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Workplace Gender Discrimination and the Implicit Association Test

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Doctor of Philosophy

Aston University
July 2015

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Thesis Summary

Women are under-represented at senior levels within organisations. They also fare less well than their male counterparts in reward and career opportunities. Attitudes toward women in the workplace are thought to underpin these disparities and more and more organisations are introducing attitude measures into diversity and inclusion initiatives to: 1) raise awareness amongst employees of implicit attitudes, 2) educate employees on how these attitudes can influence behaviour and 3) re-measure the attitude after an intervention to assess whether the attitude has changed. The Implicit Association Test (IAT: Greenwald, et al., 1998) is the most popular tool used to assess attitudes. However, questions over the predictive validity of the measure have been raised and the evidence for the real world impact of the implicit attitudes is limited (Blanton et al., 2009; Landy, 2008; Tetlock & Mitchell, 2009; Wax, 2010). Whilst there is growing research in the area of race, little research has explored the ability of the IAT to predict gender discrimination. This thesis addresses this important gap in the literature. Three empirical studies were conducted. The first study explored whether gender IATs were predictive of personnel decisions that favour men and whether affect- and cognition-based gender IATs were equally predictive of behaviour. The second two studies explored the predictive validity of the IAT in comparison to an explicit measure of one type of gender attitude, benevolent sexism. The results revealed implicit gender attitudes were strongly held. However, they did not consistently predict behaviour across the studies. Overall, the results suggest that the IAT may only predict workplace gender discrimination in a very select set of circumstances. The attitude component that an IAT assesses, the personnel decision and participant demographics all impact the predictive validity of the tool. The interplay between the IAT and behaviour therefore appears to be more complex than is assumed.

Key words: *Gender discrimination, Implicit Association Test, implicit attitudes, explicit attitudes, personnel decisions*

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Chapter One: Gender Bias In The Workplace

1. Introduction

When I told my former boss that I was resigning from my HR job, and before I had the opportunity to explain why, his eyes dropped to my stomach. We both knew what he was thinking and so I quickly said *"I'm not pregnant"*. His response was, *"Well, you women do have your cycles"* followed by *"Do any men do your job?"*.

From his response it can be inferred that he held attitudes about women that impacted his behaviour both unconsciously (instantly looking at my stomach) and consciously (the words that followed). I found this ironic since I was leaving to do a PhD on gender attitudes and how these relate to discriminatory behaviour in the workplace.

In this chapter, it is argued that issues of gender inequality may be observed in two main ways. The first represents 'manifest' inequality, demonstrable in a comparison of the career outcomes of men and women. The second represents deeper ingrained inequality in the management of men and women. Following a presentation of the literature on workplace gender disparities, consideration is given to the consequences of gender discrimination for organisations and why addressing these inequalities is now one of the most pressing diversity challenges they face. Finally, this chapter discusses the evidence for affect- and cognition-based gender attitudes as being the root cause of gender discrimination.

1.1 Manifest Inequality Between Men and Women at Work: Career Outcomes

Despite the introduction of employment legislation over the past 40 years (e.g., Equal Pay Act 1970; Sex Discrimination Act, 1975), and the growing popularity of diversity training, there remain substantial inequalities between men and women in the

workplace. These disparities are typically illustrated by analyses of company data in two career outcome areas: progression and remuneration.

1.11 Progression

Gender inequality varies at different career stages, and is most significant at more senior levels in organisations. In education, women both outnumber and outperform men at university (HEPI, 2009), yet, whilst graduate entry into the workforce is relatively equal for men and women, this equality is maintained only until junior management level. As employees progress towards middle management, senior management and leadership positions, representation of women significantly declines, with men being more than four-and-a-half times more likely to make it onto executive committees compared to women entering the workforce at the same time (Cracking the Code, 2014). Recent research by the 30% Club found that at four levels below the executive committee, there is roughly a 60/40 split between men and women in the FTSE 100. However, a move up just one level dramatically changes these figures; the number of women drops by 12%, to 29%. The proportion of women then steadily declines further up the organisation and by Board level female representation has dropped a further 11% to around the 18% mark (Cracking the Code, 2014). This trend is consistent across industries and sectors. For example, men outnumber women four to one in Parliament, only 11.1% of CEOs in UK banks are female, and 18% of police officers ranked chief inspector or above are female. Furthermore, whilst women now make up a bigger proportion of undergraduate entrants, only one in five professors within universities are female (THE, 2013).

The currency of issues of gender equality is evident in policy-making research. Many countries, including Norway, Spain, Germany and Italy, to name but a few, have decided to introduce legislation mandating that publicly listed companies need

to have at least 40% representation of both men and women on executive boards within the next few years. However, the UK is resisting such legislation and instead has introduced a voluntary goal of 25% female representation on FTSE 350 boards by 2015.

The Davies Report (2011), aimed at examining gender equality on company boards in the UK, has been the catalyst for action in this area. The first published report highlighted the inequality between men and women at senior levels. In 2010, FTSE 100 boards comprised 12.5% women members, with FTSE 250 having even less (7.8%). Furthermore, 21% of FTSE 100 boards and over 50% of FTSE 250 boards had all-male memberships (Department for Business, 2011). On the surface, the attention drawn by the report to issues of gender equality appeared to have some impact. By 2014, female representation on FTSE 100 and FTSE 250 boards had risen to 20.7%, and 15.6% respectively (Department for Business, 2014). However, these statistics conceal deeper persistent issues. For example, the number of female executive directors - those who are direct employees of the organisation, promoted from within the business and responsible for its day-to-day running - remains very low. In 2014, 6.9% of executive board positions were held by women. In the FTSE 250, women hold 5.3% of the executive directorship positions, and almost 20% of boards remain all male (Department for Business, 2014). Out of 231 female directors of FTSE 100 companies, only 20 are executive directors. For FTSE 250, 29 of 310 female directors hold executive positions (Vinnicombe, Doldor & Turner, 2014). Moreover, only 18 of FTSE 100 companies have women on the board in an executive role. It must therefore be concluded that the biggest companies in the UK are still run day-to-day by groups and teams composed of predominantly men.

The UK is not unusual with respect to gender inequality at executive level, which is rather a global problem in the management field. Within the top 101 US and European companies female representation at executive committee is just 15% and 7% respectively, and in Asia it is 3% (Department for Business, 2011).

Table 1.

Disparities between male and female education and career achievements (UK).

Women obtain better GCSE and A Level results (HEPI, 2009)
Since 1992 there has consistently been more female than male undergraduate and postgraduate students ¹
63.9% of female graduates obtained firsts and upper seconds, compared to 59.9 per cent of males (HEPI, 2009)
4+ levels from the executive board females represent 41% of the workforce (Vinnicombe et al., 2104)
3 levels from the executive board females represent 29% of the workforce, a 12% drop from the previous level (Vinnicombe et al., 2104)
Significantly more female senior executives are in staff positions (72%) than in line management positions (27%), whilst for men the split between positions is equal (Catalyst, 2007)
On average, women earn 18.6% less per hour than men (ONS, 2012)

In 2003, Norway became the first country to introduce legislation that all boards of publically listed companies need to have a 40% female representation. Ten years on, women make up 40.7% of non-executive director (NED) positions. However, there are still only 3% of female CEO's and only 6.4% of top management are female. So whilst quotas may change things at the top layer they do not seem to permeate lower levels of the hierarchy. Below board level, women are still paid less than their male counterparts and remain under represented within senior management positions (Bertrand, Black, Jensen, & Lleras-Muney, 2012). It appears that quotas, voluntary or mandatory, are not working.

¹ See <https://www.hesa.ac.uk/content/view/3129/#sex>

1.12 Pay

The gender pay gap is the subject of much commentary in the popular press. Figures published by the Office for National Statistics (ONS) in April 2012 show that women on average earn 18.6% less per hour than men. Furthermore, women are more likely than men to receive smaller wage increases when promoted (Johnston & Lee, 2012). The gender pay gap is evident across occupations and industry sectors, and among managers, senior officials and directors, women earn 18.2% per hour less than men. Interestingly, the gap appears to emerge immediately after graduation. Despite the higher educational achievements of women, men tend to obtain higher salaries after graduation than women (HEPI, 2009). Pay disparities are not unique to the UK and are observed across the globe. A recent report by the International Trade Union Confederation (International Trade Union Federation, 2012) examined pay across 43 countries and found that despite some narrowing of the pay gap between 1960 and 1990, little significant change has occurred since. This research revealed an average gap of 18.4%. Asia has the greatest wage differentials between men and women, between 30 and 40%, whilst the lowest have been observed in Slovenia, Paraguay and Italy, all of which are under 10% (ITUC, 2012). Furthermore, a great deal of the variance could not be explained by objective factors such as education, tenure or job role, suggesting that differentials are partly a result of discrimination. In no country then, are men and women's wages equal (Weichselbaumer & Winter-Ebmer, 2005).

1.2 Inequalities in the Management of Men and Women

Manifest career outcomes highlight inequalities between men and women in the workplace. However, inequalities are not limited to pay and progression, with research showing multiple areas of management in which women are disadvantaged.

1.21 Promotion

As previously noted, there are clear disparities in the progression rates of men and women. Research suggests that these inequalities stem from differences in the way men and women are considered for promotion. For example, women often have to take on 'just one more assignment' to demonstrate they are ready for promotion, face stricter scrutiny over their capabilities (Beeson & Valerio, 2012); and have to prove their competence more than men in order to get promoted (Biernat & Fuegen, 2002; Lyness & Heilman, 2006). Furthermore, research has found that following a participation in a leadership development programme, men are more likely than women to be promoted (Silva, Carter, & Beninger, 2012).

1.22 Performance management

Analysing archival data for 489 upper-middle-level and senior-level managers in a large multinational financial services firm Lyness and Heilman (2006) found that when women were in line-manager roles, as opposed to staff roles, they received lower performance ratings when compared to both their male counterparts in the same positions and women in staff roles. Furthermore, when it came to promotion, performance ratings were more strongly related to promotion for women than they were for men – women had received higher performance ratings for the 2 year prior to promotion than their male counterparts, after controlling for age, tenure, education and organisational level. Additional research has also found that women are less likely than men to get critical developmental feedback (Mattis, 2001; Ohlott, Ruderman, & McCauley, 1994).

1.23 Career-enhancing opportunities

Looking at a cohort of MBA graduates, Silva et al. (2012) found that men, compared to women:

- were allocated to projects that have more than twice the budget and more than three times as many staff to work on them;
- were allocated to work on more visible projects;
- were offered more international experiences;
- had more direct reports;
- were more likely to get “hot jobs”.

1.24 Interpersonal interactions

There are also subtle differences in the way men and women are evaluated and treated in day-to-day interactions within the workplace. For example, women are more likely than men to be interrupted during meetings and have their contributions ignored (Beeson & Valerio, 2012; Carli, 2001). Furthermore, research has shown women who display the same competence and assertiveness as men are rated cold (Porter & Geis, 1981), unattractive (Horner, 1972) or undesirable as a group member (Hagen & Kahn, 1975).

1.3 The Consequences of Gender Discrimination for Businesses

Disparities in the way men and women are treated at work, their access to career critical opportunities, promotion and equal pay lead to risks of equal pay and sex discrimination claims. Within the twelve-month period from April 2011 almost 30,000 claims were made in the UK either relating to sex discrimination or equal pay. Of these claims over 30% were settled before reaching employment tribunal; the maximum compensation award was £89,700 with an average of £9,940 for other awards. However, for discrimination cases there is no limit on the compensation an Employment Tribunal can award. In 2013 a figure of £318,630 was awarded in compensation and the largest award given to an employee in a discrimination case so far is £4.5 million. In 2012, Birmingham City Council lost an equal pay case from

174 claimants landing them a bill of over £1.1 billion. Clearly, discrimination in the workplace is costly to organisations.

