

**The Contributions and Affects of Age on
Mentoring Relationships within an
Academic Setting**

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Table of Contents

Acknowledgments	III
List of Tables	IV
1. Abstract.....	1
2. Introduction.....	2
2.1. Mentoring Functions.....	3
2.2. Formal vs Informal Mentoring	6
2.3. Gender	7
2.4. Theoretical Framework for Age	8
2.5. Empirical Research on Age and Mentoring	11
2.6. Self Competence	14
2.7. Human Capital Investment	15
2.8. Mentoring in Academia	17
2.9. Current Research.....	19
3. Method	21
3.1. Participants	21
3.2. Materials.....	21
3.3. Procedure.....	24
3.4. Ethical Considerations	25
4. Results	26
4.1. Data Preparation.....	26
4.2. Preliminary Analysis	26
4.3. Analysis of Hypotheses	28
5. Discussion.....	38
5.1. Summary of Results.....	38
5.2. Limitations	39
5.3. Implications and Conclusions.....	40
5.4. Perspectives for Future Research	43
6. References	46
Appendices	54
Appendix A: Participants Information Sheet	54
Appendix B: Students Survey	55
Appendix C: Supervisors Survey	60
Appendix D: Email Invitation for Students Participation.....	65

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List of Tables

<i>Table 1</i>	
Descriptive Statistics of Main Variables	27
<i>Table 2</i>	
Means, Standard Deviations and ANOVA Results of Supervisor and Students Mentor Functions for each Degree Type	28
<i>Table 3</i>	
Means, Standard Deviations and ANOVA Results for Mentor Functions Between the Four Gender Groups	29
<i>Table 4</i>	
Means, Standard Deviations and ANOVA Results for Mentor Functions Within Male and Female Supervisors	30
<i>Table 5</i>	
Means, Standard Deviations and ANOVA Results for Mentor Functions Within Male and Female Students	30
<i>Table 6</i>	
Inter-Item Correlations for Age and Mentor Function Variables.....	31
<i>Table 7</i>	
Means, Standard Deviations and ANOVA Results for Students and Supervisors Mentor Functions for Age Difference Categories	32
<i>Table 8</i>	
Summary of Hierarchical Regression Analysis of Supervision Variables, Student and Supervisor Age and the Age Interaction for Supervisor Psychosocial Functions	33
<i>Table 9</i>	
Summary of Hierarchical Regression Analysis of Supervision Variables, Student and Supervisor Age and the Age Interaction for Supervisor Career Functions	34
<i>Table 10</i>	
Summary of Hierarchical Regression Analysis of Supervision Variables, Student and Supervisor Age and the Age Interaction for Student Psychosocial Functions	34
<i>Table 11</i>	
Summary of Hierarchical Regression Analysis of Supervision Variables, Student and Supervisor Age and the Age Interaction for Student Career Functions.....	34

<i>Table 12</i> Inter-Item Correlations for Student Age, Student Self Competence and Student Self Liking	35
<i>Table 13</i> Inter-Item Correlations for Human Capital Investment, Age, Degree and Mentor Functions	36
<i>Table 14</i> Means, Standard Deviations and ANOVA Result for Human Capital Investment Within each Degree Type.....	37
<i>Table 15</i> Summary of Multiple Regression Analysis of Degree Type and Students Age on the Dependent Variable Human Capital Investment	37

1. Abstract

The term mentoring has traditionally been associated with mentors being senior in age and experience. However, as more people are entering the workforce or changing career paths at midlife, it is becoming increasingly common for the mentor to be close in age or younger than their protégé. There has been limited research that has examined the affects and outcomes of non-traditional age relationships in mentoring. The aim of the current study was to shed light on the limited existing literature surrounding the role of age in mentoring. Specifically, it aimed to investigate how age affects mentoring relationships in an academic setting, and what factors may be contributing to this. Participants consisted of students enrolled in postgraduate academic papers (Master Dissertation, Masters Thesis and PhD) and their assigned academic supervisor. In total, 95 students and 89 supervisors were recruited from three universities with a total of 80 matched student and supervisor pairs. Two surveys were developed, one for postgraduate students and one for their academic supervisors. The student's survey consisted of demographic questions, a measure of psychosocial and career mentor functions, and a measure of student competence. The supervisor's survey consisted of demographic information, a measure of psychosocial and career mentor functions, and a measure of human capital investment. The results of the research indicate that within an academic setting, age difference does not have any aversive affects on the processes found in mentoring relationships. In future, mentoring literature needs to expand the conceptualization of mentors and protégés to encompass the increasing existence of varying age relationships. This would enable research to identify the challenges and unique strengths associated with age diversity in mentor relationships.

2. Introduction

Mentor relationships can be described as a work relationship between a senior, experienced employee (a mentor) who serves as a role model, provides support, direction and feedback to an often *younger*, junior employee (a protégé) (Finkelstein, Allen, Rhoton, 2003; Kram, 1988; Waters, McCabe, Kiellerup & Kiellerup, 2002). Research on mentoring has grown considerably over the past twenty years (Allen & Eby, 2007; Ragins & Kram, 2007). A central finding in mentoring research is the association between the presence of a mentor and career success (Singh, Ragins & Tharenou, 2009). Research has consistently demonstrated that those who are mentored advance more rapidly in their organization, earn higher salaries, have more career mobility and show lower turnover rates (Chao, Walz & Gardener, 1992; Dreher & Ash, 1990; Dreher & Cox, 1996; Fagenson, 1989; Scandura, 1992; Tuban & Dougherty, 1994; Wallace, 2001; Whitely, Dougherty & Dreher, 1992). In addition, research has shown that mentoring influences positive affective responses to the workplace. These include job satisfaction, career satisfaction, expressing more favorable work attitudes, pay satisfaction and career expectations (Baugh & Scandura, 2000; Chao et al, 1992; Corzine, Buntzman & Busch, 1994; Dreher & Ash, 1990; Mobley, Jaret, Marsh & Lim, 1994).

Early mentoring research identified that mentors are on average, half a generation (eight to fifteen years) older than their protégés (Levinson, Darrow, Klein, Levinson & McKee, 1978). Furthermore, age was emphasized as an important characteristic in a successful mentoring relationship. Levinson, et al. (1978) argued that age differences that were greater or less than eight to fifteen years were very uncommon and posed “special hazards”. It was believed that when a mentor was a full generation older than their protégé, (twenty years or more) there would be an increased risk that the relationship would reflect parental dynamics. In contrast, when the age difference was less than six to

eight years, it was believed that the mentor and protégé were likely to see each other as peers, with minimal mentoring aspects provided.

Traditionally, careers tended to progress in linear stages and comprise working for one or two organizations (Sullivan, 1999). However, in today's workforce, it is increasingly common for individuals to have multiple career paths and multiple job movements throughout their working career (Cheremie, Sturman & Walsh, 2007). This increases the likelihood of similar-age and reverse-age (when the mentor is younger than their protégé) mentor relationships (Allen, McManus & Russell, 1999, Kram, 1996; Mirvis & Hall, 1996). Such situations could provide challenges to the dynamics of a mentoring relationship. For example, the junior could feel that previous experience makes them as competent as their mentor, or the mentor may feel uncomfortable providing advice to someone older (Kram, 1988). In other words, when career and life stages are out of sync, situations may arise that are hard to manage. While changing demographics in the workforce have increased research attention on the role of age in organizations, there has been limited research that examines the affects and outcomes of untraditional age relationships in mentoring. As a result, this is the focus of the current study.

2.1. Mentoring Functions

Mentoring functions are the aspects of a developmental relationship that facilitate an individual's growth and enhancement. These functions are the essential characteristics that differentiate developmental relationships from other work relationships (Kram, 1988). Kram, (1988) has suggested that mentoring relationships serve two different, but interrelated functions: career-related and psychosocial. Career related functions are the aspects of a relationship that enhance organizational learning and preparation for advancement. Career related functions are possible because of the mentor's experience,

organizational rank, and influence in the organizational context. Types of career functions described by Kram (1988) include:

Sponsorship – the most frequently observed career function. It occurs when a mentor publicly supports an individual for advancement or beneficial opportunities in the organization. Without sponsorship, an individual is likely to be overlooked for promotions regardless of their competence and performance.

Exposure and visibility – when a mentor gives the protégé an opportunity to demonstrate their competence and performance in an organizational setting. This allows the protégé to develop relationships with key figures in the organization who may judge their potential for future advancement.

Coaching – when a mentor enhances the protégés knowledge and understanding of how to effectively navigate in the corporate world. The mentor suggests specific strategies for accomplishing career objectives and achieving recognition.

Protection – when a mentor shields their protégé from potentially damaging contact with other senior members of an organization. If a work task is delayed, or if the protégé is new to a particular task and is yet to learn how to achieve it appropriately, the mentor may take responsibility and personally contact the senior members until the exposure becomes beneficial to the protégé.

Challenging assignments – the assignment of challenging work, supported with technical training and ongoing feedback, to enable the protégé to develop specific competencies and a sense of accomplishment. This function is critical in preparing the protégé for future advancement. Sponsorship, exposure and visibility, coaching and protection create opportunities for advancement, while challenging work assignments provide the skills for the protégé to take advantage of these opportunities.

