers?	-2	-1	0	+1	+2
----	--	----	----	---	----	----

**SECTION 2: EMPLOYMENT OF OLDER TEACHERS**

There are 5 items to answer in this section.

Based upon your *attitudes* to older teachers, please assign each of these items a score between 1 and 5.  
Circle the appropriate score for each item using the scale shown below.

-2 = *Strongly Disagree*  
 -1 = *Disagree*  
 0 = *Neither agree nor disagree*  
 +1 = *Agree*  
 +2 = *Strongly Agree*

		Strongly disagree	Disagree	Neither	Agree	Strongly agree
1.	It is a better investment to train younger teachers rather than older teachers	-2	-1	0	+1	+2
2.	Given a choice, I would prefer not to work with older teachers on a daily basis	-2	-1	0	+1	+2
3.	Older teachers should step aside to give more opportunities to younger teachers	-2	-1	0	+1	+2
4.	In general, I think that younger teachers should be given priority to stay if there is a need to cut jobs	-2	-1	0	+1	+2
5.	Overall, older teachers' contributions at work are less valuable than younger teachers' contributions	-2	-1	0	+1	+2

### SECTION 3: YOUR IMPRESSIONS OF OLDER TEACHERS

There are 15 items to answer in this section.

Based upon your **perception** of older teachers, please assign each of these items a score between -2 and +2.  
Circle the appropriate score for each item using the scale shown below.

-2 = Much less so than younger teachers  
 -1 = Less so than younger teachers  
 0 = No different from younger teachers  
 +1 = More so than younger teachers  
 +2 = Much more so than younger teachers

Much less so  
 Less so  
 No different  
 More so  
 Much more so

Compared to younger teachers, those over the age of 50:

		-2	-1	0	+1	+2
1.	Are conscientious	-2	-1	0	+1	+2
2.	Are reliable	-2	-1	0	+1	+2
3.	Work hard	-2	-1	0	+1	+2
4.	Are effective in their job	-2	-1	0	+1	+2
5.	Think before they act	-2	-1	0	+1	+2
6.	Are loyal to the organisation	-2	-1	0	+1	+2
7.	Have interpersonal skills	-2	-1	0	+1	+2
8.	Take things easy	-2	-1	0	+1	+2
9.	Work well in teams	-2	-1	0	+1	+2
10.	Are able to grasp new ideas	-2	-1	0	+1	+2
11.	Adapt to change	-2	-1	0	+1	+2
12.	Accept the introduction of new technology	-2	-1	0	+1	+2
13.	Learn quickly	-2	-1	0	+1	+2
14.	Are interested in continuing professional development	-2	-1	0	+1	+2
15.	Are receptive to direction	-2	-1	0	+1	+2

**SECTION 4: HOW DO OLDER TEACHERS MAKE YOU FEEL?**

*We are now interested in the **main emotions** you feel when you see, meet, or think about older teachers.*

There is one item to answer in this section. Please provide as many emotions as you think are necessary to convey adequately how you feel about older teachers.

1. In the table below, write a list of the main emotions you experience when you see, meet or think about older teachers.

---


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**SECTION 5: YOUR EXPERIENCES WITH OLDER TEACHERS**

In this section we are interested in your **most memorable or important experiences** with older teachers. Please provide an account of these encounters using the sort of short descriptions you would use when talking to close friends or colleagues. These encounters may have been professional or personal, positive or negative.

There are 2 items to answer in this section – please answer both, working through them in turn. For item 1, please provide as many descriptions of your experiences as you think are necessary to convey adequately your memorable or important experiences with older teachers.

- In **Column A** of the table below, write a list of short phrases you would use to describe your most memorable or important experiences with older teachers. Please go on to answer item 2.

A	B				
	Very negative	negative	neutral	positive	Very positive
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2

- Encounters with other people are experienced differently by different people. An encounter experienced as very positive by one person, may be viewed less positively by another person, or even negatively. In **Column B** of the table above, please rate whether each experience you have listed was, in your opinion, a good thing (positive) or a bad thing (negative). Use the following scale and circle a figure for each type of encounter.