“If women were working at their full qualification level making a full contribution to the economy there would be a boost of about £20 billion, which is more than the total of all of our exports to China.” Jonathan Rees, Director General at the Government Equalities Office (2012).

Over recent years the spotlight has been shone on gender disparities, with The Davies Report (Department for Business, 2011) being a catalyst for both media attention and organisational concern. With the increased media attention and the risk of tribunal claims, the disparities between men and women at work is an issue organisations can no longer overlook. As a consequence, gender equality is now firmly on organisations’ agendas, and the lack of women in senior roles is one of the most pressing diversity issues they face.

Due to the limited success quotas are having, organisations are now turning their attention to the factors that underpin gender disparities. The main barrier noted being attitudes towards women in the workplace. Of the 2654 people surveyed as part of The Davies Report in 2011, 30% of felt that “attitudes in the workplace” including “bias, prejudice and stereotypical behaviour” were the top reason for why women were under-represented in the boardroom (Department for Business, 2011).

1.4 Attitudes and Gender Discrimination

In 1989, Ann Hopkins won her claim of sex discrimination against Price Waterhouse (*Price Waterhouse v. Hopkins*, 1989). Hopkins was twice denied promotion to partner despite frequently out-performing her male counter-parts. She was told to increase her chances of promotion she needed to *“walk more femininely, talk more femininely, dress more femininely, wear make-up, have her hair styled, and wear jewellery.”* Many male colleagues also said they would not be comfortable working

with her as a partner because she did not act the way they believed a woman should. The case of *Price Waterhouse v. Hopkins* (1989) gets to the heart of one of the key factors thought to underpin gender disparities at work, namely attitudes towards women in the workplace. More commonly referred to as gender bias, such attitudes consist of beliefs held about men and women, including their different skills, abilities and roles in society and how they are perceived when they violate these beliefs. Whilst social psychologists have long suggested gender attitudes as a key reason behind gender disparities in the workplace, it has only been in recent years that organisations, policy makers and the media has acknowledged gender bias a major cause of workplace inequality.

1.41 Attitude definitions

Since the discipline was formed, attitudes have been one of the most important concepts researched within social psychology (Allport, 1954; Eagly & Chaiken, 1998; Briñol & Petty, 2012) and are central to attempts to understand human behaviour (Kraus, 1995). There are numerous definitions of attitudes, some of which are presented in Table 2, the common thread being that an attitude is an evaluation of a given object or topic and that this evaluation influences behaviour. Whilst the explicit reference to behaviour has disappeared in more recent definitions, the underlying assumption still remains that these evaluations are likely to influence judgements and behaviour towards to attitude object (Briñol & Petty 2012).

Table 2.

Definition of attitudes.

A learning predisposition to think, feel and behave towards a person (or object) in a particular way (Allport, 1954).
A psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour (Eagly & Chaiken, 1993).
Attitudes are the evaluative judgments that integrate and summarize.... cognitive/affective reactions (Crano & Prislin, 2006).

The evaluation of an attitude object can happen at an explicit and implicit level. Explicit attitudes are those that are deliberately formed and can be consciously reflected upon (Greenwald & Banaji, 1995). They are measured by self-report questionnaires where respondents are asked to directly report their thoughts and feelings toward the attitude under investigation. In contrast, implicit attitudes are associations that are triggered automatically when an individual comes into contact with an attitude object (Rudman, 2011). Furthermore, individuals may not be aware that they hold such associations. This lack of awareness means that implicit attitudes are not available to introspection and therefore assessment of the attitude relies on methods that do not ask the individual to directly report on their attitude (Fazio & Olson, 2003). Instead, implicit attitudes are inferred based on how the individual performs on a particular task (Cook & Selltitz, 1964).

1.42 The tripartite theory of attitudes

The tripartite theory of attitudes (Rosenberg & Hovland, 1960) posits that evaluation of an attitude object is based on three components: 1) cognition, 2) affect and 3) behaviour (Breckler, 1984; Eagly & Chaiken, 1993; Kothandapani, 1971; Zajonc & Markus, 1982; Zanna & Rempel, 1988). The cognitive component consists of stereotypes associated with the attitude object and also symbolic beliefs held about that object (Esses, Haddock, & Zanna, 1993; Haddock, Zanna, & Esses, 1993). The affective component refers to the level of arousal felt in response to an object and is often characterized by pleasant or unpleasant arousal, feelings or emotions. The definition of the behavioural component ranges across the literature. It may include how an individual has behaved in the past towards an attitude object or their behavioral intentions towards the attitude object in the future. As such, it is often used as an outcome measure of discrimination that results from cognitive and affective reactions to the attitude object.

1.43 The cognitive component of gender attitudes

The cognitive component of attitudes is made up symbolic beliefs and stereotypes. Symbolic beliefs are the traditions and practices associated with a particular group in society (Esses et al., 1993; Haddock et al., 1993). According to social role theory (Eagly, 1987; Eagly, Wood, & Diekmann, 2000) attitudes about traditional labour divisions between men and women are at the root of discrimination. These attitudes stem from learnt status differences between the genders; men are more likely to be leaders and women supporters; men are more likely to be breadwinners and women homemakers. Workplace discrimination occurs when women violate the behaviours and roles traditionally associated with their gender. For example, working mothers are rated as less competent than non-working mothers and men (Heilman & Okimoto, 2008). Mothers who choose to work instead of staying at home are also perceived to be less effective parents than non-working mothers and working fathers (Okimoto & Heilman, 2012). Halpert, Wilson, and Hickman (2006) found that when a woman was perceived to be pregnant she was rated as less competent and less qualified for promotion when compared to a non-pregnant woman, even though both women were observed performing the exact same task. Bragger, Kutcher, Morgan, and Firth (2002) also found that participants were less likely to recommend hiring a woman when she was perceived to be pregnant.

Stereotypes are beliefs about the different skills, traits and abilities men and women are thought to possess. Research suggests that evaluations of groups fall across two dimensions (Judd, James-Hawkins, Yzerbyt, & Kashima, 2005). Some scholars refer to these as “warmth” and “competence” (Cuddy, Fiske, & Glick, 2007; 2008; Cuddy, Glick, & Beninger, 2011; Fiske, Cuddy, Glick, & Xu, 2002; Judd et al., 2005). Others use “agency” and “communality” as the two principle dimensions (Abele & Wojciszke, 2007; Eagly et al., 2000; Williams & Best, 1990). Stemming from their traditional roles in society, women are associated with warm and communal traits

that are required to successfully fulfil home roles (i.e., caring, helpful and sensitive), whereas men are associated with competence and agentic traits needed to succeed in the workplace (i.e., assertive, dominant and decisive). Discrimination occurs when women are considered for male-gender type roles since the traits associated with women are at odds with those believed to be required for success in many key organisational positions (Heilman & Eagly, 2008). For example, the traits associated with management and leadership are stereotypically masculine (Brenner, Tomkiewicz, & Schein, 1989; Dennis & Kunkel, 2004; Heilman, Block, Martell, & Simon, 1989; Martell, Parker, Emrich, & Crawford, 1998; Powell, Butterfield, & Parent, 2002; Schein, 1975; Scott & Brown, 2006; Willemsen, 2002). This 'lack of fit' (Heilman, 1983) or 'think manager, think male' (Schein, 2001) leads to negative performance expectations – women are not seen as having the competence to be successful in the role and thus fare worse than their male counterparts when pay, performance evaluation and promotion are considered. Therefore, it is the mismatch between stereotypes of women and the stereotypes required for male-gendered work roles that creates discrimination (Cejka & Eagly, 1999; Eagly, 1987; Glick, Wilk, & Perreault, 1995; Gorman, 2005; Heilman, 1983; Heilman & Eagly, 2008).

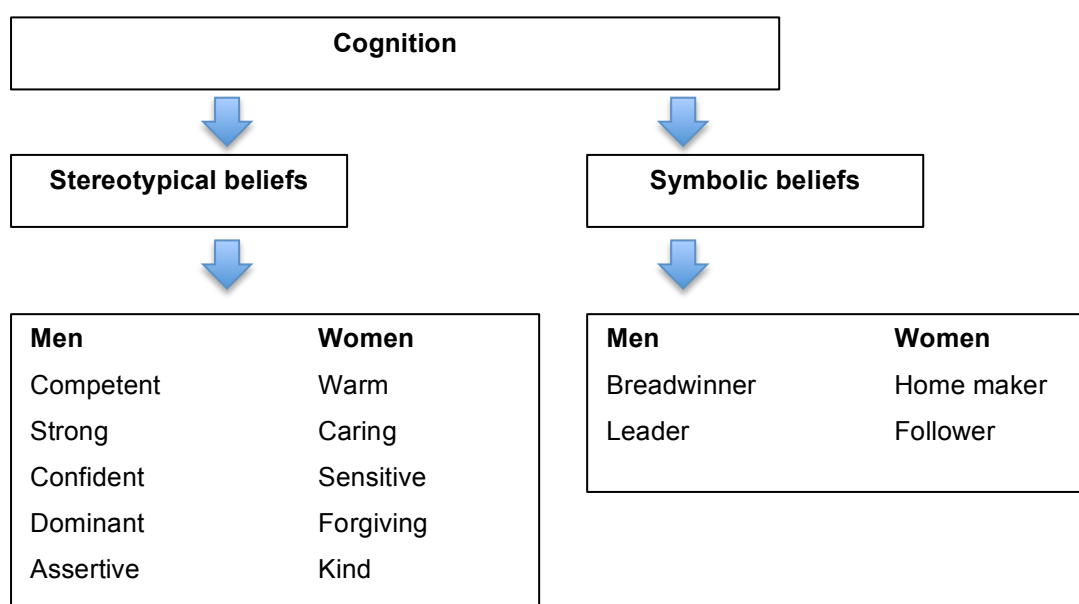


Figure 1. The structure of the cognitive component of gender attitudes.

Research has demonstrated the impact of gender stereotypes on workplace evaluations. Madera, Hebl, and Martin (2009) found that in letters of recommendation for academic positions women were described less agentic and more communal than men. Additionally, communal characteristics were negatively related to hiring decisions; women were less likely to be hired as a consequence of the way they were being described, since it was traits associated with agency that were needed to progress. Swim, Borgida, Maruyama, and Myers (1989) found that performance ratings for women were more negative when they were involved in stereotypically masculine tasks, as opposed to feminine tasks.

Research also shows that stereotypes influence what information is attended to, how information is interpreted and what is remembered. Fiske and Taylor (1984) refer to humans as cognitive misers who have the desire to process information in a way that requires minimal effort. People are therefore motivated to see things in a way that is consistent with their well-established belief system. As a result, gender stereotypes and the expectations they create are likely to go unchallenged. Even when perceiving information inconsistent with beliefs there is a tendency to interpret the information in a way that is consistent with expectations. So the same behaviour may be described as laid back for a man but timid for a woman (Heilman & Parks-Stamm, 2007).

Stereotypes also impact upon what is remembered. People are more likely to remember information consistent with their expectations than information that is not consistent. Furthermore, research has shown people make up the existence of expectation consistent information even when it did not occur (Fiske & Neuberg, 1990). So when a women behaves in a stereotypically consistent way e.g., being caring, this is more likely to be remembered than if she was behaviour contrary to

expectations e.g., being assertive and showing leadership qualities. When there is ambiguity over who was responsible for the success of a task, this success is more likely to be attributed to a man than a woman (Dipboye, 1985; Heilman, 1983; 1995; Heilman, Martell, & Simon, 1988; Swim et al., 1989). Heilman and Haynes (2005) found that women were rated as less competent, less influential and less likely to have played a leadership role than men on a work task when there was ambiguity over individuals' contributions to the task. They labelled this '*attributional rationalisation*' that serves to maintain congruence between expectations and outcomes. Whether or not a woman contributed to task success is questioned because of the negative expectations held about women who perform on male sex-typed tasks.