Psychosocial functions are the aspects of the relationship that enhance a sense of competence, clarity of identity, and effectiveness in a professional role. Psychosocial functions are possible because of the interpersonal relationship that develops which enables mutual trust and understanding. Types of psychosocial functions described by Kram (1988) include:

Role modeling – the most frequently reported psychosocial function. It occurs when the mentor's attitudes, values, and behavior provide a model for the protégé to imitate.

Acceptance and confirmation – both individuals in the relationship have an enriched sense of self from the positive regard received by the other.

Counseling – the ability for the protégé to explore personal concerns about their role in the organization with their mentor. In this context, the protégé feels open to talk about anxieties and fears that may detract from productive work. The mentor actively listens to any concerns and offers personal experience as an alternative perspective.

Friendship – characterized by social interaction that provides enjoyable, informal exchanges about work and non-work experiences. The friendship function allows the protégé to begin to feel like a peer with a more senior adult. Over time the protégé feels more confident when interacting with other authority figures.

It has been argued that the greater the number of functions provided by a mentor, the more beneficial the relationship will be to the protégé. In 1988, Noe developed a scale which assessed the extent that protégés believed their mentors provided career and psychosocial functions. A factor analysis supported the existence of the two distinct mentoring functions, thus supporting Kram's qualitative research. However, there were two exceptions to Noe's findings. Firstly, friendship was not included in Noe's scale as the factor analysis determined that it did not clearly load onto career related functions or psychosocial functions. Secondly, coaching was placed under psychosocial functions

instead of career related functions as the factor analysis revealed that it contributed more variance towards the psychosocial functions. Subsequent investigations have provided additional support for Kram's research. Chao et al. (1992) found that higher levels of psychosocial and career related mentoring functions have been shown to be related to more positive outcomes for the protégés. In addition, Scandura (1992) found that career-related mentoring was significantly related to protégés' promotion rates, and psychosocial functions were significantly and positively related to protégés' salary level.

2.2. Formal versus Informal Mentoring

Mentoring relationships can be either formal or informal. Formal mentorships usually occur through an assignment or matching process that is initiated by a third party. The matching process can range from random assignment to mentor selection based on protégé files (Chao et al., 1992). Formal mentors may be less inclined to view their protégé as worthy of special attention and support. In addition, a longer adjustment period is often required for formal mentors and protégés to get to know each other. In contrast, informal mentorships evolve over time through mutual attraction and informal interactions. Informal relationships are longer in duration and often last three to six years, while formal mentorships generally last from six months to one year (Kram, 1985).

Research regarding the type of functions found in formal and informal mentoring relationships has been inconsistent. Chao et al. (1992) found that protégés in informal mentoring relationships reported receiving more career support from their mentors than protégés that were in formal mentoring relationships. No significant differences were found for psychosocial functions. Ragins and Cotton (1999) found that protégés with informal mentors reported more career related functions and psychosocial functions than did protégés with formal mentors. In contrast, Fagenson-Eland, Marks and Amendola

(1997) surveyed both protégés and mentors, and found that protégés reported receiving greater psychosocial mentoring in informal mentorships than did protégés in formal mentorships. No differences in career related mentoring were detected. However, mentors in informal mentorships did not report providing more psychosocial mentoring than did mentors in formal mentorships. This finding was supported by Allen and Eby's (2004) research which found that mentors in informal mentorships reported no differences in mentoring provided to their protégés compared to mentors in formal mentorships. Collectively, these findings emphasize the importance of gathering information from both protégés and mentors in order to provide greater insight into why mentors and protégés may diverge in their perceptions of the mentoring relationship.

2.3. Gender

Unlike age, gender and its effects on mentoring have been well researched. Research has focused on how protégé gender, mentor gender and the gender relationship between the protégés and mentors influence the type of mentoring received (Allen & Eby, 2004). Empirical results regarding protégé gender have been mixed. Noe (1988) and Burke (1984) found that female protégés reported receiving more psychosocial mentoring from their formal mentors than did males. However, a set of studies based on healthcare professionals found that male protégés reported receiving more career related mentoring but no difference was found for psychosocial mentoring (Koberg, Boss, Chappell & Ringer, 1994). On the other hand, several studies have reported no difference in the amount of mentoring received based on protégé gender (Dreher & Ash, 1990; Scandura & Williams, 2001; Whitely et al., 1992).

Several theories suggest that men may be more likely to provide career mentoring whereas women may be more likely to provide psychosocial mentoring (Allen

and Eby, 2004). Social psychology literature suggests that women are more likely than men to provide emotional support and aspects of counseling. While the majority of findings indicate that there is no difference between mentor gender and the amount of mentoring provided (Ragins & Cotton, 1999), Allen & Eby (2004) found contradicting results. They found that female mentors reported providing more psychosocial mentoring to protégés, while males reported providing more career mentoring.

Mentoring literature suggests that cross-gender mentorships pose risks due to sexual harassment and innuendo from others (Kram, 1988). Ragins (1997) argued that there would be less mentoring received in cross-gender mentorships because there would be less perceived similarity and role-modeling. Once again, the research findings on cross-gender mentoring have been mixed. Thomas (1990) found that protégés of same-gender mentorships reported receiving more psychosocial and career mentoring than those of cross-gender mentorships. Koberg et al. (1998) also found that protégés of same-gender mentorships received more psychosocial mentoring, but found no difference in career mentoring. In contrast, several studies have found no difference regarding the amount of mentoring provided in same-gender or cross-gender mentorships (Noe, 1988; Ragins & Cotton, 1999 & Allen & Eby, 2004).

2.4. Theoretical Framework for Age

Due to an aging population, it has been predicted that by the year 2020, 39.1% of the workforce will be over the age of 55 years (Williams & Nussbaum, 2001). This occurrence, combined with the demise of linear career paths, increases the likelihood that new employees will be older. Research on age in the workforce has found that chronological age is not a reliable predictor of work performance. In certain job types, performance actually increases with age as would be expected with accumulated job

experience (Cleveland & Landy, 1983). Furthermore, there is evidence that older workers are as productive as younger workers, are almost as capable of learning (despite less formal education), have high energy levels and willingness to learn, and are less prone to voluntary absences and turnover than younger employees (Rupp, Crede & Vodanovich, 2006).

Evidence from a meta-analysis conducted by Waldman and Avolio (1986) found no significant differences between age groups in objective work performance measures. However, the results indicated that older workers received lower performance scores by subjective supervisor ratings. This finding indicates that myths and stereotypes regarding older workers in the workplace still exist (Finkelstein et al., 2003). From an industrial psychological perspective, it is important to investigate career related issues for older workers. In particular, how age may affect factors such as daily activities, interpersonal interactions and career development within an organization (Finkelstein et al., 2003). Of particular concern to mentoring relationships is the research regarding relational demography. Tsui, Egan and Xin (1995) define relational demography as the similarity or difference of an individual's demographic characteristics with others in a group. Tsui et al. (1995) argued that age heterogeneity may negatively affect communication and group cohesion. This was found to be a direct issue in dyad relationships that involved supervisor-subordinate pairings, due to the norms and expectations for supervisors to be older than their subordinates.

Finkelstein et al. (2003) applied Lawrence's organizational theory of age (Lawrence, 1987, 1988) to explain how age may adversely affect mentoring dynamics. Lawrence's theory states that age distributions create age norms which produce age effects within an organization or role (Lawrence, 1987). Age distributions are the patterns of employees' chronological ages within an organization or within a particular role. Both

the actual and the perceived distribution of ages within an organization or role may contribute to the development of age norms. Age norms are shared assumptions regarding the 'norm' or appropriate ages of employees within an organization or role (Lawrence, 1987). Expectations are violated when an individual is not in sync with the age norm associated with their particular role. Age effects can occur at a micro or macro level within an organization and can be the result of direct physiological processes associated with aging or due to indirect social responses to the violation of age norms (Finkelstein et al., 2003). In terms of mentoring, Lawrence's organizational theory of age is applicable due to indirect processes. The processes are indirect because there is no physiological reason as to why mentors or protégés of atypical ages are not able to perform their roles, instead, there are age norms and expectations associated with what age the individuals should be in their particular role. Developmental research has shown that people have relatively clear and consistent expectations of when events should occur in life. Because individuals tend to have shared perceptions regarding career progress and what roles people are entered in at particular ages, people are subject to judge one another in terms of whether they are ahead, in line or behind on those expectations (Greller & Simpson, 1999).

Traditionally, a mentor is characterized as a senior person whose role is to pass on their experience and wisdom, whereas a protégés role is viewed as a novice who is seeking to grow and advance. Reverse-age mentor relationships could be judged by status incongruence (Perry, Kulik & Zhou, 1999) which can provide uncomfortable situations for both involved. Because older individuals are expected to be of higher status, when the higher status individual in the relationship is younger (the mentor) and the lower status individual is older (the protégé) it can create potentially negative age effects.

Mentorship is often associated with someone who is in the later stages of their career. Mentoring a protégé enables mentors to develop a greater sense of self worth, at a time when their own rate of career advancement begins to decline (Kram, 1988). Stage models of development by Levinson et al. (1978) and Super (1957) theorize that as individuals get older they experience an increasing desire to pass on knowledge to others. Erikson (1959) proposed the idea of generativity, which can be applied to help understand an individual's desire to mentor others. Generativity can be defined as an interest in establishing and guiding the next generation. As individuals approach later career stages, they may find that mentoring others satisfies their increased generative needs. This theory may help explain why reverse-age mentorships are predicted to have negative effects on the types of mentoring provided. Those who are older may have higher generative desires and therefore may be more committed to passing on knowledge and advice to their protégé. In contrast, younger mentors may have less generative desires and therefore may not be as committed to passing on knowledge. This would result in less mentor functions being provided.