-2	-1	0	+1	+2
<i>Very Negative</i>	<i>Negative</i>	<i>Neutral</i>	<i>Positive</i>	<i>Very Positive</i>

## SECTION 6: YOUR CONTACT WITH OLDER TEACHERS

In this section, we are interested in the **amount and type of contact** that you have personally had with older teachers. Please circle the most appropriate number for items 1 to 7 to describe the amount and type of contact you have with older teachers. For instance, if you rarely visited an older teacher's home, you might answer as shown in the example below.

There are 7 items to answer in this section. Items 5, 6 and 7 each have 2 parts – **a** and **b**. In part **a** we are interested in contact with older teachers that is directly related to work, and in part **b** contact with older teachers that is not related to work. Please answer both part **a** and **b** for each of these items.

Amount of contact with older teachers...

1.	...at work	<i>None at all</i>	1	2	3	4	5	6	7	<i>A great deal</i>
2.	...as close friends	<i>None at all</i>	1	2	3	4	5	6	7	<i>A great deal</i>
3.	...in social settings related to work	<i>None at all</i>	1	2	3	4	5	6	7	<i>A great deal</i>
4.	...in social settings unrelated to work	<i>None at all</i>	1	2	3	4	5	6	7	<i>A great deal</i>

Is the majority of your contact with older teachers usually...

5.	...superficial or in-depth?									
a	When related to work	<i>Very superficial</i>	1	2	3	4	5	6	7	<i>Very in-depth</i>
b	When unrelated to work	<i>Very superficial</i>	1	2	3	4	5	6	7	<i>Very in-depth</i>
6.	...experienced as pleasant?									
a	When related to work	<i>Not at all pleasant</i>	1	2	3	4	5	6	7	<i>Very pleasant</i>
b	When unrelated to work	<i>Not at all pleasant</i>	1	2	3	4	5	6	7	<i>Very pleasant</i>
7.	...competitive or cooperative?									
a	When related to work	<i>Very competitive</i>	1	2	3	4	5	6	7	<i>Very cooperative</i>
b	When unrelated to work	<i>Very competitive</i>	1	2	3	4	5	6	7	<i>Very cooperative</i>



## SECTION 7: FURTHER INFORMATION

There are 6 items to answer in this section.

Please complete the following **information about yourself**. This information will be used in order to help us understand the questionnaire and will not be used to identify you. Tick the boxes or fill in the spaces as appropriate.

- |    |  |  |
|----|--|--|
| 1. | Age:   | _____ years  |
| 2. | Sex:   | <input type="checkbox"/> Male / <input type="checkbox"/> Female  |
| 3. | Location (name of town/city):  | _____  |
| 4. | Type of school:  | <input type="checkbox"/> Primary / <input type="checkbox"/> Secondary / <input type="checkbox"/> Special   |
| 5. | Please select the title that most closely describes your position at work: | <input type="checkbox"/> Supply Teacher<br><input type="checkbox"/> Class Teacher<br><input type="checkbox"/> Teacher with additional responsibility<br><input type="checkbox"/> Head of Department<br><input type="checkbox"/> Senior Management Team<br><input type="checkbox"/> Other _____ |
| 6. | Do you work part-time or full-time?  | <input type="checkbox"/> Part-time / <input type="checkbox"/> Full-time  |

**THANK YOU FOR COMPLETING THIS QUESTIONNAIRE. PLEASE PLACE THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED AND RETURN IT TO THE RESEARCH TEAM AT YOUR EARLIEST CONVENIENCE.**

## **Appendix 5**

Questionnaire version two

# QUESTIONNAIRE

**OLDER TEACHERS ARE DEFINED AS TEACHERS AGED 50 OR ABOVE.  
PLEASE KEEP THIS IN MIND WHEN ANSWERING THE FOLLOWING SECTIONS.**

## SECTION 1: YOUR OVERALL EVALUATION OF OLDER TEACHERS

There is one item to answer in this section.