Research has shown that factors that make gender more salient, such as being a mother (Heilman & Okimoto, 2008), wearing make-up and physical attractiveness (Heilman & Saruwatari, 1979), and when there are few women in comparable roles (Eagly, Makhijani, & Klonsky, 1992; Heilman, 1980; Heilman & Blader, 2001; Lyness & Heilman, 2006; Pazy & Oron, 2001) heighten the association with gender stereotypes and as a consequence exaggerate the lack of fit between the traits associated with women and the traits associated with the male sex-typed role (Heilman & Parks-Stamm, 2007). The more masculine the job role, the greater the lack of fit and the more negative the evaluations of women's performance will be (Heilman & Okimoto, 2008).

1.44 The affective component of gender attitudes

The affective component of an attitude also influences behaviour. This refers to the level of arousal felt by an individual when they come into contact with the attitude object (Haddock et al., 1993). When a woman is perceived to violate the traditions and customs associated with her gender it is likely to stir a negative affective reaction

within the perceiver. Fiske (1998) refers to this as 'hot discrimination' that results from peoples' affective reaction (i.e., their feelings and emotions) towards women when they are perceived outside of traditional societal roles or behaving in a counter-stereotypical manner. This negative arousal leads to harsh evaluations of women resulting in some form of punitive treatment. For example, women who step outside of traditional roles or display traits associated with male stereotypes such as self-promotion, competitiveness and assertiveness, are seen as less socially appealing (Rudman, 1998), are described as counter-communal (Heilman, Wallen, Fuchs, & Tamkins, 2004), selfish, devious and hostile towards others (Glick, Diebold, Bailey-Werner, & Zhu, 1997; Heilman et al., 1989; Heilman, Block, & Martell, 1995). Carli (2001) found that when women presented ideas in an assertive manner they were disliked, perceived as less trustworthy and less able to influence male listeners compared to men or less assertive women. Women leaders are also evaluated more negatively than male leaders when they use intimidation to achieve goals (Bolino & Turnley, 2003) or discipline staff (Brett, Atwater, & Waldman, 2005). Sinclair and Kunda (2000) found that recipients of negative feedback viewed women as less competent than males who delivered the same feedback. Bowles, Babcock, and Lai (2005) found that men were more willing to work with "nice" women who accepted their salary offer than women who tried to negotiate a higher salary. Salary negotiation had no impact however on the willingness of male participants to work with men.

Research has also shown negative physiological affective reactions toward women who operate outside of gender norms. For example, using facial EMG technology, Carranza (2004) found that when a woman self-promoted she was met with derisive smiles from men and frowns from women. Others have found that female leaders were subject to more nonverbal negative affective reactions, such as frowns, than male leaders (Butler & Geis, 1990; Koch, 2005).

Discrimination is thought to occur as a consequence of these negative affect-based reactions. For example, whilst a woman's competence may be recognised (Glick et al., 1997), the reduced liking created by the women behaving in a manner not associated with her gender leads to reduced organisational rewards including lower salaries and fewer job opportunities (Heilman, 2002; Heilman et al., 2004), bias performance ratings (Dipboye, 1985; Feldman, 1981; Heilman & Chen, 2005; Ilgen & Feldman, 1983), being hired less often than comparable males (Rudman, 1998; Rudman & Glick, 2002), less access to social networks that are critical for progression (Casciaro & Lobo, 2005), and being met with hostility (Hebl, King, Glick, Singletary, & Kazama, 2007). When it comes to leadership, directive and autocratic behaviours are ones that particularly to lead to backlash (Eagly et al., 1992). In summary, being liked less is costly for a woman in terms of her career opportunities, reward and progression.

1.5 Conclusion

There is a great deal of research therefore that suggests affect- and cognition-based gender attitudes lead to discrimination. Less established however, is whether measures assessing gender attitudes are able to predict behaviour. It is to that question that attention is turned to in Chapter 2.

Chapter Two: Measuring Attitudes, Predicting Behaviour

2. Introduction

Organisations have started to address gender inequalities by including attitude measures within their corporate diversity initiatives. These raise awareness of gender attitudes and are used as a part of change interventions, based on the premise that if you change the attitude then you change the behaviour. In order to raise awareness of gender attitudes a valid and reliable measure is required. This chapter discusses attitude measurement and how explicit measures are increasingly seen as inadequate predictors of behaviour when the issue under investigation is of a socially sensitive nature (Dunton & Fazio, 1997; Fazio, Jackson, Dunton, & Williams, 1995). Implicit attitude measurement is then discussed, together with a familiarisation of the Implicit Association Test (IAT: Greenwald, McGhee, & Schwartz, 1998), one of the most popular and widely used implicit attitude measures.

Whilst research has shown people to commonly hold implicit attitudes (e.g., Nosek et al., 2002; 2007), such pervasive attitudes are only a problem if they influence behaviour and lead to discrimination (Amodio & Devine, 2005; Amodio & Mendoza, 2010). Should my former boss have completed the IAT (Greenwald et al., 1998), would his test results have given an indication of how he would behave in this situation or not? Following a discussion on the pervasiveness of implicit gender attitudes, the literature on the predictive validity of the IAT is reviewed. Over recent years evidence has accumulated to suggest that the IAT is predictive of workplace racial discrimination, such as biased personnel selection decisions (e.g., Blommaert, van Tubergen, & Coenders, 2012; Rooth, 2010; Yogeeswaran & Dasgupta, 2010). However, for gender, the link between the IAT and gender discrimination in the workplace is both limited and inconclusive. It is argued that the circumstances surrounding personnel decision-making render it vulnerable to implicit bias and

therefore, similar to the findings in the race domain, the IAT will also be predictive of workplace gender discrimination. If, however, relationships between the IAT and gender discrimination are not clearly established its value as a tool for bias detection and reduction in this domain is limited.

“Understanding how implicit biases are expressed in behaviour is arguably the most important question in implicit (race) bias research today.” (Amodio & Mendoza, 2010, p. 21)

2.1 Attitude Measurement

Attitudes are mental constructs and as such are not directly observable (Rudman, 2011). Their assessment therefore depends upon reliable and valid tools to assess their prevalence and strength. However, the validity of self-report measures have long been criticised and questions raised as to whether or not the way people respond to items on a questionnaire is a true reflection of their attitudes (Corey, 1937; Crosby, Bromley, & Saxe, 1980; Kutner, Wilkins & Yarrow, 1952; LaPiere, 1934; Wicker, 1969). In recent years, the overt expression of an *'ism'* has become socially frowned upon and is illegal in many contexts. This in part has been due to major legislative acts over the past 40 years, both in the UK and the US (e.g., in the UK legislation has included the Equal Pay Act 1970; the Sex Discrimination Act, 1975; the Race Relations Act, 1976; and the Disability Discrimination Act, 1995) aimed at protecting women and minority groups in the workplace. People may therefore no longer be willing to openly express their true attitude towards the object being researched, but are motivated to respond in a manner that portrays themselves in a good light.

Furthermore, whether or not individuals are able to accurately convey their attitude has been questioned. Many scholars have proposed that people are often unable to report on their cognitive processes and to introspect accurately on their true thoughts and feelings that underlie their judgements, decisions and behaviour (Nisbett &

Wilson, 1977; Pronin, 2007; Wilson & Brekke, 1994; Wilson & Dunn, 2004) and that much of the mind is inaccessible to consciousness, including attitudes (Wilson & Dunn, 2004; Wilson, Dunn, Kraft, & Lisle, 1989). As a consequence of either 'willing' or 'able' constraints there is often a mismatch between responses to explicit attitude measures and subsequent behaviour leading to them being viewed increasingly as inadequate predictors of behaviour (Dunton & Fazio, 1997; Fazio et al., 1995), particularly on socially sensitive issues.

Criticisms of explicit attitude measurement have led to the development and use of implicit methods of attitude assessment. Implicit attitude measures bypass impression management by assessing a person's attitude without asking the individual directly for their opinion (Fazio & Olson, 2003); the attitude is inferred based on how the individual performs on a given task (Cook & Selltitz, 1964; Greenwald et al., 1998). Implicit measures are also hard to fake (Steffens, 2004) and are able to detect disengaged participants, a factor that is of particular concern when paying people for their participation. Advancements in technology have meant that modern day implicit methods also produce quantitative and hence objective, standardised data and thus are less open to criticism of subjective interpretation and low reliability (Lilienfeld, Wood, & Garb, 2000) that plagued early implicit methods such as the Rorschach Inkblot Test (Rorschach, 1927) and the Thematic Apperception Test (TAT; Morgan & Murray, 1935). Like explicit measures, they are cheap and easy to administer, and due to computer technology, can reach large populations of participants. Implicit attitude measures are also said to predict a variety of social behaviour (Fazio & Olson, 2003; Greenwald, Poehlman, Uhlmann, & Banaji, 2009) and have been shown on occasions to be more predictive of behaviour than explicit measures (Friese, Hofmann, & Schmitt, 2009).

2.2 The Implicit Association Test

The Implicit Association Test (IAT: Greenwald et al., 1998) is the most popular and widely used implicit attitude measure. Greenwald et al.'s (1998) seminal paper which first published the measure has been cited over 5,500 times and a search of the term '*Implicit Association Test*' in Google Scholar yields over 1 million hits. The IAT captures the strength of association between two concepts stored in memory (Banse, Seise, & Zerbes, 2001; Dasgupta, McGhee, Greenwald, & Banaji, 2000; Ellwart, Rinck, & Becker, 2006; Greenwald et al., 1998; 2002). Completion of an IAT requires participants to classify words presented in the middle of the screen into one of two categories, presented in the left and right-hand corner of the screen (Figure 2). Participants indicate their choice by pressing either the E (left) or I (right) key. In the example below, in the first block of the test, names are presented in the middle of the screen and the participant needs to indicate by pressing the E or I key which category the name belongs to - male or female.

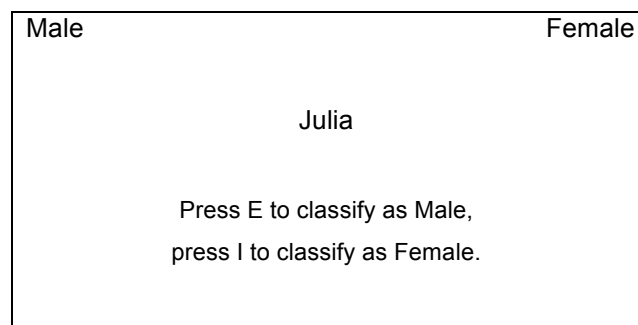


Figure 2. Example IAT screen to classify female name into male or female category.

In the next block of the test two new attributes are introduced, and again the participant classifies the word into one of two categories, for example, career or family (Figure 3).

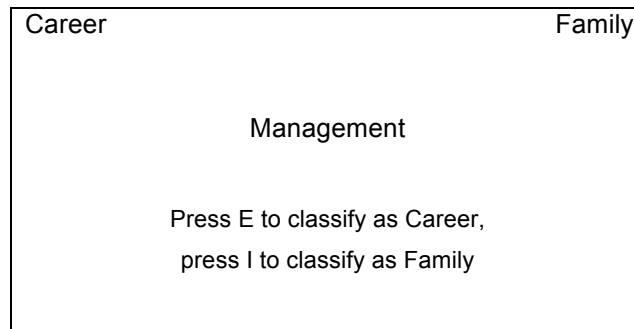


Figure 3. Example IAT screen to classify career attribute into career or family category.

The blocks that follow explore the strength of association between categories. Each side of the screen contains two categories and the word presented in the middle of the screen belongs to one of the categories presented. Respondents again use the E (left) and I (right) keys to indicate which category the word belongs to (Figure 4). When categories are more easily associated response times will be faster when the categories share the same response key. In contrast, when categories are more weakly associated, response times will be slower when categories share the same response key.