These theoretical perspectives provide insight into how varying ages and role expectations can potentially negatively affect mentor relationships. This could have implications regarding the type of mentoring provided and the outcomes of the mentorship. As a result, the primary focus of the current study is to investigate how varying age dynamics affect mentoring relationships.

2.5. Empirical research on age and mentoring

As discussed above, there has been limited research examining the effects of age diversity on the processes and outcomes of mentoring. This is most likely because the term mentoring has traditionally been associated with mentors being senior in age and

experience (Finkelstein et al., 2003). Some studies that have used age as a control variable have demonstrated the importance of age in understanding mentoring relationships. After noting that the social norm is for protégés to be young, Whitely, et al. (1992) predicted and found that younger protégés received more career-related mentoring. However, this study did not consider age diversity or state the range in ages of the mentor and protégé.

Feldman, Folks and Turnley (1999) applied a relational demography approach to their research by investigating the effects of age, gender and race diversity on mentoring. No significant effects were found for age diversity and they concluded that age may not be as important to mentoring as other demographic variables. While this study examined age diversity, it was limited by only investigating absolute age difference rather than age diversity and the direction of the age difference. As a result, Finkelstein et al. (2003) conducted a study which examined the role of both age and age diversity (including reverse-age relationships) in mentorships. They found that older protégés on average experienced less career-related mentoring than younger protégés and had shorter relationships with their mentors. This finding may reflect the belief that older protégés may not require career related mentoring as much as a younger protégé. No significant results were found for any effects of protégés' age on psychosocial mentoring. Nor were any significant effects found regarding the effects of age diversity between the mentor and protégé on psychosocial or career related functions. In addition, no relationship was found between protégés' age and overall quality of the mentor relationships. However, some interesting interactions between mentors' and protégés' age when predicting psychosocial and career related function were found. Younger protégés reported a similar level of psychosocial and career related mentoring to older protégés. However, as the age of the protégé increased so too did the difference in the degree of mentoring provided based on the mentor's age. With psychosocial mentoring, the amount of mentoring provided by

younger mentors increased with the age of the protégé. Overall, these findings indicated that according to protégés, older mentors provided the least amount of both psychosocial and career related mentoring. Finkelstein et al. (2003) suggested that these findings may indicate that young mentors work harder to gain credibility with their protégé, and that this is enhanced when the protégé is older and may doubt their mentor's capabilities. In contrast, older mentors may provide less effort as they feel they can rely on their experience.

Finkelstein et al. (2003) also conducted a qualitative section in their study. Participants were asked to indicate whether they had been mentored by someone similar in age or younger than themselves. If they had, participants were then asked to state the advantages and disadvantages they perceived (or expected if they had not experienced either types of mentoring) with their particular type of mentoring relationship. The findings showed that protégés of similar aged mentors believed that similar life experiences, good opportunities for the protégé and the mentor to learn off each other, and the ability to relate to one another were advantageous to their relationships. The most common disadvantages for similar aged mentoring were concerns regarding the mentor's knowledge and experience, and relationship boundary issues. In regards to reverse age mentoring, the overwhelming advantage was the belief that a younger mentor would introduce fresh ideas and high energy into the relationship. The main disadvantage perceived was the lack of depth of experience and knowledge of the mentor. While Finkelstein et al. (2003) has conducted the most comprehensive study of age diversity in mentoring, data was only collected from protégés. As a result, Finkelstein et al. (2003) have emphasized the importance of collecting information from both protégés and mentors so both sides of the relationship can be represented and accurately assessed.

2.6. Self Competence

While it is important to understand how age could affect the outcomes of mentoring relationships, it is equally important to understand what factors may contribute to these outcomes. Self competence could be an issue for mentors and protégés in similar age or reverse age mentorships. As stated above, Kram (1988) hypothesized that older protégés may feel that their previous experience makes them as competent as their mentor.

Self competency refers to the overall positive or negative beliefs about one's individual power and efficacy. It is closely related to self-efficacy, which is defined as people's opinions about their ability to exercise control over events that control their lives (Tafarodi & Swann, 2001). Age stereotyping literature has demonstrated that a positive stereotype about older individuals is that they are more experienced (Finkelstein, Higgins & Clancy, 2000). If older protégés have already experienced a successful career, then they may have an elevated sense of self competence which may influence the mentoring relationship. If the younger mentor is struggling with issues of personal identity and self confidence and perceives their protégé as more competent, then this imbalance could negatively affect their relationship (Schlosser & Foley, 2008).

If the older protégé has been in the workforce for longer than their mentor, they may feel like they do not need the developmental support and guidance provided by their mentor. In addition, the mentor may feel uncomfortable taking the authoritative role in the relationship. Due to social norms, it is more acceptable for younger people to be inexperienced and seek out developmental support, which could influence older protégés to be more resistant to asking for help. If individuals feel more competent, they may not readily seek advice, or use their mentor as a support system. This elevated sense of self

competency for older protégés could potentially contribute to negative dynamics in mentor relationships.

2.7. Human Capital Investment

Beliefs held by the mentor may also affect dynamics in the mentoring relationship. Human capital refers to the skills and knowledge gained by a worker through education and experience. Accumulation of human capital is an important aspect of individuals' earning capacity and employment prospects (Bedard, 2001). Mentors play a vital role in investing their time and efforts into their protégé to enable them to build their human capital.

Research has found that older employees received less on-the-job training (Simpson, Greller & Stroh, 2001). Neoclassical economists believed that this finding is a result of a present-value cost-benefit framework which is used when employers and employees make decisions about human capital investment. The present-value cost-benefit formula is based on comparing the discounted net returns from education or training over the remaining years that the employee will be in the labour market (Simpson et al., 2001). Neoclassical economists argue that there are too many direct and indirect costs associated with human capital investments for older workers. They state that experienced older workers are too valuable to justify the loss in production as a result of the time that training and development requires. In addition, older employees have fewer remaining years than younger employees to return on their investments (Straka, 1992). Neoclassical economists also argue that the combined effects of higher expected costs and shorter pay-back period lead employers to avoid making human capital investments in older workers (Rix, 1996). The present-value cost-benefit framework is also applicable

for older workers who may not want to invest in their human capital due to associated costs through loss of wages and little time to benefit from their return of investments.

Poteat, Shockley and Allen (2009) examined commitment levels between mentors and protégés, and their level of relationship satisfaction. Their findings demonstrated that mentors were most satisfied when they perceived mutually high commitment, and when they felt that their protégé was more committed to the relationship than themselves. Because mentoring someone takes a large amount of time, it is not surprising that mentors would be more satisfied when they perceived their protégé to be highly committed. Mentors may believe that this greater commitment helps counterbalance the amount of human capital investment they have placed into their mentoring relationship. This finding emphasizes how perceptions of the mentor can affect the dynamics of the relationship and the subsequent processes. Based on the neoclassical economists' approach, it could be possible that mentors view older protégés as having less time to make a return on their investments and therefore invest more time and effort with younger protégés than older protégés. If so, then this would contribute to negative effects for older protégés in their mentoring relationships.

In summary, the mentoring literature has consistently highlighted the association between the presence of a mentor and career success. Much of the literature has focused on the range of outcomes for protégés, formality, and gender dynamics in mentor relationships. Early mentoring literature emphasised the importance of age in mentoring relationships. However, given that it is increasingly common for people to enter the workplace or change career paths at later stages in life, there has been limited research that examines the effects of non-traditional age relationships in mentoring. Based on the theories of age, the current research aims to contribute to the limited literature regarding the role of age in mentoring. Specifically, it aims to investigate how age affects

mentoring relationships in an academic setting, and whether student's competency levels, or supervisor's human capital investments contribute to this.

2.8. Mentoring in Academia

The current research will be conducted in an academic setting. Mentor relationships play a crucial role in the personal and professional development of graduate students (Johnson & Huwe, 2002). According to Dixon-Reeves (2003), effective mentoring is essential for professional development, publication, and advancement through the ranks of academia. When a postgraduate student enrolls to write an academic paper, they are assigned a senior academic supervisor who is often a specialist in the student's particular area of interest. The types of academic papers include: Honors Dissertation, Masters Dissertation, Masters Thesis and PhD. The supervisor is there to provide support and advice to the student throughout the academic year. Because the system is set up by the universities, it is a type of formal mentoring. Dixon-Reeves (2003) found that over half of all recent PhD students were encouraged by their mentors to submit articles, chapters, and book reviews for publication; serve as a research assistant and present their work at various conferences. These encouragements were part of a strategic plan to have their protégé engage in professional development activities to enhance their human capital.

While the benefits of mentoring are consistently demonstrated in the literature, there appears to be little emphasis on the problems that can occur in mentoring relationships. A study by Clarke, Harden and Johnson (2000) found that a significant proportion (17%) of doctoral psychology students described negative components about their graduate mentorship. From the 787 psychology doctoral students that took part in the study, the most common complaint found was mentor neglect and unavailability. With

multiple demands for teaching, research, writing, grant preparation and mentoring other students, it is understandable that mentors may not be available at all times. Research has found that mentor neglect leaves the protégé feeling less satisfied with their relationship (Poteat et al., 2009). In addition, there is research to suggest that mentor neglect contributes to the protégé feeling less confident, less competent and having lower professional identity (Johnson & Huwe, 2003). Another complaint found by Clarke et al. (2000) was the occurrence of poor faculty mentor–student protégé matching. Poorly matched partners are likely to encounter significant problems when trying to form and sustain a productive and satisfying relationship.