*Based upon your overall attitude to older teachers, please assign the following item a score between -2 and +2.  
Circle the appropriate score using the scale shown below.*

-2 = *Very unfavourable*  
-1 = *Unfavourable*  
0 = *Neutral*  
+1 = *Favourable*  
+2 = *Very favourable*

Very unfavourable  
Unfavourable  
Neutral  
Favourable  
Very favourable

1.	How would you describe your overall attitude towards older teachers?	-2	-1	0	+1	+2
----	--	----	----	---	----	----

**SECTION 2: EMPLOYMENT OF OLDER TEACHERS**

There are 5 items to answer in this section.

Based upon your *attitudes* to older teachers, please assign each of these items a score between 1 and 5.  
Circle the appropriate score for each item using the scale shown below.

-2 = *Strongly Disagree*  
 -1 = *Disagree*  
 0 = *Neither agree nor disagree*  
 +1 = *Agree*  
 +2 = *Strongly Agree*

		Strongly disagree	Disagree	Neither	Agree	Strongly agree
1.	It is a better investment to train younger teachers rather than older teachers	-2	-1	0	+1	+2
2.	Given a choice, I would prefer not to work with older teachers on a daily basis	-2	-1	0	+1	+2
3.	Older teachers should step aside to give more opportunities to younger teachers	-2	-1	0	+1	+2
4.	In general, I think that younger teachers should be given priority to stay if there is a need to cut jobs	-2	-1	0	+1	+2
5.	Overall, older teachers' contributions at work are less valuable than younger teachers' contributions	-2	-1	0	+1	+2

**SECTION 3: YOUR IMPRESSIONS OF OLDER TEACHERS**

In this section, we are interested in *characteristics you would use to describe older teachers*. Please provide a list of characteristics or, if necessary, short phrases that you would use to describe older teachers to close friends or colleagues. You may include descriptions relating to personal or professional characteristics, or both.

There are 2 items to answer in this section – please answer both, working through them in turn. For item 1, please provide as many characteristics or short phrases as you think are necessary to convey adequately your impressions of older teachers.

- In **Column A** of the table below, write a list of characteristics (or short phrases) you would use to describe older teachers. Please go on to answer item 2.

A	B				
	Very negative	negative	neutral	positive	Very positive
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2

- Not all characteristics mean the same thing to all people. Something one person views as very positive maybe viewed less positively by another person, or even negatively. In **Column B** of the table above, please rate whether each characteristic is, in your opinion, a good thing (positive) or a bad thing (negative). Use the following scale and circle the appropriate figure for each characteristic.

-2	-1	0	+1	+2
Very Negative	Negative	Neutral	Positive	Very Positive

**SECTION 4: HOW DO OLDER TEACHERS MAKE YOU FEEL?**

*We are now interested in the **main emotions** you feel when you see, meet, or think about older teachers.*

There is one item to answer in this section. Please provide as many emotions as you think are necessary to convey adequately how you feel about older teachers.

1. In the table below, write a list of the main emotions you experience when you see, meet or think about older teachers.

---


---

**SECTION 5: YOUR EXPERIENCES WITH OLDER TEACHERS**

In this section we are interested in your **most memorable or important experiences** with older teachers. Please provide an account of these encounters using the sort of short descriptions you would use when talking to close friends or colleagues. These encounters may have been professional or personal, positive or negative.

There are 2 items to answer in this section – please answer both, working through them in turn. For item 1, please provide as many descriptions of your experiences as you think are necessary to convey adequately your memorable or important experiences with older teachers.

- In **Column A** of the table below, write a list of short phrases you would use to describe your most memorable or important experiences with older teachers. Please go on to answer item 2.

A	B				
	Very negative	negative	neutral	positive	Very positive
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2
	-2	-1	0	+1	+2

- Encounters with other people are experienced differently by different people. An encounter experienced as very positive by one person, may be viewed less positively by another person, or even negatively. In **Column B** of the table above, please rate whether each experience you have listed was, in your opinion, a good thing (positive) or a bad thing (negative). Use the following scale and circle a figure for each type of encounter.