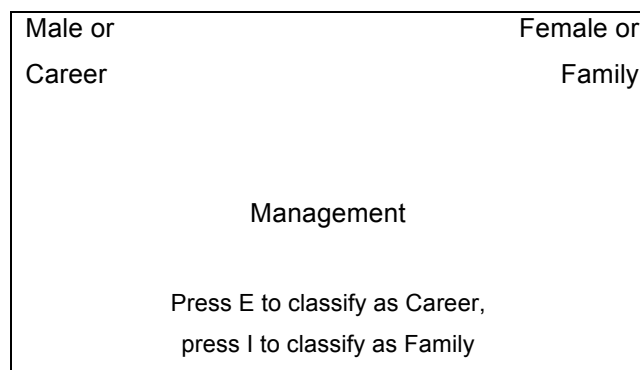


Figure 4. Example IAT screen to classify career attribute into career or family category.

An individual's implicit attitude towards an attitude object is determined by comparing the speed in which they complete the two different sorting tasks. For example, the response time differences between the compatible blocks (e.g., male + career, female + family) and the incompatible blocks (e.g., male + family, female + career)

are taken as an indication of an individual's implicit attitude. Responding faster to the compatible than the incompatible would suggest that the individual more easily associate men, as opposed to women, with career and thus is indicative of an attitude that favours men in the workplace, seeing the primary role of women to be in the home.

The IAT is a particularly attractive implicit measure to use since it is easy to adapt the test to assess new associations and attitudes. It is also easy to administer remotely, has good reliability and construct validity (Cunningham, Preacher, & Banaji, 2001; Nosek, Hawkins, & Frazier, 2011) and has large effect sizes compared to other implicit measures (Nosek et al., 2002; 2007). Furthermore, its popularity in research is in part driven by its strong psychometric properties. Effect sizes demonstrating strong associations between target categories e.g., associating men with career and women with family, have been found to be consistent and large (Greenwald, Nosek, & Banaji, 2003; Greenwald et al., 1998). Internal consistency coefficients have been found to be in the region of .8 - .9 (Greenwald & Nosek, 2001) and thus are on par with explicit measures, such as the Ambivalent Sexism Inventory (Glick & Fiske, 1996). Test-retest reliabilities average .6 (Greenwald & Nosek, 2001), which is higher than other implicit measures (Bosson, Swann, & Pennebaker, 2000; Robinson & Neighbors, 2006).

IAT research has centred on three areas: 1) the pervasiveness of implicit attitudes across attitude domains (e.g., Nosek et al., 2007), 2) whether the IAT predicts behaviour and if so, is it a better predictor than explicit attitude measures and 3) the extent to which the measure correlates with explicit measures of attitude (e.g., Nosek et al., 2007). The pervasiveness of implicit attitudes and the predictive validity of the IAT are considered in the remainder of this chapter. Correspondence between

explicit and implicit measures and the superior predictive validity of the IAT over and above explicit measures is reviewed in Chapter 3.

2.3 The Pervasiveness of Implicit Attitudes

“The existence of implicit bias is beyond reasonable doubt.” (Jost et al., 2009, p. 42)

Research has found implicit attitudes to be strongly held on a variety of topics across groups of individuals (Nosek et al., 2002; 2007). For example, on IATs assessing racial attitudes participants repeatedly show automatic preferences for white over black people and IATs assessing age attitudes participants show automatic preferences for young over old people (Nosek et al., 2002; 2007).

Gender attitudes, as measured by the IAT, have also been found to be pervasive and relatively stable across ethnic groups (Nosek et al., 2002; 2007). Nosek et al. (2002) found participants more easily associated men with science and women with liberal arts (as opposed to the men with liberal arts and women with science), and men with career and women with family (as opposed to the opposite pairings of men with family and women with career) thus supporting symbolic beliefs that women are better suited to certain roles in society and certain academic subjects. Subsequent research by Nosek et al. (2007) further supports the notion that implicit gender attitudes are strongly held across individuals. Results from the Gender-Career IAT and the Gender-Science IAT showed that implicit gender attitudes were consistent across ethnic groups but did vary as a function of participant age; older participants were more likely to hold stronger implicit gender attitudes.

Interestingly, compared to men, women have been shown to have higher implicit scores on both the Gender-Career IAT and the Gender-Science IATs (e.g., Lynch,

2010; Nosek et al., 2002; 2007; Reuben, Sapienza, & Zingales, 2014). Similar results have also been observed on other gender IATs with studies finding men and women holding similar implicit attitudes towards female authority; men, compared to women, are more likely to be associated with career (Rudman & Kilianski, 2000) and agentic traits (Rudman & Glick, 2002; Rudman & Kilianski, 2000). Such findings suggest that implicit attitudes can be shared and reinforced also by those to whom that attitude applies; being a member of the group studied (i.e., a woman) does not protect the individual from exhibiting similar attitudes towards the group (i.e., women) (Greenwald & Banaji, 1995; Jost & Banaji, 1994).

Together, the above research shows that response times on gender related IATs reveal that people have strong implicit gender attitudes. Since strong attitudes are thought to be held more securely in knowledge structures (Eagly & Chaiken, 1993) and more readily accessible (Schuette & Fazio, 1995) the view is that they are more likely to influence behaviour than weakly held attitudes (Kronsick & Petty, 1995). Therefore, many claim that strong associations in a given direction will predict behaviour (e.g., Jost et al., 2009). So, if a person had a strong association between 'white and good' and 'black and bad' then it is likely that these implicit biases could lead them to discriminate against black people, a finding that has been found in the research (e.g., Green et al., 2007; McConnell & Leibold, 2001; Rudman & Ashmore, 2007).

2.4 The Predictive Validity of the IAT

“any psychological tool is only as good as its ability to predict human behaviour.” (McConnell & Leibold, 2001, p. 440)

According to Rudman (2011) the ability of a measure to predict behaviour is the '*gold standard*' with which to evaluate any new assessment technique. Within the

literature there are many claims that implicit attitudes, as measured by the IAT, influence behaviour. For example, in his book *Blink*, Gladwell (2005, p.85) describes the IAT as a “powerful predictor of how we react in certain kinds of spontaneous situations”. Kang (2005, p. 1514) asserts, “there is now persuasive evidence that implicit bias against a social category, as measured by the instruments such as the IAT, predicts disparate behaviour towards individuals mapped to that category”. Kang and Banaji (2006) argue that implicit bias leads to subtle and overt discrimination and Greenwald and Krieger (2006, p. 961) state that the evidence linking implicit attitudes to behaviour is “already substantial”. Jost et al. (2009) further contend that the IAT has been shown to predict political, medical and organisationally significant behaviours, including discriminatory employment decisions. Finally, Greenwald and Banaji (2013) argue in their recent book *Blindspot* that the race IAT has repeatedly been shown to predict discriminatory behaviour towards black people. Such claims lead to the overall perception that the link between the IAT and behaviour is well established and well evidenced (Blanton et al., 2009).

Research on the predictive validity of the IAT has a broad span across many sub-disciplines of psychology including clinical psychology (e.g., Ellwart et al., 2006; Nock et al., 2010), consumer psychology (e.g., Friese, Hofmann, & Wänke, 2008; Gibson, 2008; Hofmann & Friese, 2008), health psychology (e.g., Houben & Wiers, 2008; Keatley, Clarke, & Hagger, 2012; Robinson, Meier, Zetocha, & McCaul, 2005) and political psychology (e.g., Arcuri, Castelli, Galdi, Zogmaister, & Amadori, 2008; Friese, Bluemke, & Wänke, 2007; Galdi, Arcuri, & Gawronski, 2008; Karpinski, Steinman, & Hilton, 2005). Evidence of links between the IAT and behaviour has accumulated in some areas more than others.

In clinical psychology, the IAT has been found to predict avoidance behaviour towards spiders (Ellwart et al., 2006) and predict sensitive clinical behaviours such as suicidal tendencies that self-report measures are unlikely to detect (Nock et al., 2010). In health psychology, smokers and non-smokers have been found to have different implicit attitudes towards smoking (Robinson et al., 2005) and positive implicit alcohol associations were linked to alcohol consumption (Houben & Wiers, 2008). In political psychology the IAT has been found to predict voting intentions (Karpinski et al., 2005), voting behaviour (Frieze et al., 2007) and voting behaviour for yet undecided voters (Arcuri et al., 2008; Galdi et al., 2008). In consumer psychology the IAT has been shown to predict participants brand choices when making decisions under time pressure (Frieze, Wänke, & Plessner, 2006) and whether people would act in line with their implicit preferences when under the influence of alcohol (Hofmann & Frieze, 2008).

The IAT has also been the tool of choice when exploring racial prejudice since implicit measures are posited to be better predictors of behaviour when assessing attitudes in socially sensitive domains (Greenwald et al., 2009). One of the first studies to look at the link between the IAT and behaviour toward group members was conducted by McConnell and Leibold (2001). In their study participants were interviewed, on separate occasions, by both a white and black female experimenter. These social interactions were recorded and then trained judges assessed the degree to which each participant displayed certain behaviours during the interaction such as smiling, speech errors, eye contact and seating distance. Participants also completed both a race IAT and explicit measures of racial prejudice. Correlational analyses showed that individuals who had stronger implicit associations between white names and desirable words and black names and undesirable words were also assessed as having had more negative interactions with the black experimenter, as opposed to the white experimenter.

Research following McConnell and Leibold (2001) has likewise shown the predictive utility of the IAT in the area of racial discrimination. Rudman and Ashmore (2007) found those who more easily associated minority group members with negative attributes and majority group members with positive attributes were more likely to recommend budget cuts for the target group's student organisation. They were also more likely to report higher incidences of engaging in past harmful behaviour towards black people. Green et al. (2007) found that the race IAT also predicted clinical decisions; the more easily physicians associated white faces with good words and black faces with bad words the less likely they would be to recommend thrombolysis treatment for black patients. Lynch (2010) found that participants who had strong implicit attitudes towards white, as opposed to black people, were more likely to display higher positive emotional responses to racist jokes.

Whilst evidence has accumulated in some areas to support the predictive utility of the IAT, much of the literature encompasses criterion measures that are far removed from real behaviour (Baumeister, Vohs, & Funder, 2007; Karpinski & Hilton, 2001; Mitchell & Tetlock, 2006), especially that in an employment context (Blanton et al., 2009; Tetlock & Mitchell, 2009; Wax, 2010). Whilst Jost et al. (2009, p. 39) assert that *"implicit associations do predict socially and organizationally significant behaviors, including employment, medical and voting decisions made by working adults"*, only three of the studies cited in their paper looked at racial discrimination in a workplace context (e.g., Bertrand & Mullainathan, 2003; Bertrand, Chugh, & Mullainathan, 2005; Rooth, 2007) and only one at gender discrimination (e.g., Rudman & Glick, 2002). Furthermore, in a recent meta-analysis conducted by Greenwald et al. (2009), the majority of the studies cited did not explore links to real behaviour but instead looked at relationships to known groups membership (e.g., Gray, Brown, MacCulloch, Smith, & Snowden, 2005; Robinson et al., 2005; Swanson, Swanson, & Greenwald, 2001), judgements, such as relationship

satisfaction (e.g., Banse et al., 2001), physiological responses, such as neurological activations (e.g., Mitchell, Macrae, & Banaji, 2006; Phelps et al., 2000), and self-reported behavioural intentions (e.g., Galdi et al., 2008; Rudman & Ashmore, 2007). Indeed, only 3 of the 121 papers in Greenwald et al.'s (2009) meta-analysis explored links between the IAT and behaviour in a workplace context (e.g., Rudman & Glick, 2002; Vanman, Saltz, Nathan, & Warren, 2004; Ziegert & Hanges, 2005). Of these, Vanman et al. (2004) found that the IAT was not related to the race of the applicant selected for a teaching fellowship. Ziegert and Hanges (2005) found under organisational climates that condone or encourage racial bias the IAT predicted job hiring decisions; those who more easily associated white names with pleasant words and black names with unpleasant words were less likely to select the black candidate. However, when under no instruction on which candidate to select the IAT was not predictive of participants decision-making (Wax, 2010) - a fact that is often omitted in the citation of this research (e.g., Greenwald & Banaji, 2013; Jost et al., 2009). Left to their own devices, there was no relationship between participants' IAT scores and selection decisions. It was only under direct instruction from the president of the company to select the white job applicant that participants acted on their implicit bias. It is therefore unclear whether it was the instruction or the bias that lead to discrimination, suggesting that the results of the research by Ziegert and Hanges (2005) need to be interpreted with caution.