In academia, the most common reasons for mentor-protégé mismatching include (a) *personality*, especially when one member is very introverted and the other prefers extensive interaction; (b) *communication style*, for example, when one member is task orientated and the other is verbal orientated; (c) *career stage*, this is of particular concern when the mentor is younger than their protégé and struggling with issues of competence and professional identity. In contrast, the protégé is older and is likely to be established in another career making them more confident than their mentor. Not all graduate university staff are competent to mentor. This could be due to inexperience at mentoring or technical incompetence through lack of knowledge about the subject matter; and (d) *career interest*, for example, the mentor might be a researcher whose primary interest is in training their protégé for academia, whereas, the protégé may be more interested in becoming a practitioner.

A study conducted by Storrs, Putsche and Taylor (2008) investigated the expectations and realities among female protégés and their mentors in a university mentoring program and found that both protégés and mentors often experienced a gap in what they expected in the mentoring system and what they actually experienced. In

particular, protégés expected more formal relationships and were surprised to have informal and relational experiences with their mentors. Collectively, these findings suggest that at the start of the relationship, both parties need to clarify their expectations and what they want to gain from their relationship. This should help maximize future productivity and satisfaction between the mentor and protégé.

2.9. Current Research

As discussed above, the term mentoring has traditionally been associated with mentors being senior in age and experience. However, as more people are entering the workforce or changing career paths at midlife, it is becoming increasingly common for the mentor to be close in age or younger than their protégé. Given this occurrence, there has been limited research that has examined the affects and outcomes of non-traditional age relationships in mentoring. From an industrial psychological perspective, it is important to investigate how age can affect career related issues associated with mentoring. As a result of the limited research surrounding this issue, the aim of the current study is to shed light on the existing literature, and investigate how age affects mentoring relationships in an academic setting, and what factors may be contributing to this. Based on early mentoring literature and theories regarding stage models of development and organizations theory of age, the current study will use Krams' (1988) career and psychosocial functions to test if age has any affects on the amount of mentor functions provided. In addition, the neoclassical economist's view of human capital investment and age stereotypes about competence will be tested to investigate whether these factors contribute to any affects found in the mentoring relationships.

To investigate age difference, the following formula was used, age difference = (mentors age – protégés age). This formula takes the protégés and mentors age and forms

a single number that can be placed on a continuum. The continuum will range from negative to positive numbers. Higher numbers represent ideal age relationships (i.e. the mentor is significantly older than their protégé) and lower or negative numbers represent unconventional age relationships (i.e. the mentor is close in age or younger than their protégé).

In light of the previous research and findings, it is hypothesized that:

- a) As age differences increase there will be higher levels of psychosocial functions found.
- b) As age differences increase there will be higher levels of career functions found.
- c) Older students will report higher competency levels.
- d) Supervisors will make more human capital investments in younger students that they will in older students

3. Method

3.1. Participants

In total, 95 students and 89 supervisors were recruited with a total of 80 matched student and supervisor pairs. Postgraduate students consisted of 33 females and 63 males with a range of ages from 22 to 58. The mean age of postgraduate students was 34.2. Supervisors consisted of 38 females and 51 males with a range of ages from 33 to 67. The mean age of supervisors was 49.7. Participants were recruited voluntarily from three universities throughout New Zealand. These included The University of Canterbury (N = 101), Lincoln University (N= 14) and Otago University Christchurch School of Medicine (N= 69). Participants were remunerated with a \$1 instant kiwi and a chocolate bar for completing the survey. In total 310 surveys were handed out and 184 surveys were returned. This resulted in an overall response rate of 59%. Students' response rate was 61.3% and supervisors' response rate was 57.4%.

3.2. Materials

Two surveys were developed, one for postgraduate students and one for their academic supervisors. All wording in the surveys were changed from mentor and protégé to supervisor and student to reduce confusion.

The students' survey included an information sheet (Appendix A) and the following three sections: *Section A: Demographic information*, *Section B: The Mentor Functions Scale* and *Section C: The Self-Liking/Self-Competence Revised Version Scale* (Appendix B).

The supervisors' survey included an information sheet (Appendix A) and the following three sections: *Section A: Demographic information*, *Section B: The Mentor Functions Scale* and *Section C: Human Capital Investment Scale* (Appendix C).

Section A: Demographic Information

This consisted of eight questions that asked the participant for demographic information, including: age, gender, the type of studies they are enrolled in or supervising, which university they attend, the date of their first meeting with their student/supervisor and the frequency and duration of their meetings with their student/supervisor.

Section B: The Mentor Functions Scale

Perceived mentoring functions provided by the supervisors were measured by The Mentor Function Scale which was developed by Noe (1988). Noe's scales are comprised of 23 items that were developed to assess the extent to which protégés believed their mentors provided career and psychosocial functions. Students and supervisors were required to indicate on a Likert scale the extent that each statement described their relationship. The psychosocial functions subscale consisted of 16 items about the coaching, acceptance, confirmation, role modeling and counseling provided by their supervisor. The career-related functions subscale consisted of 7 items on the protection, exposure, visibility, and opportunity for challenging assignments provided by their supervisor.

A 6-point Likert scale was used for each item where 0 = "Not at all" and 6 = "To a very large extent." Students read statements starting with "My mentor" e.g. "My mentor has shared history of his/her career with you", while for supervisors the scales were adapted to read "I" e.g. "I have shared history of my career with my student." The possible scale range for the psychosocial functions was 0 – 80, the possible scale range for the career functions was 0 – 35. Higher scores indicated a greater degree of mentoring provided. Cronbach's alpha for the supervisors' psychosocial and career related scales

were found at .85 and .76. Cronbach's alpha for the students' psychosocial and career related scales were found at .91 and .83 respectively.

Section C: Students' Competence Levels

Students' competency levels were measured by the Self-Liking/Self-Competence Scale – Revised Version (SLCS-R) that was developed by Tafarodi and Swann (2001). This scale consists of 16 items, with 8 items regarding self-competence (e.g. "I am highly effective at the things I do.") and 8 items regarding self-liking (e.g. "I am secure in my sense of self-worth."). A 5-point Likert scale ranging from 1= strongly disagree to 5= strongly agree was used to record answers. The possible scale range for the self liking scale and the self-competence scale was 8 – 40. Cronbach's alpha was found at .75 for the self-liking items and .91 for the self-liking items.

Section C: Supervisors' Human Capital Investment

Currently, there are no existing validated scales that measure human capital investment. Therefore, a scale was generated to assess the amount of human capital investment the supervisors' provided to their students. Rather than measuring the supervisors' beliefs about human capital investment, 7 questions were generated regarding how frequently the supervisor directly encouraged behavior that would benefit their student's human capital. The majority of these factors were observed in Dixon-Reeve's (2003) study. The more the supervisor directly encouraged positive behavior, the more human capital investment they were providing. An example of a generated question is: "How often do you encourage your student to attend conferences?" A 5-point Likert scale ranging from 1= never to 5= very frequently was used to record the supervisors' answers. The possible scale range for the human capital investment scale was 7 – 35. Cronbach's alpha for the human capital investment scale was found at .86.

3.3. Procedure

Prior to distribution, all student and supervisor surveys were matched with a coding system. A number was assigned to each student and supervisor pair. This number was written on the front of the surveys to anonymously match the student with their supervisor. For example: 1 and 1, 2 and 2 etc.

The University of Canterbury's Student Association (UCSA) and the Lincoln University Student Association (LUSA) were contacted and asked to forward on an email to all post-graduate students, which invited Masters and PhD students and their primary supervisor to participate in the current research (Appendix D). The invitation outlined the purpose of the research and that the surveys would take approximately five to ten minutes to complete.

At the University of Otago Christchurch School of Medicine, the director was contacted and informed about the current study. After their permission was granted, the researcher handed out surveys to students in the department.

At all three Universities, both the student and the supervisor surveys were given to the students first. The post-graduate students were then asked to contact their supervisors and explain that they had agreed to participate in the current research and ask for their supervisors' participation. If the supervisor agreed to participate, then the students passed on the supervisor's survey to their primary supervisor at their next meeting. If the supervisor did not agree to participate, students were told that they could still fill out the student's survey and return it. All surveys had returned addressed envelopes, and included the \$1 instant kiwi and chocolate. The student invitation and the information sheet did not mention that age was the primary focus of this research. This was to restrict any potentially biased answers.

3.4. Ethical Considerations

Given the nature of the research, there were three specific ethical considerations that were addressed to ensure that the research was conducted in a consistent and ethical manner.

1) The majority of postgraduate students have more than one supervisor for their academic research. As a result, it was specified that only primary supervisors could be involved in the research. This was done on the basis that primary supervisors would have the most involvement with the student and it would increase consistency and reliability in the research.

2) Given that there are often multiple postgraduate students who have the same primary supervisor, it was decided that supervisors could only participate once. This was to avoid multiple ratings of one supervisor against single ratings of individual students. Therefore, on the information sheet it was clearly stated in bold that if an academic supervisor had already completed the survey, then they should not complete another survey.