-2	-1	0	+1	+2
<i>Very Negative</i>	<i>Negative</i>	<i>Neutral</i>	<i>Positive</i>	<i>Very Positive</i>

## SECTION 6: YOUR CONTACT WITH OLDER TEACHERS

In this section, we are interested in the **amount and type of contact** that you have personally had with older teachers. Please circle the most appropriate number for items 1 to 7 to describe the amount and type of contact you have with older teachers. For instance, if you rarely visited an older teacher's home, you might answer as shown in the example below.

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Amount of contact with older teachers...

1.	...at work	<i>None at all</i>	1	2	3	4	5	6	7	<i>A great deal</i>
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3.	...in social settings related to work	<i>None at all</i>	1	2	3	4	5	6	7	<i>A great deal</i>
4.	...in social settings unrelated to work	<i>None at all</i>	1	2	3	4	5	6	7	<i>A great deal</i>

Is the majority of your contact with older teachers usually...

5.	...superficial or in-depth?									
a	When related to work	<i>Very superficial</i>	1	2	3	4	5	6	7	<i>Very in-depth</i>
b	When unrelated to work	<i>Very superficial</i>	1	2	3	4	5	6	7	<i>Very in-depth</i>
6.	...experienced as pleasant?									
a	When related to work	<i>Not at all pleasant</i>	1	2	3	4	5	6	7	<i>Very pleasant</i>
b	When unrelated to work	<i>Not at all pleasant</i>	1	2	3	4	5	6	7	<i>Very pleasant</i>
7.	...competitive or cooperative?									
a	When related to work	<i>Very competitive</i>	1	2	3	4	5	6	7	<i>Very cooperative</i>
b	When unrelated to work	<i>Very competitive</i>	1	2	3	4	5	6	7	<i>Very cooperative</i>



## SECTION 7: FURTHER INFORMATION

There are 6 items to answer in this section.

Please complete the following **information about yourself**. This information will be used in order to help us understand the questionnaire and will not be used to identify you. Tick the boxes or fill in the spaces as appropriate.

- |    |  |  |
|----|--|--|
| 1. | Age:   | _____ years  |
| 2. | Sex:   | <input type="checkbox"/> Male / <input type="checkbox"/> Female  |
| 3. | Location (name of town/city):  | _____  |
| 4. | Type of school:  | <input type="checkbox"/> Primary / <input type="checkbox"/> Secondary / <input type="checkbox"/> Special   |
| 5. | Please select the title that most closely describes your position at work: | <input type="checkbox"/> Supply Teacher<br><input type="checkbox"/> Class Teacher<br><input type="checkbox"/> Teacher with additional responsibility<br><input type="checkbox"/> Head of Department<br><input type="checkbox"/> Senior Management Team<br><input type="checkbox"/> Other _____ |
| 6. | Do you work part-time or full-time?  | <input type="checkbox"/> Part-time / <input type="checkbox"/> Full-time  |

**THANK YOU FOR COMPLETING THIS QUESTIONNAIRE. PLEASE PLACE THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED AND RETURN IT TO THE RESEARCH TEAM AT YOUR EARLIEST CONVENIENCE.**

## Appendix 6

Factor loadings for exploratory factor analysis with varimax  
rotation of questionnaire version one stereotypical beliefs items

Item No.	Component 1	Component 2	Component 3
1	<b>.761</b>	.015	.346
2	<b>.653</b>	.020	.282
3	<b>.734</b>	.179	.282
4	.265	.191	<b>.634</b>
5	.150	.028	<b>.808</b>
6	<b>.608</b>	.176	.194
7	.310	.201	<b>.623</b>
8	<b>-.747</b>	-.237	.020
9	<b>.514</b>	.359	.171
10	.217	<b>.779</b>	.030
11	.237	<b>.727</b>	.157
12	.386	<b>.669</b>	-.075
13	.050	<b>.706</b>	.059
14	.000	<b>.614</b>	.338
15	.075	<b>.550</b>	.099

*Note.* Bold text indicates primary factor loading.