As a consequence, the real world impact of implicit attitudes, as measured by the IAT, is hotly debated within both legal and psychological journals (e.g., Blanton et al., 2009; Landy, 2008; Tetlock & Mitchell, 2009; Wax, 2010). Tetlock and Mitchell (2009, p. 6) claim "*there is no evidence that the IAT reliably predicts class-wide discrimination on tangible outcomes in any setting*". Blanton et al. (2009) argue that there is limited evidence that the IAT predicts unambiguous discriminatory behavior outside of the laboratory.

“When a method is introduced, it should rightly be the target of scepticism and debate until its usefulness has been established.” (Rudman & Ashmore, 2007, p. 359)

However, in the area of race at least, recent years have seen the emergence of an accumulating body of evidence that suggests the IAT is predictive of workplace racial discrimination. In a field study looking at discrimination toward Arab-Muslims in the workplace, Rooth (2010) found that recruiters who had stronger negative associations towards Arab-Muslims were less likely to invite Arab-Muslim job applicants for interview. Similar results have been demonstrated in laboratory studies. Deros, Nguyen, and Ryan (2009) found that less negative attitudes towards Arab job applicants was linked to higher job suitability rating. Yogeeswaran and Dasgupta (2010) found the more participants associated American, as opposed to Asian American, with white people the less likely they were to both hire an equally qualified Asian American for a national security job and evaluate an immigration policy more negatively when put forward by an Asian, as opposed to white American. Son Hing, Chung-Yan, Hamilton, and Zanna (2008) found that when clear information about the applicants' qualifications were withheld participants who had higher IAT associations between white names and words they liked and Asian names and words they disliked also provided a lower hiring recommendation for an Asian job candidate; ambiguity led to participants to act upon their implicit attitudes. Blommaert et al. (2012) found that the more participants' associated Turkish or Moroccan people with negative words and Dutch people with positive words the less likely they were to invite Turkish or Moroccan job applicants for an interview.

Similar findings have also been observed for weight bias. Agerström and Rooth (2011) found that IAT scores predicted whether obese job applicants would be invited for an interview; the more hiring managers linked obese people with low, as

opposed to high, performance the less likely they were to invite obese job applicants for an interview.

2.5 The IAT and Gender Discrimination

When it comes to gender and implicit attitudes, the prevailing view can be summed up as follows:

1. the IAT predicts discrimination on the socially sensitive topic of race;
2. gender discrimination is another socially sensitive topic, and so;
3. the IAT will predict discriminatory behaviour.

In selection this type of transfer of validity data is referred to as synthetic validity. However, when reviewing the literature the evidence to support the IAT's ability to predict workplace gender discrimination is found wanting. Once again, the majority of the research looking at implicit gender attitudes does not look at the link between the IAT and real behaviour nor behaviour in a workplace context. For example, of the 121 papers used in Greenwald et al.'s (2009) meta-analysis on the predictive validity of the IAT, only five specifically looked at the link between gender attitudes and behaviour. Rudman and Heppen (2003) found that women who had stronger implicit romantic fantasies showed less interest in achieving high status jobs and were more likely to pick occupations with lower economic rewards and lower educational requirements. Carpenter (2000) found the IAT to predict candidate choice, but only for female participants. Gawronski, Geschke, and Banse (2003b) found that the strength of stereotypical associations influence the way people are perceived; participants who had strong stereotypical associations between men and work and women and home were more likely to rate male targets as less communal than those with weak stereotypical associations. The paper by Eyssele and Bohner (2007) appears to have been amended since Greenwald et al.'s (2009) meta-analysis and no longer makes reference to the IAT. The only paper cited in

Greenwald et al.'s (2009) meta-analysis looking at the link between implicit gender attitudes and the workplace discrimination was by Rudman and Glick (2002).

Exploring the links between gender stereotypes and evaluations of women, Rudman and Glick (2002) found that the IAT predicted ratings of women's social skills; those who more easily associated men with agency and women with communality rated women who had been portrayed as possessing agency as less socially skilled when applying for feminised job roles – those roles requiring a combination of agentic and communal traits. However, whilst the results showed that agentic women were rated as less hireable than men, none of the IATs employed in this study predicted hireability ratings.

Subsequent research exploring the links between the IAT and gender discrimination in the workplace is scarce, with only a further two published studies known to the author at the time of writing this thesis. Levinson and Young (2010) explored whether their own developed Judge-Gender IAT and the more widely used Gender-Career IAT predicted discriminatory decision-making. Whilst they found implicit biases in their sample – participants more quickly associated men, as opposed to women, with judges and career - these biases were not predictive of discriminatory decision-making. So whilst again gender attitudes were found to be pervasive, neither of the IATs employed in this research predicted the gender of the job applicant selected nor the allocation of financial resources. In contrast, Latu et al. (2011) found their Successful-Manager IAT did predict salary recommendations – the more participants associated men, as opposed to women, with managerial success the higher the salary was for the male employee. These results suggest that when it comes to gender the predictive validity of the IAT is inconclusive and the circumstances in which implicit gender attitudes are applied to behaviour and decision-making is less clearly understood.

2.6 Personnel Decision-Making

Personnel decision-making is an area of behaviour where discrimination against women has been consistently demonstrated and is a form of behaviour that may be particularly susceptible to the influence of implicit attitudes (Chugh, 2004).

Dual process theories posit that decision-making is influenced by two processing systems, commonly referred to as System 1 and System 2 (Kahneman & Frederick 2002; Stanovich 1999). System 1 is described as unconscious, rapid, automatic and high capacity. To cope with the complexity of material presented during personnel decision-making, and to guide information processing, the decision-maker automatically activates categories that simplify and structure the information (Allport, 1954; Brewer, 1988; Fiske & Neuberg, 1990; Macrae & Bodenhausen 2000). This process is automatic and is a key function of system 1. When presented with both male and female job applicants, gender is likely to be detected as a salient feature of the candidates (Chaiken & Eagly 1989; Macrae & Bodenhausen, 2000) and this categorisation will lead to the automatic activation of gender attitudes. The activation of an attitude is therefore thought to be automatic and inevitable in the presence of particular cues (Brewer, 1988; Devine, 1989), and often without awareness (Dovidio & Fiske, 2012). In contrast, system 2 is conscious, slow, low capacity and deliberate (see Evans, 2008 for a review). Providing the situation allows, an individual can engage in effortful processing to determine if the categories generated by system 1 are valid and applicable to the situation.

The degree to which each system influences the decision outcome will heavily depend on factors such as time, cognitive capacity and motivation the individual has to engage in effortful processing. In situations where deliberate, effortful reasoning processes are hindered (Bodenhausen, Macrae, & Sherman, 1999; Devine, 1989; Dovidio & Fiske, 2012; Fazio, 1990; Fazio & Towes-Schwen, 1999; Wilson, Lindsey,

& Schooler, 2000) system 1 will dominate and as a consequence implicit attitudes are likely to go unchallenged and influence the decision outcome. However, even in situations where effortful processing is possible, activated implicit associations can still impact the decision outcome via influencing what information is attended to and how that information is explicitly reflected upon.

2.61 The influence of implicit attitudes on decision outcomes via system 1

Several factors hinder the effortful processing of information including time pressure, cognitive capacity, motivation, risk and uncertainty, and the manner in which the personnel decision is framed.

Personnel decisions involve processing complex and often incomplete information within tight timeframes. The combination of high cognitive load and time pressure depletes an individual's cognitive resources and consequently reduces the ability to engage in system 2 processing where information is dealt with in a systematic and deliberate manner (Bodenhausen et al., 1999; Wilson et al., 2000). This increases the likelihood that implicit associations will influence the decision outcome (Greenwald & Banaji, 1995). Both high cognitive load and time pressure on participants has been shown to enhance the relationship between IAT scores and behaviour (e.g., Friese et al., 2006; Hofmann, Rauch, & Gawronski, 2007). Friese et al. (2006) found that only when participants were under time pressure did the IAT predict brand choices.

For system 2 to have an influence on the decision outcome, an individual also needs to be motivated to engage in effortful processing (Devine, 1989; Macrae & Bodenhausen, 2000; Schuette & Fazio, 1995). Decision-making is tiring (Baumeister, Bratslavsky, Muraven, & Tice, 1998) and requires mental effort (Bodenhausen et al., 1999). As noted previously, humans are 'cognitive misers' who

prefer to process information with minimal effort (Chaiken et al, 1989; Fiske & Taylor, 1984). In contrast to Human Resources (HR) professionals, personnel decision-making is not a manager's core role. Managers may prefer to conserve their mental effort for activities they consider to be their 'real' job (Macrae, Milne, & Bodenhausen, 1994; Sherman, Lee, Bessenoff, & Frost, 1998). Furthermore, individuals have a tendency to satisfice when making decisions (Simon, 1957); they will examine alternatives only up until a point where they find a solution that meets minimal requirements; they then cease to look for a better one. Therefore, if a man and woman both apply for a male sex-typed role and the man, due to stereotypical beliefs, is more easily matched to the criteria, then the individual is unlikely to engage in deeper processing to see if the woman also fits.

Decision-makers also need to be motivated to be egalitarian in their behaviour. Plant and Devine (1998) posit that people differ according to the internal and external motivation they have to be non-prejudiced and have developed measures to assess these attributes. Their research has found that those with a high internal motivation together with a low external motivation to be non-prejudiced displayed lower levels of race bias on both implicit and explicit measures of prejudice (Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002). According to Devine (1989) low prejudice people, providing they have the cognitive resource to do so, will replace automatic stereotypes with explicit more considered views of the target object.

Personnel decisions also contain an element of risk and uncertainty. For example, promoting a woman into a role traditionally held by men could be perceived to be a greater risk than promoting a man. When making decisions under conditions of risk and uncertainty an individual can do one of two things: 1) gather more information – the woman needs to do just one more thing, over and above that of her male counterpart to prove she is not a risk; or 2) rely on heuristics and attitudes to guide

their decision (Kahneman, 2012; Tversky & Kahneman, 1974). Each option has the male candidate as the preferred choice.