3) In all cases, the postgraduate students were recruited first. This was to eliminate any power coercion which may have occurred if the supervisors had asked their students to complete the survey. In addition, it eliminated any potential bias that may have occurred if supervisors were given the ability to choose which student they wished to participate in the study.

4. Results

4.1 Data Preparation

Survey data were entered into a SPSS 17.0 data base. Initially all the data from the 95 students and the 89 supervisors were entered. After data collection had finished, any supervisor data that did not have corresponding student data were deleted from further analysis. This resulted in 80 supervisor cases, 95 student cases and 80 matched dyads for analysis.

The items from the SLCS-R that were negatively coded were reversed to reflect their real values and two new variables were created: age difference and supervision duration. Age difference was calculated by subtracting the students age from their supervisors age. Supervision duration was calculated by adding the months from when the student or supervisor stated their first meeting with each other was held, to the date on which the student or supervisor completed the survey. Gender, type of degree, and frequency of meetings were coded for. All scale items were collapsed into their computed variables and descriptive statistics were generated. Reliability analysis was performed on each scale. As a result of this analysis, item 20 from the career mentor function scale was removed from the supervisor's and student's data to maximize the Cronbach's alpha coefficient.

4.2 Preliminary Analysis

A summary of the mean scores, standard deviations, minimum and maximum value, for each variable are shown in Table 1.

Table 1.
Descriptive Statistics of Main Variables

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Supervisor Age	80	34.00	33.00	67.00	49.96	7.74
Student Age	96	36.00	22.00	58.00	34.24	10.83
Age difference	80	57.00	-16.00	41.00	15.18	14.57
Supervisor supervision duration (months)	77	109.00	2.00	111.00	25.43	19.12
Student supervision duration (months)	92	113.00	2.00	115.00	23.15	19.83
Supervisor meeting frequency	80	5.00	1.00	6.00	3.31	1.19
Student meeting frequency	94	5.00	1.00	6.00	3.30	1.17
Supervisor meeting duration (minutes)	79	80.00	10.00	90.00	53.73	21.39
Student meeting duration (minutes)	95	110.00	10.00	120.00	53.02	24.34
Supervisor psychosocial functions	80	3.34	1.29	4.63	3.16	.62
Student psychosocial functions	95	4.50	.31	4.81	3.17	.82
Supervisor career functions	80	4.17	.50	4.67	3.13	.81
Student career functions	95	4.50	.50	5.00	2.87	1.01
Human capital investment	80	4.29	.71	5.00	3.14	.90
Self competency	95	2.63	2.00	4.63	3.54	.52
Self liking	95	3.75	1.25	5.00	3.44	.82

The primary focus of this study was to investigate the role of age in mentoring relationships, with a particular interest in similar-age and reverse age relationships. As seen in Table 1, there is a broad range of student age, supervisor age and age difference. The maximum negative age difference between student and supervisor was -16 years (reflecting a reverse-age relationship) and the maximum positive difference was 41 years. Age diversity was further investigated by examining the frequencies of age difference. This revealed that there were 14 reverse age relationships, 17 relationships reflected a 0 to 10 year difference, 16 relationships an 11 to 20 year difference, 21 relationships a 21 to 30 year difference and 12 relationships were 31 or more years apart. Collectively these findings demonstrate that in the current sample, age diversity in mentor relationships exists.

Prior to any further analyses, the relationship between degree type and the four mentor functions was investigated to ascertain if degree type needed to be controlled for. A one-way ANOVA was conducted to test whether the type of degree that the participants were either enrolled in or supervising (Masters Dissertation, Masters Thesis or PhD) created any difference in the amount or type of mentor functions found. The means, standard deviations and F values for the related variables are presented in Table 2.

Table 2.
Means, Standard Deviations and ANOVA Results of Supervisor and Students Mentor Functions for each Degree Type

	Masters	Masters Thesis	PhD	ANOVA Result
Supervisor Psychosocial functions	3.15 (.60)	3.22 (.53)	3.14 (.67)	$F(2, 77) = .127$, ns
Students Psychosocial Functions	3.19 (.90)	3.19 (.66)	3.26 (.87)	$F(2, 77) = .071$, ns
Supervisor Career Functions	2.89 (.69)	2.91 (.76)	3.28 (.83)	$F(2, 77) = 2.230$, ns
Student Career Functions	3.05 (1.25)	2.78 (.97)	2.89 (.96)	$F(2, 77) = .277$, ns

As shown by Table 2, there is no significant difference in the amount of psychosocial or career functions found between the three degree types. Therefore, degree type was not required as a control variable when using psychosocial or career variables in future analysis.

4.3 Analysis of Hypotheses

Given the inconsistent findings in previous research on the role of gender in mentoring, gender differences were investigated to examine if these had any effect on the amount of psychosocial and career mentor functions found. It is important to examine

the role of gender as any significant effects found for gender could potentially mask subsequent age effects. To investigate the types of gender relationships between supervisors and students, a frequency analysis was conducted. This demonstrated that there were 19 mentorships in which the supervisor and student were male, 27 in which the supervisor was male and the student was female, 6 in which the supervisor was female and the student was male and 28 in which the supervisor and student were female. Based on these four gender groups, a one-way ANOVA was conducted to examine whether there was any significant difference in the amount of psychosocial or career functions. The means, standard deviations and ANOVA results for the mentor functions between the four gender groups are presented in Table 3.

Table 3.
Means, Standard Deviations and ANOVA Results for Mentor Functions Between the Four Gender Groups

	Male : Male	Male : Female	Female : Male	Female : Female	ANOVA RESULTS
Supervisor Psychosocial Functions	3.08 (.73)	3.12 (.54)	3.21 (.66)	3.25 (.64)	$F(2,77) = .330, ns$
Students Psychosocial Functions	3.19 (.93)	3.32 (.74)	3.04 (.67)	3.23 (.87)	$F(2,77) = .221, ns$
Supervisor Career Functions	2.98 (.78)	3.18 (.83)	2.86 (.63)	3.23 (.84)	$F(2,77) = .616, ns$
Student Career Functions	2.81 (1.04)	2.98 (1.06)	2.50 (.75)	2.95 (1.01)	$F(2,77) = .421, ns$

Table 3 shows that there is no difference in the amount of psychosocial or career mentor functions between the four gender groups. However, it is possible that gender differences occurred within supervisors and students. To investigate the possibility of within differences in the amount of mentor functions, two one-way ANOVAs were conducted. These findings are presented in Table 4 and Table 5 respectively.

Table 4.
Means, Standard Deviations and ANOVA Results for Mentor Functions Within Male and Female Supervisors

	Male Supervisors	Female Supervisors	ANOVA Results
Supervisors Psychosocial Functions	3.10 (.62)	3.24 (.63)	$F(1,78) = .936$, ns
Supervisors Career Functions	3.10 (.81)	3.17 (.82)	$F(1,78) = .137$, ns

Table 5.
Means, Standard Deviations and ANOVA Results for Mentor Functions Within Male and Female Students

	Male Students	Female Students	ANOVA Results
Students Psychosocial Functions	3.10 (.82)	3.20 (.82)	$F(1,93) = .331$, ns
Students Career Functions	2.73 (.97)	2.95 (1.02)	$F(1,93) = .959$, ns

Table 4 and Table 5 show that there is no significant difference in the amount of psychosocial and career functions found between male and female supervisors or male and female students. Collectively, these findings demonstrate that gender dynamics in mentoring had no effect on either supervisors' or students' psychosocial and career mentor outcomes.

Once the range in age diversity was ascertained, the role of age was further investigated to examine whether age diversity had any effect on the type of mentoring provided. Hypothesis one predicted that as age difference increased there would be more psychosocial mentor functions found. Hypothesis two predicted that as age difference increased there would be more career mentor functions found. To test these hypotheses, a correlation matrix was generated to examine the relationship between age and the mentor functions provided. The measure used was the Pearson product-moment correlation which can be seen in Table 6. As shown by Table 6, there were no

significant relationships found between age or age difference and any of the four measures of mentor functions.

Table 6.
Inter-Item Correlations for Age and Mentor Function Variables

	1	2	3	4	5	6
1. Supervisor Age						
2. Students Age	-.166					
3. Age Difference	.658**	-.852**				
4. Supervisor Psychosocial Functions	-.033	.066	-.068			
5. Supervisors Career Functions	.077	-.067	.092	.402**		
6. Student Psychosocial Functions	-.023	.076	-.014	.442**	.251*	
7. Students Career Functions	-.035	-.067	.048	.329**	.410**	.791**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 6 confirms that there is no linear relationship between age difference and any of the four psychosocial and career measures. To investigate age difference further, age difference was split into five categories (reverse age, 0 to 10 years, 11 to 20 years, 21 to 30 years and 31 plus years) and a one way ANOVA was generated to examine whether there was a difference in the amount of psychosocial or career functions (for students and supervisors) across any of the five age difference categories. The means, standard deviations and *F* values for the related variables are presented in Table 7. As shown in Table 7, no significant difference in the amount of psychosocial or career functions was found between any of the five age difference categories.

Table 7.
Means, Standard Deviations and ANOVA Results for Students and Supervisors Mentor Functions for Age Difference Categories

	Reverse Age (n=14)	0 – 10 Years (n=17)	11 - 20 Years (n=16)	21 – 30 Years (n=21)	31+ Years (n=12)	ANOVA Result
Supervisor Psychosocial Functions	3.42 (.71)	3.04 (.77)	3.16 (.46)	3.15 (.48)	3.14 (.69)	$F(2,77) = .358, ns$
Students Psychosocial Functions	3.37 (.77)	3.19 (1.11)	3.29 (.68)	3.23 (.84)	3.17 (.60)	$F(2,77) = .733, ns$
Supervisor Career Functions	3.12 (.94)	3.10 (.81)	3.10 (.70)	3.02 (.92)	3.50 (.53)	$F(2,77) = .514, ns$
Student Career Functions	2.87 (1.32)	2.91 (1.12)	3.03 (.76)	2.78 (.97)	3.00 (.87)	$F(2,77) = .774, ns$

Subtracting the student's age from their supervisor's age may not be a true representation of the age dynamics in a mentoring relationship. While age difference establishes the age gap and the direction of the relationship (reverse age, or traditional age) it does not account for decade characteristics. For example, if a student is 22 and their supervisor is 32, this is an age difference of 10 years. Likewise, if a student is 50 and their supervisor is 60, this is also an age difference of 10 years, however, the dynamics in the two mentorships maybe different. Unlike the 22 year old, the 50 year old probably has substantial career experience before entering the mentor relationship and represents a non-traditional protégé, yet, age difference does not represent these differences. As a result, a regression interaction approach was employed which had been used in previous research on age differences (Cleveland & Shore, 1992; Goldberg & Shore, 1994; Finklestein et al., 2003). This approach made it possible to examine

whether the interaction between student age and supervisor age predicted unique variance in any of the four measures of mentor functions beyond the student's age or supervisor's age alone. In order to undertake the regression analysis, an interaction variable was computed which multiplied the student's age by the supervisor's age, and the assumptions of normality, linearity and multi-collinearity were tested and met. For the regression analysis, supervision duration, meeting frequency and meeting duration were entered as control variables in Step 1, the student's age and supervisor's age were entered in Step 2 and the interaction between student's and supervisor's age was entered in Step 3. Hierarchical regression analyses were conducted for supervisor psychosocial functions, supervisor career functions, student psychosocial functions and student career functions. Summaries of the hierarchical regression analyses can be seen in Table 8, Table 9, Table 10 and Table 11 respectively.

Table 8.

Summary of Hierarchical Regression Analysis of Supervision Variables, Student and Supervisor Age and the Age Interaction for Supervisor Psychosocial Functions

Step	R Square	Adjusted R Square	Standard Error	R Square Change	Regression Result
1	.04	-0.02	.60	.04	<i>F</i> Change (3,72) = .962, ns
2	.05	-.02	.60	.01	<i>F</i> Change (2,70) = .288, ns
3	.11	.027	.59	.06	<i>F</i> Change (1,69) = 4.539, $p < 0.05$

Table 8 demonstrates that supervision duration, meeting duration and meeting frequency explained 4% of the variance in supervisor's psychosocial functions. After entering the students and supervisors age in step 2, 5% of the variance was explained. Once the interaction of the students and supervisors age was entered in at step 3, 11% of the variance was explained. This produced a significant R^2 change at step 3 and a subsequent interaction effect. However, the total variance explained by the model was not

significant $F(6,69) = .246$, ns. In the final model only two variables were statistically significant: student's age ($\beta = 1.81$, $p < .05$) and the interaction between supervisors and students age ($\beta = -1.87$, $p < .05$).

Table 9.

Summary of Hierarchical Regression Analysis of Supervision Variables, Student and Supervisor Age and the Age Interaction for Supervisor Career Functions

Step	R Square	Adjusted R Square	Standard Error	R Square Change	Regression Result
1	.08	.04	.77	.078	F Change (3,72) = .116, ns
2	.08	.02	.78	.003	F Change (2,70) = .889, ns
3	.09	.01	.79	.005	F Change (1,69) = .539, ns

Table 10.

Summary of Hierarchical Regression Analysis of Supervision Variables, Student and Supervisor Age and the Age Interaction for Student Psychosocial Functions

Step	R Square	Adjusted R Square	Standard Error	R Square Change	Regression Result
1	.05	.01	.81	.048	F Change (3,72) = .316, ns
2	.05	-.02	.82	.003	F Change (2,70) = .886, ns
3	.07	-.01	.83	.017	F Change (1,69) = .266, ns

Table 11.

Summary of Hierarchical Regression Analysis of Supervision Variables, Student and Supervisor Age and the Age Interaction for Student Career Functions

Step	R Square	Adjusted R Square	Standard Error	R Square Change	Regression Result
1	.100	.062	.96275	.100	F Change (3,72) = .057, ns
2	.105	.040	.97364	.005	F Change (2,70) = .811, ns
3	.107	.028	.97971	.002	F Change (1,69) = .701, ns

Tables 9, 10 and 11 demonstrate that there were no significant effects found for supervisor career functions, student psychosocial functions and student career functions.

While supervisor psychosocial functions produced a significant interaction effect for supervisor's and student's age, and student's age was found to be a significant variable, these variables only accounted for 7% of variance in supervisors' psychosocial functions. This amount of variance was too small to make the overall model significant. Therefore, while supervisor's age and student's age are creating an effect on the amount of supervisor psychosocial functions, this effect remains small. Given these findings and the findings regarding age difference, hypotheses one and two are not supported.

Hypothesis three predicted that older students would report higher competency levels. To test this hypothesis, self competence, self liking, and student's age were entered into a Pearson product – moment correlation which can be seen in Table 12. Table 12 demonstrates that there is a positive relationship between student's age and self competence, and student's age and self liking. Therefore, as the age of the student increases so too does their self competence and self liking, supporting hypothesis three.

Table 12.
Inter-Item Correlations for Student Age, Student Self Competence and Student Self Liking

	1	2
1.Student Age		
2.Student Self Competency	.26*	
3.Student Self Liking	.31**	.48**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Hypothesis four predicted that supervisors would make more human capital investments in younger students than they would for older students. To test this hypothesis, a correlation matrix was generated to investigate whether human capital investment was related to student's age. In addition, supervisor's age, degree type and the

mentor functions were added to the matrix to examine whether human capital investment was related to any other relevant variables.

Table 13.
Inter-Item correlations for Human Capital Investment, Age, Degree and Mentor Functions

	1	2	3	4	5	6	7
1.Supervisors Age							
2.Student Age	-.17						
3.Student Degree	-.06	.07					
4.HCI	.16	.14	.43**				
5.Supervisor Psychosocial Functions	-.03	.07	-.03	.25*			
6.Students Psychosocial Functions	-.02	.08	.04	.24*	.44**		
7.Supervisor Career Functions	.08	-.07	.22	.54**	.40**	.25*	
8.Students Career Functions	-.04	-.07	-.04	.25*	.33**	.72**	.41**

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 13 demonstrates that there is no significant relationship between student's age and human capital investment. However, human capital investment was found to be significantly correlated to supervisors' psychosocial and career functions, and students' psychosocial and career functions. In addition, degree type was found to be significantly correlated to human capital investment. A one-way ANOVA was conducted to examine whether human capital investment significantly differed between degree types. Table 14 presents the means, standard deviations and *F* value for human capital investment within each degree type.

Table 14
Means, Standard Deviations and ANOVA Result for Human Capital Investment Within each Degree Type

	Masters Dissertation	Masters Thesis	PhD	ANOVA Result
Human Capital Investment	2.65 (.87)	2.61 (.99)	3.50 (.70)	F (2,77) = 11.518, p < 0.01

As shown by Table 14, there is a significant difference in human capital investment across degree types. This requires degree type to be controlled for before hypothesis four can be confirmed or rejected. To test hypothesis four while controlling for degree type, a multiple regression was conducted in which degree type and student's age were entered as predictor variables to investigate whether student's age contributed unique variance in human capital investment.

Table 15.
Summary of Multiple Regression Analysis of Degree Type and Students Age on the Dependent Variable Human Capital Investment

	Beta Weight	Standard Error	t value	p level
Degree Type	.42	.12	4.13	.000
Students Age	.11	.01	1.03	.304

By using multiple regression to control for degree type, Table 15 demonstrates that student's age was not a significant predictor. Therefore, the amount of human capital investment provided by supervisors does not vary according to the student's age and hypothesis four is not supported.

5. Discussion

The aim of the current study was to shed light on the limited existing literature on the role of age in mentoring, and to investigate how age affected mentoring relationships within an academic setting. Specifically, the aim was to assess how age affected the psychosocial and career outcomes found within mentoring relationships, and how student competency levels and supervisor human capital investments contributed to any affects found. The following provides a summary and discussion of the results, followed by study limitations, interpretations and conclusions, and suggestions for future research.

5.1 Summary of Results

The findings of this study confirmed that age diversity in mentoring relationships does exist. However, contrary to what was predicted, there was no relationship found between age difference and psychosocial or career mentor functions. A small interaction effect was found between students' and supervisors' age when predicting supervisors' psychosocial functions. However, this effect was minimal, and as a result hypothesis one and hypothesis two were not supported. Collectively, these findings suggest that, within the academic setting, age difference does not have any aversive effects on the psychosocial or career functions found in mentoring relationships. As predicted by hypothesis three, student's levels of self liking and self competence were higher for older students than they were for younger students. While human capital investment was found to be positively related to degree type and the four measures of mentor functions, there was no relationship found between age difference and human capital investment. Therefore, hypothesis four was not supported. Before discussing the implications and interpretations of this research, it is appropriate to identify possible limitations.