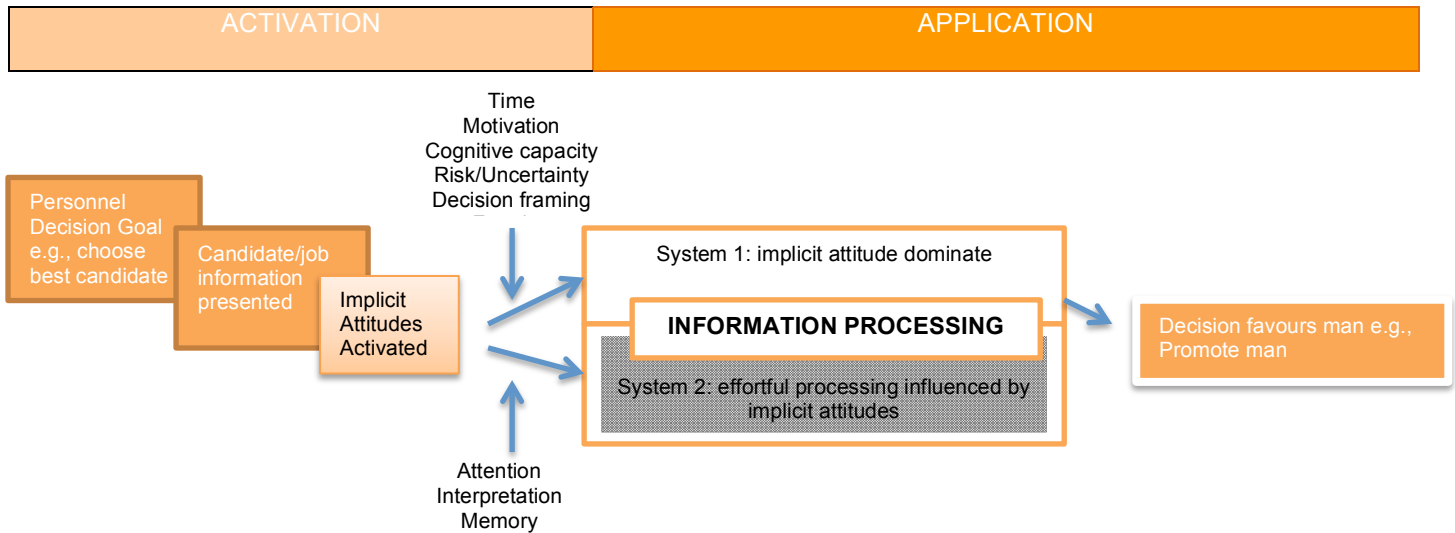


Figure 5. The impact of implicit attitudes on personnel decision outcomes.

Finally, personnel decisions may be vulnerable to framing effects that either hinder or facilitate effortful processing of information. The majority of personnel decisions require the manager to choose one candidate from among several. Research has shown that choice alternatives are likely to induce non-compensatory information processing strategies (Westenberg & Koele, 1990; 1992). Furthermore, the process of selecting, as opposed to rejecting, induces attribute wise processing (Westenberg & Koele, 1990; 1992); the focus is on quick and effortless matching of compatible attributes between the job requirements and the applicants. Consequently, situations that require the decision-maker to select between male and female candidates are likely to be guided by system 1 processing and heuristics and biases.

2.62 The influence of implicit attitudes on decision outcomes via system 2

No task is immune from the influence of automatic processes (Jacoby, Toth, & Yonelinas, 1993; Sherman, 2008). Even in situations where effortful processing is able to occur, implicit attitudes can still impact decision-making. Once an attitude has been activated it is likely to influence the decision-maker's focus and what they deem to be important to meet the role (Cuddy et al., 2011). So, even when information processing appears to be methodical and systematic, attitudes filter what material an individual pays attention to (Fazio & Towes-Schwen, 1999; Gawronski, Ehrenberg, Banse, Zukova, & Klauer, 2003a), how they interpret information (Heilman & Haynes, 2005; Heilman & Parks-Stamm, 2007) and what is remembered (Fiske & Neuberg, 1990). For example, Gawronski et al. (2003a) found that when participants held strong stereotypes about women they were less likely to consider individuating information when judging their behaviour. Once activated, implicit attitudes can therefore influence system 2 processing and consequently the decision outcome.

2.63 The nature of the personnel decision

An observation from the IAT literature is that within a given study IATs have been shown to predict some, but not all, of the behaviours under investigation (e.g., Keatley et al., 2012; Latu et al., 2011; Levinson & Young, 2010; Rudman & Ashmore, 2007). Observed differences may in part be due to the amount of effortful processing an individual engages in. For example, some personnel decisions may rely more heavily on system 2 processing than other personnel decisions and therefore be less influenced by implicit attitudes. Redundancy decisions are one such example. Redundancy decisions occur with less frequency than personnel selection decisions and have a major detrimental impact on the individual for whom employment is terminated. Firing employees is also one of the most disliked human resource activities a manager engages in. As a consequence, redundancy decisions

may provoke negative emotions in the decision-maker. Research has shown that negative mood states (Bodenhausen, Kramer, & Susser, 1994; Clore, Schwarz, & Conway, 1994; Dasgupta, DeStano, Williams, & Hunsinger, 2009; DeSteno, Dasgupta, Bartlett, & Cajdric, 2004; Forgas & Fiedler, 1996; Lambert, Khan, Lickel, & Fricke, 1997; Park & Banaji, 2000; Tiedens & Linton, 2001) lead to more extensive information processing. For example, happy mood states have been found to lead to more heuristic processing based on category membership (Bodenhausen et al., 1994) whereas sad mood states lead to more systematic information processing, decreasing the reliance on stereotypes (Lambert et al., 1997; Park & Banaji, 2000). Furthermore, Luce, Bettman, and Payne (1997) found that more emotionally difficult decisions also lead to more extensive information processing. Negative emotions connected to a decision may signal the importance of making an accurate decision (Luce et al., 1997). A person making a redundancy decision may therefore feel a higher degree of responsibility for getting the decision right than when, say, selecting an individual for promotion. Whilst not promoting a person may have a negative impact on the job candidate, the impact is not as great as losing their job altogether. For these reasons, choosing whom to make redundant may prompt more systematic and effortful processing than choosing whom to promote. When increased effortful processing is undertaken there is an increased likelihood that the impact of implicit attitudes will be corrected for (Devine, 1989). To date, the majority of the research exploring the link between the IAT and personnel decisions has been focused on decisions that are not emotionally negative, such as selection decisions (e.g., Agerström & Rooth, 2011; Blommaert et al., 2012; Levinson & Young, 2010; Rooth, 2010; Yogeeswaran & Dasgupta, 2010; Ziegert & Hanges, 2005), the rating of personal job skills (Rudman & Glick, 2002), monetary rewards (Latu et al., 2011) and budget decisions (Rudman & Ashmore, 2007), with evidence for links apparent in each area. However, no prior research has explored the links between the IAT and redundancy decisions.

In summary, when making personnel decisions, the ability to process information in an effortful manner is either inhibited or influenced by implicit associations. As a consequence, activated gender attitudes are unlikely to go unchallenged during the decision-making process leading to them being applied to the decision outcome (Macrae & Bodenhausen, 2000). In line with prior research in the race domain, it is therefore hypothesised that there will be a link between implicit gender attitudes, as measured by the IAT, and certain personnel decisions such as promotion and budget decisions. However, due to the detrimental effects redundancy has on employees, it may invoke negative emotions on the part of the decision-maker and thus lead to more effortful processing, countering the influences of implicit gender attitudes on the decision outcome. Therefore, relationships between the IAT and redundancy decisions are not expected.

Hypothesis 1a: Participants who have higher IAT scores are more likely to appoint men in promotion decisions.

Hypothesis 1b: Participants who have higher IAT scores are more likely to recommend a male related initiative receives the most funding.

2.7 Conclusion

Gender attitudes have been found to be pervasive (Nosek et al., 2002; 2007) and held equally by men and women (Lynch, 2010; Nosek et al., 2002; 2007; Rudman & Glick, 2002; Rudman & Kilianski, 2000). Whilst there have been calls for more research using IAT methodology within organisational research (Barsade, Ramarajan, & Westen, 2009; George, 2009; Latham, Stajkovic, & Locke, 2010), to date, the impact of implicit attitudes on workplace discrimination is under-researched in general (Blommaert et al., 2012), but especially for gender. With so little research in the area it is difficult to conclude that the IAT predicts gender discrimination; all

that can be concluded from the research is that people tend to have certain associative patterns.

Due to the practical implications of IAT-behaviour links more empirical evidence is required before conclusions can be drawn about the IATs ability to predict workplace discrimination (Agerström & Rooth, 2011). For the IAT to be of value to organisations and to be accepted in legal contexts determining when it will and will not lead to actual discrimination is of critical importance. Due to the unique circumstances surrounding personnel decision-making, this is one area where the links between the IAT and gender discrimination are expected to occur.

Chapter Three: A Closer Look at the IAT

3. Introduction

This chapter takes a closer look at factors that may influence predictive validity of the IAT and whether it should always be the measure of choice when predicting gender discrimination in the workplace. It is argued that the predictive validity of the IAT seems to vary as a function of the attitude component the tool assesses. For example, studies have found IATs that assess affect-based attitudes to be predictive of behaviour, but those that assess stereotypes not to be predictive of the same behaviour (e.g., Green et al., 2007). Likewise, the opposite has been observed, with stereotype-based IATs being predictive but affect-based IATs showing no predictive validity (Rudman & Ashmore, 2007). The affect-cognition distinction for implicit gender attitudes has not been explored in the literature and it is of yet unknown if affect- or cognition-based IATs perform equally well at predicting personnel decisions that favour men, or if one is a better predictor.

It is also argued that whilst explicit measures are increasingly seen as inadequate predictors of behaviour when the issue under investigation is of a socially sensitive nature (Dunton & Fazio, 1997; Fazio et al., 1995), there may be circumstances where they have good predictive utility. Unlike hostile sexists, benevolent sexists hold subjectively positive feelings towards women (Glick & Fiske, 1996). Due to the positive nature of the attitude, questionnaire responses are unlikely to be tainted by social desirability concerns. However, benevolent sexists still view women as inferior to men, seeing their place in the home. As a consequence, such attitudes are likely to lead them to favour men when making personnel decisions. Therefore, explicit measures of benevolent sexism may be an equally valid predictor of personnel decisions as the IAT.

3.1 What Factors Influence The Predictive Validity Of The IAT?

One of the advantages of the IAT is its adaptability to tap different constructs (Nosek et al., 2007) and different category associations. However, this adaptability also creates challenges in evaluating the consistency in which it predicts behaviour.

Many of the studies exploring the predictive validity of the IAT have not only contained IATs that were linked to behaviour but also had IATs that were found not to be predictive (e.g., Carpenter, 2000; Derous et al., 2009; Green et al., 2007; Levinson & Young, 2010; Rudman & Ashmore, 2007; Rudman & Heppen, 2003). For example, Green et al. (2007) found that out of the three IATs employed in their study only the race-preference IAT predicted the clinical recommendation. Neither of the two stereotype IATs were significant predictors of the clinical decision, even though the results showed physicians held strong implicit stereotypes about black patients (e.g., they are less cooperative towards medical treatment). Furthermore, as noted previously, even when an IAT has been linked to a specific behaviour, is it often not predictive of all the behaviours explored within the study (e.g., Keatley et al., 2012; Latu et al., 2011; Levinson & Young, 2010; Rudman & Ashmore, 2007). Understanding why an IAT is not predictive of behaviour is as important as understanding why one is predictive and has important implications for how best to intervene to address discrimination.

3.11 Affect vs. cognition-based IATs

An IAT's ability to predict behavior may depend on the attitude component it is assessing, for example, an IAT that taps into the affective component of an attitude may be more predictive than an IAT that measures the cognitive component of an attitude, or vice versa. As noted previously, both cognitive and affective reactions to women in the workplace have been linked to gender discrimination. For example, women who violate traditional gender roles and behaviours are likely to be met with negative emotional reactions and these reactions lead to women being less liked and

evaluated more harshly than their male counterparts (Fiske 1998). Similarly, stereotypes have also been found to underpin gender discrimination (e.g., Heilman & Okimoto, 2008; Madera et al., 2009; Swim et al., 1989); when a woman is considered for traditionally masculine roles she is often evaluated as not suitable for the job since there is a mismatch between the traits the woman is thought to possess and those require for the job (Heilman & Eagly, 2008). When it comes to the predictive validity of the IAT, will each attitude component be equally predictive of behaviour? Or, do either cognition- or affect-based IATs have a stronger link to gender discrimination in the workplace?