5.2. Limitations

A limitation associated with this study is that participants were not randomly sampled. The majority of students were invited to participate in this study via email. This could have created a positive sample bias. Throughout data collection, numerous students emailed and asked if it was compulsory for their supervisor to participate in the study. Additional emails by students stated that they wanted to participate in the survey but did not want to ask their supervisor to participate, as they did not have a good relationship. Given the nature of these comments, students that agreed to participate obviously felt confident in approaching their supervisor and asking them to participate in the research. This suggests that these students had a positive relationship with their supervisor. As a result, this research may have under-represented unsuccessful mentoring relationships in the academic setting.

A second limitation in this study is the relatively small sample size. In mentoring research, it is common for researchers to only gather data from one side of the relationship. An advantage of this study was that it gathered data from students and their supervisors. Consequently, this may have contributed to the small sample size as the research was reliant on both parties completing and returning the survey. While the sample size appeared small, variables that were expected to correlate did so, (for example, human capital investment and degree type). Therefore, it is unlikely that the small sample size created any detrimental effects in the data set.

The final limitation is regarding the generalizability of the findings. While three universities took part in this study, the majority of the participants came from the University of Canterbury and the Otago University Christchurch School of Medicine. In addition, given the small sample size, only a very small proportion of the postgraduate

population in each of the universities is represented in the current study. As a result, this limits the generalizability of the current findings.

5.3 Implications and Conclusions

The current study was based on theories which argued how certain age dynamics could create negative effects in mentoring relationships. While these theories remain plausible, there is a disparity between the prediction of these theories, and the outcomes of previous research and the current findings. There are multiple reasons as to why this disparity may have occurred. Both Super's (1957) theory of stage models and Erikson's (1959) theory of generative desires were developed when careers tended to progress in linear stages and comprise of working for one or two organizations. In addition, Lawrence's organizational theory of age (1987) and Levinson et al.'s (1978) argument that mentors should be eight to fifteen years older than their protégé were created nearly three decades ago. Since then the working environment has evolved substantially, the original 'age norms' may no longer be as relevant as first predicted.

There are problems in trying to conceptualize the age dynamics between supervisors and students for empirical research. As stated in the results, using age differences in statistical analyses fails to account for decade characteristics. Furthermore, people of the same age do not necessarily have the same amount of experience and attributes. Analyzing age tends to generalize people into certain classifications and fails to account for individual differences. Assessing the dynamics between two individuals is particularly difficult because many intrapersonal factors can affect the functioning of their relationship. For example, the personality match between the student, and supervisor, and how well they relate to each other could substantially influence the outcomes of their

relationship. Therefore, it is difficult to differentiate any effect that age may have from other co-existing factors in the relationship.

As predicted, older students were found to have higher levels of self-competence and self-liking. In contrast to what was predicted, this was not associated with differences in the amount of psychosocial and career functions provided. This finding suggests that older students are comfortable with receiving developmental support and guidance from their supervisor. An influencing factor may be the increasing number of older individuals who are returning to higher education (Simpson et al., 2001) and, as a result, reducing associated age norms. This may lead to students feeling more comfortable in their learning environment and give supervisors more experience, and higher levels of competence, when providing advice to older individuals.

After finding that there was no effect of age difference on the mentoring processes, it was not surprising to discover that students' age did not affect the amount of human capital investment provided by supervisors. This finding further demonstrates that non-traditional age dynamics do not produce aversive effects in mentoring relationships. The neoclassical theory of human capital investment states that older people have fewer remaining years than younger employees to provide return on investments (Simpson et al., 2000). However, this notion appears unrealistic, especially when people are staying in the workforce for longer and there is no longer a compulsory retirement age. Thus, if a payback period is 5 to 10 years, then a 25 year old and a 55 year old can both be expected to have a full return on the investments (Simpson et al., 2001). Therefore, the neoclassical theory may only be relevant for individuals who are very close to retirement. In the current study the oldest student was 58 years old, leaving many years for them in the contemporary employment environment to make a return on investments. When organizations provide human capital investments, they often directly receive benefits from

their employees' return on investments. However, in universities, supervisors tend to only receive minimal direct benefits from any return on investments, for example, being able to co-author a publication. In this context, any return on investments is primarily for the students' benefit. The fact that supervisors are not as directly impacted by returns on investments may account for why there was no relationship found between age and supervisor's human capital investments.

The current study was conducted in an academic setting. This was advantageous as this setting provided access to a large pool of individuals who experience a very similar type of mentoring relationship across a range of disciplines. It is unlikely that as many individuals who share such a similar experience (e.g., structure, purpose and formality) could be contacted in different organizations across several industries. Because this study was conducted in an academic setting, there may be some doubt about the applicability of the findings to an organizational setting. Although an academic setting is different to an organizational setting, the elements of the formal relationship are parallel and, while there are marked differences in an organizational setting, there are also significant similarities. In both academic and organizational settings there is a similar formality and structure to mentoring relationships because both relationships are formed in support of progress for the protégé. In addition, in both settings protégés must rely on the authority and advice of their mentor.

A key difference between the two settings is that in an academic setting the main purpose of the mentor is to help the protégé gain success in a particular academic paper. Once this requirement has been fulfilled the relationship often fades away (Young & Perrewe, 2000). In the organizational setting, the mentor often socializes with their protégé and provides guidance to improve the protégé's success and productivity within the organization. Therefore, in an organization setting, the mentor can potentially provide

a much broader range of career mentor functions, as opposed to an academic setting in which the mentor is primarily focused on one main goal.

Similar to the current study, Whitely et al. (1992) and Finkelstein et al. (2003) found that in an organizational setting, there was no relationship between age and psychosocial functions. However, they did discover that younger protégés received more career related mentoring than older protégés. It is understandable that in both settings similar effects for psychosocial functions were found, as the type of setting is less likely to directly affect the psychosocial processes. However, the career mentor functions appear more tailored to an organizational setting, and it may be that in an academic setting supervisors have less opportunity to provide career mentoring, and as a result it is hard to distinguish any age affects.

5.4 Perspectives for Future Research

A replication of this study in an organizational setting would benefit the generalizability of the current findings. It would be particularly interesting to investigate whether career functions produced similar findings as the current study, or if they replicated the findings by Whitely et al. (1992) and Finkelstein et al., (2003).

As stated above, Super's (1957) theory of stage models and Erikson's (1959) theory of generative desires were developed when careers tended to progress in linear stages and comprise of working for one or two organizations. In today's working environment it is less likely that career stages follow such a linear pattern. Since age and career stages may not match, future research should attempt to conceptualize career stage and disentangle possible effects of chronological age and career stage.

The current research suggests that in an academic setting, neither age nor gender have any effects on the amount of psychosocial or career mentor functions found. As

stated above, interpersonal factors between the mentor and the protégé could substantially influence the dynamics in mentoring relationships. Therefore, future research should investigate the personality characteristics of the mentor and protégé to ascertain if personality does affect the amount of psychosocial or career mentor functions found. In addition, the research should examine which personality types complement each other, and which are more likely to cause detrimental effects.

There are some issues that were not addressed in the current study that should be the focus of future research. Specifically, it is unknown how much each of the psychosocial and career mentor functions were desired or needed by students of varying ages at the time of their mentor relationship. It would be interesting to examine expectations and desires at the start of the mentor relationship to investigate if, or how, these vary as a function of age. The findings by Whitely et al. (1992) and Finkelstein et al. (2003) may reflect the possibility that older protégés do not expect or seek out career mentoring to the same extent that younger protégés do. Future research surrounding these findings may discover that different forms of mentoring may be more or less desired by protégés at different career and life stages (Finkelstein et al., 2003).

Finally, although no effects for age difference were found on the amount of psychosocial or career mentor functions, varying age dynamics in mentoring relationships are likely to become increasingly common. Mentoring literature should expand the conceptualization of mentors and protégés to encompass varying age relationships. In doing so, future research is required to investigate the potential challenges of various mentorship age combinations, as well as highlight their unique strengths.

In summary, these findings suggest that, within an academic setting, age difference does not have any aversive affects on the psychosocial or career functions found in mentoring

relationships. This notion is further supported by the findings regarding student competence levels and supervisor human capital investments. Many of the early mentoring theories and organizational age theories were developed when careers tended to progress in linear stages. Since then, the working environment has evolved substantially, and it is likely that this has contributed to the demise of traditional age norms. As a result, these theories may no longer be as relevant as first predicted. In the future, mentoring literature needs to expand the conceptualization of mentors and protégés to encompass the increasing existence of varying age relationships. This would enable research to identify other predicting factors which contributed to mentoring processes. Finally, research is required to identify the associated challenges and strengths for varying age relationships. This would provide a greater understanding of the role of age in mentor relationships.

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Appendix A

College of Science

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Please read the following note before completing the questionnaire

You are invited to participate in a research project that aims to investigate the outcomes and affects of mentoring relationships in an academic setting. It will focus on postgraduate students and their *primary* academic supervisors. Both parties (students and their primary supervisors) must agree to participate.

The project is being carried out as a requirement for a Master of Science (Applied Psychology) by Katherine Deering, (kad47@student.canterbury.ac.nz) under the primary supervision of Associate Professor Christopher Burt, (christopher.burt@canterbury.ac.nz). Both will be pleased to discuss any concerns you may have about participation in the project.

Participation in this research is anonymous, and you will not be asked any identifying information. Therefore, by completing the questionnaire it will be understood that you have consented to participate in the project. You may withdraw your participation, including withdrawal of any information you have provided, at any stage. However, once surveys have been returned, the information provided cannot be withdrawn as the survey is anonymous. The survey should take approximately 10 minutes to complete. Once completed, please return the survey to the address marked on the envelope.

This research project has been approved by the University of Canterbury Ethics Committee

It is intended that supervisors will only have to fill out one survey with one particular student in mind. Therefore, if you are an academic supervisor and have already completed this survey please do not continue with this current survey.

Appendix B

Student's Survey***Section A:***

Date:

Age:

Your Gender: (Please Tick) M F Type of postgraduate studies: (Please tick) Masters Dissertation Masters Thesis PhD

University:

What date was your first meeting with your supervisor?

How often do you meet with your supervisor?

How long (on average) do the meetings with your supervisor last for?

Section B: Please indicate your response to each statement by circling the number on the scale that best describes how you feel.

My supervisor has shared history of his/her career with me	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor has encouraged me to prepare for advancement	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor has encouraged me to try new ways of behaving	0 Not at all	1	2	3	4	5 To a very large extent
I try to imitate the work behavior of my supervisor	0 Not at all	1	2	3	4	5 To a very large extent
I agree with my supervisors attitudes and values regarding education	0 Not at all	1	2	3	4	5 To a very large extent
I respect and admire my supervisor	0 Not at all	1	2	3	4	5 To a very large extent
I will try to be like my supervisor when I reach a similar position in my career	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor has demonstrated good listening skills in our conversations	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor has discussed my questions or concerns regarding feelings of competence	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor has discussed my questions or concerns regarding commitment to advancement	0 Not at all	1	2	3	4	5 To a very large extent

My supervisor has discussed my questions or concerns regarding relationships with peers and/or work/family conflicts	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor has shared personal experiences as an alternative perspective to my problems	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor has encouraged me to talk openly about anxiety and fears that distract me from my work	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor has conveyed empathy for the concerns and feelings I have discussed with him/her	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor has kept feelings and doubts I shared with him/her in strict confidence	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor has conveyed feelings of respect for me as an individual	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor reduces unnecessary risks that could threaten the possibility of succeeding in my academic research	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor helped me finish assignments/tasks or meet deadlines that otherwise would have been difficult to complete	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor helped me meet new colleagues	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor gave me assignments that increased written and personal contact with people in my field of research	0 Not at all	1	2	3	4	5 To a very large extent

My supervisor assigned responsibilities to me that increased contact with people who may judge my potential for future advancement	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor gave me assignments or tasks in my work that prepares me for future success	0 Not at all	1	2	3	4	5 To a very large extent
My supervisor gave me assignments that present opportunities to learn new skills	0 Not at all	1	2	3	4	5 To a very large extent

Section C: Please indicate your response to each statement by circling the number on the scale that best describes how you feel.

I tend to devalue myself	1 Strongly disagree	2	3	4	5 Strongly agree
I am highly effective at the things I do	1 Strongly disagree	2	3	4	5 Strongly agree
I am very comfortable with myself	1 Strongly disagree	2	3	4	5 Strongly agree
I am almost always able to accomplish what I try for	1 Strongly disagree	2	3	4	5 Strongly agree
I am secure in my sense of self-worth	1 Strongly disagree	2	3	4	5 Strongly agree
It is sometimes unpleasant for me to think about myself	1 Strongly disagree	2	3	4	5 Strongly agree
I have a negative attitude toward myself	1 Strongly disagree	2	3	4	5 Strongly agree

At times, I find it difficult to achieve the things that are important to me	1 Strongly disagree	2	3	4	5 Strongly agree
I feel great about who I am	1 Strongly disagree	2	3	4	5 Strongly agree
I sometimes deal poorly with challenges	1 Strongly disagree	2	3	4	5 Strongly agree
I never doubt my personal worth	1 Strongly disagree	2	3	4	5 Strongly agree
I perform very well at many things	1 Strongly disagree	2	3	4	5 Strongly agree
I sometimes fail to fulfill my goals	1 Strongly disagree	2	3	4	5 Strongly agree
I am very talented	1 Strongly disagree	2	3	4	5 Strongly agree
I do not have enough respect for myself	1 Strongly disagree	2	3	4	5 Strongly agree
I wish I were more skilful in my activities	1 Strongly disagree	2	3	4	5 Strongly agree

Thank you for participating in my study

Appendix C

Supervisors Survey***Section A:***

Date:

Age:

Your Gender: (Please Tick) M
F

Type of postgraduate study your student is enrolled in: (Please tick)

Masters Dissertation Masters Thesis PhD

University:

What date did you have your first meeting with your student?

How often do you meet with your student?

How long (on average) do the meetings with your student last for?

Section B: Please indicate your response to each statement by circling the number on the scale that best describes how you feel.

I have shared the history of my career with my student	0 Not at all	1	2	3	4	5 To a very large extent
I have encouraged my student to prepare for advancement	0 Not at all	1	2	3	4	5 To a very large extent
I have encouraged my student to try new ways of behaving	0 Not at all	1	2	3	4	5 To a very large extent
My student tries to imitate my work behavior	0 Not at all	1	2	3	4	5 To a very large extent
My student agrees with my attitudes and values regarding education	0 Not at all	1	2	3	4	5 To a very large extent
My student respects and admires me	0 Not at all	1	2	3	4	5 To a very large extent
My student will try to be like me when they reach a similar position in their career	0 Not at all	1	2	3	4	5 To a very large extent
I have demonstrated good listening skills in our conversations	0 Not at all	1	2	3	4	5 To a very large extent
I have discussed my students questions or concerns regarding feelings of competence	0 Not at all	1	2	3	4	5 To a very large extent
I have discussed my students questions or concerns regarding feelings of commitment to advancement	0 Not at all	1	2	3	4	5 To a very large extent

I have discussed my students questions or concerns regarding relationships with peers and/or work/family conflicts	0 Not at all	1	2	3	4	5 To a very large extent
I have shared personal experiences as an alternative perspective to my students problems	0 Not at all	1	2	3	4	5 To a very large extent
I have encouraged my student to talk openly about anxiety and fears that distract my student from their work	0 Not at all	1	2	3	4	5 To a very large extent
I have conveyed empathy for the concerns and feelings my student has discussed with me	0 Not at all	1	2	3	4	5 To a very large extent
I have kept feelings and doubts my student shares with me in strict confidence	0 Not at all	1	2	3	4	5 To a very large extent
I have conveyed feelings of respect for my student as an individual	0 Not at all	1	2	3	4	5 To a very large extent
I have reduced unnecessary risks that could threaten the possibility of my student succeeding in their academic research	0 Not at all	1	2	3	4	5 To a very large extent
I have helped my student finish assignments/tasks or meet deadlines that otherwise would have been difficult to complete	0 Not at all	1	2	3	4	5 To a very large extent

I have helped my student meet new colleagues	0 Not at all	1	2	3	4	5 To a very large extent
I have given my student assignments that increased written and personal contact with people in their field of research	0 Not at all	1	2	3	4	5 To a very large extent
I have assigned responsibilities to my student that increased contact with people who may judge their potential for future advancement	0 Not at all	1	2	3	4	5 To a very large extent
I have given my student assignments or tasks in their work that prepares them for future success	0 Not at all	1	2	3	4	5 To a very large extent
I have given my student assignments that present opportunities to learn new skills	0 Not at all	1	2	3	4	5 To a very large extent

Section C: For the following questions, please indicate your response to each question by circling the number that best represents your answer

How often do you encourage your student to attend conferences?	1 Never	2	3	4	5 Very frequently
How often do you encourage your student to submit papers for publication?	1 Never	2	3	4	5 Very frequently
How often do you encourage your student to attend research seminars?	1 Never	2	3	4	5 Very frequently
How often do you encourage your student to co-author publications	1 Never	2	3	4	5 Very frequently

How often do you encourage your student to network with colleagues?	1 Never	2	3	4	5 Very frequently
How often do you encourage your student to read widely?	1 Never	2	3	4	5 Very frequently
How often do you encourage your student to give guest lectures?	1 Never	2	3	4	5 Very frequently

Thank you for participating in my study

Appendix D

Participants wanted!!

I am looking for MASTERS AND PhD postgraduate students to participate in my research project.

It aims to understand more about the outcomes and affects of mentoring relationships in an academic setting. It will focus on the relationship between postgraduate students and their primary academic supervisors.

I require postgraduate students who are currently enrolled in their MASTERS DISSERTATION, MASTERS THESIS OR PhD, *and* their primary supervisor to each fill out a survey. All participation is completely anonymous.

The survey will only take around 5-10 minutes to complete and your generosity will be rewarded (instant win scratchies and chocolate!!!)

The project is being carried out as a requirement for an Msc in Applied Psychology, and has been approved by the University of Canterbury ethics committee.

If you are interested in participating in this research, please contact Katherine Deering

Email: kad47@student.canterbury.ac.nz

Any help will be greatly appreciated!!