To date, the affect-cognition distinction for implicit gender attitudes has not been explored in the literature. Other research, however, suggests that affect-based attitude measures are better than cognition at predicting health behaviour (Lawton, Conner, & McEachan, 2009), voting behaviour (Abelson, Kinder, Peters, & Fiske, 1982; Granberg & Brown, 1989; Kuklinski, Riggall, Ottati, Schwarz, & Wyer, 1991; Marcus, 1988; 2000; Marcus & MacKuen, 1993; Ragsdale, 1991), and racial discrimination (Dovidio, Kawakami, & Gaertner, 2002; Talaska, Fiske, & Chaiken, 2008). Others have also shown emotions such as pity, envy, disgust and pride play a major role in prejudice towards others and are more predictive of behaviour than negative stereotypes (Cuddy et al., 2007; Fiske et al., 2002).

Within the implicit attitude literature there has been less attention toward the affect-cognition distinction (Amodio & Devine, 2006). Whilst a review of the literature suggests that evidence has accumulated more for the predictive validity of affect-based IATs than cognition-based IATs in both the political (e.g., Arcuri et al., 2008; Friese et al., 2007; Galdi et al., 2008) and race domain (e.g., Green et al., 2007; McConnell & Leibold, 2001; Ziegert & Hanges, 2005) the findings are still not clear. For example, Green et al.'s (2007) research showed that it was an affect-based IAT

that predicted harmful actions towards black people not stereotype IATs. In contrast, Rudman and Ashmore (2007) found that a stereotype IAT to be more predictive of self-reported past behaviours towards black people and budget decisions than an affect-based IAT. They concluded that implicit stereotypes might be more predictive of harmful behaviours than implicit affect measures since stereotype IATs include more specific evaluations about the attitude object that are more justifiable than mere good/bad associations.

Levinson and Young (2010) found that out of the two gender IATs used in their research, only the Judge-Gender IAT was linked to behaviour. Furthermore, this IAT only predicted one of the three outcome variables in the study; the Judge-Gender IAT was linked to male participants' preferences for appellate judges to possess masculine traits but not participants' hiring decisions or budget allocations. Furthermore, whilst Latu et al. (2011) found their Successful-Manager IAT predicted salary recommendations, the same IAT was not predictive of explicit evaluations of male versus female employees. Indeed, one of the criticisms levied at the IAT during *Wal-Mart Stores, Inc. v. Dukes* (2011) was that the measure could not say what decisions implicit gender stereotypes would have influenced; did implicit gender bias influence one, some or all of the decisions (Wax, 2010)?

Amodio and Devine's (2006) theorising may shed light on why affect- or cognition-based implicit measures predict some, but not all behaviours. They argue that there is a conceptual distinction between affect and cognitive components of implicit attitudes and as such each will predict different types of behaviour. In support of this they found that stereotype and affect-based race IATs were uncorrelated even though participants showed pervasive racial attitudes towards African Americans on both measures, suggesting that they were conceptually independent constructs. Furthermore they found that each IAT type predicted uniquely different behaviours.

The affect-based IAT, which asked people to categorise black and white faces or pleasant and unpleasant words, was found to predict participants' desire to get to know an African American person and how far they sat from items they thought to belong to an African American, on the other hand, the stereotype IAT was not predictive of this behaviour. In contrast the stereotype IAT predicted stereotypical judgements of the African American person and how well they expected them to perform on stereotypical and non-stereotypical tasks - but the affect IAT did not. From this, Amodio and Devine (2006) posit that stereotypes predict instrumental behaviours such as impression formation and judgements, whereas, affect-based attitudes predict consummatory behaviours such as approach and avoidance tendencies towards the attitude object depending on whether the affective reaction is positive (approach) or negative (avoid).

Further support for theorising that affect- and cognition-based attitudes predict uniquely different behaviours comes from explicit attitude research. Dovidio, Esses, Beach, and Gaertner (2004) found that affect-based measures of race bias predicted approach and avoidance responses towards African Americans, whereas cognition-based measures predicted the endorsement of stereotypes and support for policies that disadvantaged African Americans. Esses and Dovidio (2002) found that affect-based measures were more predictive of willingness to engage in intergroup contact and cognitive based measures more predictive of social policy endorsements. In a meta-analysis looking at the links between racial attitudes and discrimination, Talaska et al. (2008) found that affect-based measures were better predictors of direct behaviours, such as action tendencies towards out-group members. In contrast, they found cognition-based measures to be better predictors of indirect behaviours, such as paper and pencil evaluations of out-group members. The mixed evidence for the impact of implicit attitudes on behaviour could therefore result from a

mismatch between the component of attitude an IAT assesses and the type of discriminatory behaviour being predicted (Amodio & Devine, 2006).

In the domain of gender, the predictive validity of affect-based IATs has not been researched. Therefore, little is known about the affect-cognition distinction and how this impacts on the IATs ability to predict workplace gender discrimination.

It could be argued that in line with prior research on racial discrimination affect is a superior predictor of behaviour (Dovidio et al., 2002; Green et al., 2007; McConnell & Leibold, 2001; Talaska et al., 2008; Ziegert & Hanges, 2005); it is the negative affective reactions towards women who violate traditional gender roles that leads to disparate treatment of women in the workplace. For example, Glick et al. (2000) found that hostile sexist men stated that they “feared” and felt “intimidated” by career women. Such feelings could provoke avoidance tendencies towards women and approach tendencies towards men, leading to men being the preferred choice for promotion to senior positions. Such decisions would ensure women to have more time to fulfil their traditional gender roles and would minimise the threat posed by their presence in the workplace.

Alternatively, four factors suggest that cognition-based IATs will also be valid predictors of gender discrimination. First, since personnel decisions involve judgements about people they can be considered instrumental behaviours. As noted previously, such behaviours are more likely to be predicted by cognition-based IATs (Amodio & Devine, 2006; Dovidio et al, 2004; Lawton et al., 2009). Second, many personnel decisions are made without direct contact with the individual about whom the decision is being made e.g., initial CV screening. According to Talaska et al. (2008), the less direct the behaviour the more likely cognitive attitudes will be predictive. Third, factors that make gender more salient have been shown to

heighten the association with gender stereotypes and as a consequence exaggerate the perceived lack of fit between women and male sex-typed roles (Eagly et al., 1992; Heilman, 1980; Heilman & Blader, 2001; Heilman & Okimoto, 2008; Heilman & Parks-Stamm, 2007; Heilman & Saruwatari, 1979; Lyness & Heilman, 2006; Pazy & Oron, 2001). Cognition-based IATs should, therefore, be predictive of discrimination where, for example, working mothers are being considered for a male-dominated job role due to the lack of fit between the stereotypes associated with women and the requirements of the job role. Finally, as Rudman and Ashmore (2007) suggest, implicit stereotype IATs could be more predictive of discrimination than affect IATs since stereotypes include more specific evaluations about the attitude object and are therefore more justifiable than mere good/bad associations.

To date, no research has explored whether the predictive validity of gender IATs vary as a function of the attitude component they assess. However, since both affect and cognition have been shown to underpin discrimination against women in the workplace, both cognition and affect-based IATs have the potential to be valid predictors of discriminatory personnel decisions.

Hypothesis 2: The effect of IAT scores on personnel decisions will be observed for all forms of IAT (i.e., cognition and affect).

Additionally, since both affective and cognitive processes contribute to attitude formation (Edwards, 1990; Edwards & Hippiel, 1995), it is possible that when there is consistency between both attitude components an individual will be more likely to act on the attitude than when the components diverge. For example, those who have strong stereotypical gender associations together with higher negative emotional reactions to women when they violate traditional gender roles may be more likely to discriminate against women than individuals who endorse gender stereotypes but do

not feel strongly about women who violate their traditional roles. Divergence between the attitude components weakens the strength of the overall attitude towards women and as a consequence combined scores are less likely to be predictive of personnel decisions. The combined effect of affect- and cognition-based IATs has not yet been explored in the research.

Hypothesis 3: Participants with higher combined IAT scores will be more likely to make personnel decisions that favour men (e.g., promote the male candidate, recommend a male related initiative receives the most funding).

Should cognition- or affect-based IATs vary in their ability to predict personnel decisions, then this has important implications for how best to address discrimination. Given that affect and cognition may stem from different processes it is likely that they will be learned and unlearned via different mechanisms (Amodio & Devine, 2006). Research has shown that attempts to change attitudes need to be matched to the basis of the attitude; emotional persuasion only works when the attitude is affect-based and persuasion via cognitive information is only effective when the attitude is cognition-based (Drolet & Aaker, 2002; Edwards, 1990; Edwards & Hippiel, 1995; Fabrigar & Petty, 1999; Mayer & Tormala, 2010; Petty & Wegener, 1998; See, Petty, & Fabrigar, 2008). If cognition-based attitudes were found to be more predictive of gender discrimination then training that weakens existing stereotypic associations and strengthens new non-stereotypic ones could be effective. For example, 'just say no' interventions (Gawronski, Deutsch, Mbirikou, Seibt, & Strack, 2008; Kawakami, Dovidio, Moll, Hermsen, & Russin, 2000) require participants to say 'no' when presented with pictures of, for example, black or white faces together with stereotypic traits, and to say 'yes' when the faces are presented with non-stereotypic traits. In contrast, if affect is found to be a superior predictor of behaviour then one off interventions will not be effective since implicit affective reactions are thought to be

learned more quickly but take longer to unlearn than implicit stereotypes (Amodio & Devine, 2006). Therefore, approach and avoidance training (Kawakami, Phillips, Steele, & Dovidio, 2007) where participants are required to move a joystick away from the stimulus when they see, for example, a white face, and toward the stimulus when they see a black face, whilst matching the underlying basis of the attitude, would only be effective via multiple exposure to the training.

3.2 Are Explicit Measures of Gender Attitudes Redundant?

Explicit measures of attitudes are increasingly seen as inadequate predictors of behaviour (Dunton & Fazio, 1997; Fazio et al., 1995), mainly due to social desirability concerns attached to such measures. There are a number of measures available to assess individuals explicit attitudes towards women, including the Attitudes Toward Women Scale (AWS) (Spence & Helmreich, 1972), the Sexist Attitudes Towards Women Scale (Benson & Vincent, 1980), the Sex-Role Egalitarianism Scale (Beere, King, Beere, & King, 1984), the Modern Sexism Scale (Swim, Aikin, Hall, & Hunter, 1995), and the Neo-sexism Scale (Tougas, Brown, Beaton, & Joly, 1995). However, the majority of such measures only assess negative attitudes towards women and therefore responses may be particularly biased by social desirability concerns.

Gender attitudes operate differently from attitudes towards other stigmatized groups, with different theoretical foundations underpinning each (Paluck & Green, 2009). For example, racial discrimination is often driven by negative attitudes toward ethnic minorities. However, explicit attitudes towards women are often positive (Glick & Fiske, 1996), sometimes more so than those towards men (Eagly & Mladinic, 1989; 1994; Eagly, Mladinic, & Otto, 1991) and greatly depend upon the context within which a woman is perceived (Glick et al., 1997).

Ambivalent Sexism theory (Glick & Fiske, 1996) posits sexism is not something based on pure antipathy towards women, but also contains positive thoughts about,

and feelings toward, women. The theory argues that modern day attitudes towards women are made up of two components: hostile and benevolent sexism. Hostile sexism encapsulates the traditional view that prejudice is based on antipathy towards a minority group. Hostile sexists want to dominate women, hold derogatory beliefs about women and view them as sexual objects. They also fear women will use sexual attraction to gain power over men. Benevolent sexism is characterised by subjectively positive thoughts and feelings towards women. Women are perceived to be the weaker sex in need of the protection of men. Their traits are perceived to be ones associated with their homemaker role and thus ones that compliment men's traits. Benevolent sexists recognise their dependence on women for reproduction and seek intimacy with them.

Unlike hostile sexism, benevolent sexism is likely to come across as paternalistic and protective towards women. Therefore, its expression is less likely to be frowned upon. As a consequence, individuals' responses to explicit measures of benevolent sexism may not be censured. However, benevolent sexists still view women as inferior to men, seeing their place to be in the home. Therefore explicit measures of benevolent sexism may predict discriminatory personnel decisions - those that favour men.

3.21 The Ambivalent Sexism Inventory

The Ambivalent Sexism Inventory (Glick & Fiske, 1996) measures both hostile and benevolent sexism and is one of the most widely used explicit measures of attitudes towards women. Each scale assesses three sub-dimensions of sexism identified by Glick and Fiske (1997); paternalism; gender differentiation and heterosexuality and taps into both affective and cognitive components of an attitude by measuring feelings towards women, and the stereotypes and symbolic beliefs associated with women. Ambivalent, hostile and benevolent sexist scores have been shown to have

internal consistency ranging from .8 to .9, with correlations between hostile and benevolent sexism averaging .5 (Glick & Fiske, 1997). Individuals who score high on one scale typically score high on the other scale (Glick & Fiske, 2001).

The attitude triggered towards a woman will depend on the role she is perceived to be fulfilling. Research shows that women are often classified into sub-types (Carpenter, 1994; Clifton, McGrath, & Wick, 1976; Coats & Smith, 1999; Eckes, 1994; Fiske & Neuberg, 1990; Noseworthy & Lott, 1984; Six & Eckes, 1991) including traditional women (i.e., homemakers), and non-traditional women (i.e., career women). Women who fulfil traditional gender roles will be met with benevolent sexism – positive feelings, evaluations and stereotypes. However, women who break away from traditional gender roles, particularly if the role threatens the status and power of men, will provoke hostile attitudes and behaviour that punishes them for violating prescribed gender norms.

Both elements of the attitude serve to maintain the male superiority and power (Glick & Fiske, 1996; 1997; 2001; 2011) and thus perpetuate gender inequalities. Hostile sexism punishes women who step out of line and challenge male authority, whereas benevolent sexism rewards women with protection and warmth who fulfil their traditional gender roles (Glick & Fiske, 2011). Ultimately, both view women as inferior.

Table 3.

Description of sub-dimensions of sexism as described by Glick and Fiske (1997) and associated questions from the ASI (Glick & Fiske, 1996).

	Hostile Sexism	Benevolent Sexism
Paternalism	Dominant: women should be controlled by men	Protective: women should be protected by men
ASI question	<i>"Feminists are not seeking for women to have more power than men."</i> (reverse scored)	<i>"Women should be cherished and protected by men."</i>
Gender differentiation	Competitive: derogatory beliefs about women give men confidence they are superior	Complimentary – beliefs women possess positive traits associated with their homemaker (e.g., warm and caring) role and these traits compliment those of men
ASI question	<i>"Women are too easily offended."</i>	<i>"Many women have a quality of purity that few men possess."</i>
Heterosexuality	Hostile: view women as sexual objects and fear they will use sexual attraction to gain power over men	Intimate: view women as romantic partners who are needed to make men complete
ASI question	<i>"Once a woman gets a man to commit to her, she usually tries to put him on a tight leash."</i>	<i>"No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman."</i>

Hostile and benevolent measures of attitudes therefore seem to correspond to different evaluations of women dependent upon the role in which they are perceived to be carrying out, a finding that is supported by other research. Individuals with hostile sexism attitudes evaluate women who violate traditional gender roles, such as career women, less favourably (e.g., Glick et al., 1997; Takabayashi, 2007). For example, Glick et al. (1997) asked participants to evaluate a number of sub-types of women, including carer women and homemakers. They found that hostile sexism predicted negative evaluations of career women, whereas benevolent sexism predicted favourable evaluations homemakers. Whilst those high on hostile sexism perceived career women to be "intelligent", "hard-working" and "professional", they also labelled such women as "selfish, greedy and cold". So whilst men may

recognise a career woman's competence, they perceived them to lack feminine traits such as warmth (Eagly & Mladinic, 1989) and instead attach a number of negative characteristics to them (Glick & Fiske, 1996; Glick et al., 2000). Men high on hostile sexism also stated that they "feared" "envied" and felt "intimidated" or "competitive" toward career women. In contrast, those high on benevolent sexism showed more positive emotions towards women in traditional gender roles.

Gaunt (2013) found hostile sexism predicted more negative perceptions of a female breadwinner; she was perceived to be less warm, competent and happy. In contrast, benevolent sexism predicted positive perceptions of a female caregiver; she was rated as more warm, competent and likely to experience fewer negative emotions. Sakalli-Ugurlu and Beydogan (2002) found that those who scored high on hostile sexism had significantly less favourable attitudes towards female managers than those who scored lower on the measure. Hostile sexism has also been found to be related to preferences for male authority (Rudman & Kilianski, 2000) and predictive of negative attitudes towards women studying traditional sciences (Sakalli-Uğurlu, 2010).

Women have also been shown to demonstrate hostile and benevolent attitudes towards other women, dependent on the role in which they are perceived. Becker and Swim (2011) found that the more females thought about career women whilst completing the hostile sexism scale the greater their endorsements of hostile sexist beliefs. In contrast, those who thought about housewives whilst completing the benevolent sexism scale the greater their endorsements of benevolent sexist beliefs.

Whilst there is a great deal of research linking hostile sexism to more negative evaluations of career women, there is limited research looking at whether hostile sexism also predicts discriminatory personnel decisions. Masser and Abrams

(2004) looked at the relationship between hostile sexism and evaluations of male and female job applicants who were being considered for a male sex-typed job role.

They found a negative relationship between hostile sexism scores and evaluations of the female job applicant; hostile sexists displayed more negative evaluations of the female candidate and were less likely to recommend hiring her than those who scored low on the measure. Furthermore, they were more likely to recommend hiring the male candidate. No relationships were observed between benevolent sexism and evaluations or hiring recommendations.

Whilst there is some evidence that explicit measures of gender attitudes are predictive of behaviour, there is also evidence to the contrary. For example, Rudman and Glick (2002) found no relationships between hostile or benevolent sexism scores and evaluations of career women. Salvaggio, Streich, and Hopper (2009) were unable to find a link between hostile sexist scores and evaluations of women when their applications were being considered for a male sex-typed role. To explain the absent relationship, Salvaggio et al. (2009) drew upon the flexible correction hypothesis (Wegener & Petty, 1995) that posits that people will try to correct for their negative evaluations in subsequent behaviour when they are motivated to not appear biased. To support this idea they asked participants to rate a gender ambiguous CV and found that those who scored high on hostile sexism and who also believed the applicant to be female evaluated the candidate less favourably. Not being told the gender of the applicant allows hostile sexists to act upon their attitudes in their evaluations whilst escaping accusations of sexism; they couldn't possibly be sexist if they did not know the applicants gender. However, both Salvaggio et al. (2009) and Rudman and Glick's (2002) findings could both have also been a consequence of people being unwilling to express their true attitudes. The expression of explicit hostile sexist attitudes are likely to frowned upon, leading to people concealing their true attitude.

Whilst the expression of hostile sexism is frowned upon, benevolent sexism is not. No links between benevolent sexism and discrimination in the workplace have been noted in previous research. However, it is possible that since the expression of benevolent sexism is more acceptable, those who believe the place of the women is in the home may continue to express their sexism on explicit measures and allow it to influence their decisions. For example, not promoting a woman may be justified as a good decision since it protects her from working longer hours and allows her to spend more time with her family. Therefore, individuals may see no harm in expressing these protective and paternalistic attitudes towards women, and its expression may not be seen as socially unacceptable. However, benevolent sexists still perceive women to be inferior and this could lead to them discriminating against them in the workplace. Hostile sexists on the other hand are either likely to mask their true attitude when responding to questionnaire items or correct for their attitude when making decision so as to not appear biased. As a consequence, no relationships between hostile sexism and personnel decisions would be expected.

Hypothesis 4a: Participants who have higher benevolent sexism scores are more likely to appoint men in promotion decisions.

Hypothesis 4b: Participants who have higher benevolent sexism scores are more likely to recommend a higher starting salary for men.

3.3 Revisiting the Explicit/Implicit Attitude Debate

3.31 Correlations between implicit and explicit measures

A key question explored in the attitude literature is whether there is correspondence between implicit and explicit attitude measures. To date, correspondence observations between implicit and explicit attitude measures have been mixed.

Some researchers have found low correlations between measures (e.g., Dovidio et al 1997) whilst others have noted strong relationships (e.g., Blair, Ma, & Lenton, 2001;

McConnell & Leibold, 2001; Nosek et al., 2002). Meta-analyses have shown that implicit and explicit attitude measures are often positively correlated but the strength of the correlation varies considerably (Lane, Banaji, Nosek, & Greenwald, 2007). For example, Hofmann, Gawronski, Gschwendner, Le, and Schmitt (2005) found implicit-explicit correlations varied between .01 and .47 with a mean correlation of .24, Nosek (2005) found a mean correlations of .36, whilst Greenwald et al. (2009) a number of negative correlations between implicit and explicit measures ranging from -.290 to .730 with a mean correlation of .21.

For gender, the results are also mixed. Nosek et al. (2002) found that the effects sizes for both implicit and explicit gender attitude measures were similar suggesting that at the time the data was gathered there was some convergence between implicit and explicit gender attitudes (Table 4). However, greater convergence was observed between implicit and explicit attitudes for men than for women; whilst men showed equally high gender attitudes on implicit and explicit measures, women's gender attitudes diverged on the two measures, with weaker gender attitudes on explicit measures than implicit measures. More recent research has revealed some divergence between implicit and explicit gender attitudes (Table 5) (Nosek et al., 2007), with larger effect sizes for implicit than explicit measures. However, in both studies effects sizes across implicit and explicit measures were high, ranging from 0.50 to .089 for explicit measures and 0.72 to 1.10 for implicit measures.

Table 4.

Effects sizes (Cohen's d) for implicit and explicit gender attitudes (taken from Nosek et al., 2002).

<i>Attitude</i>	<i>N</i>	<i>IAT</i>			<i>Self-report</i>		
		<i>All</i>	<i>Men</i>	<i>Women</i>	<i>All</i>	<i>Men</i>	<i>Women</i>
Gender-science	61,228	0.72	0.72	0.73	0.73	Not provided	Not provided
Gender-career	38,797	0.72	0.66	0.76	0.50	0.62	0.43

Table 5.

Effects sizes (Cohen's d) for implicit and explicit gender attitudes (taken from Nosek et al., 2007).

Attitude	N	IAT			Self-report		
		All	Men	Women	All	Men	Women
Gender-science	299,298	0.93	0.93	0.98	0.79	0.91	0.73
Gender-career	83,084	1.10	0.94	1.19	0.89	0.95	0.87

Two schools of thought exist for why and when correspondence between implicit and explicit measures will and will not be observed. The first relates to the willing element of the willing and able problem noted previously. Here, people try to conceal their true attitude on topics perceived to be socially sensitive; this leads them to respond to self-report measures in a way that displays them in a favourable light. Over recent years gender discrimination has become a prominent topic of discussion and this could be a reason for some departure from convergent implicit and explicit gender attitudes; people are now less willing to express gender attitudes on explicit measures. Since implicit measures are harder to fake (Steffens, 2004) and bypass socially desirability issues, true attitudes will only be revealed by such measures. As such, they are considered the 'bona fide pipeline' (Fazio et al., 1995). The low correlations between implicit and explicit measures can therefore be explained by individuals not responding truthfully to explicit measures. Convergence between implicit and explicit attitudes is thought to only occur when the attitude being assessed is not of a sensitive nature.

However, whether or not implicit measures do tap an individual's true attitude is debated. Dual process theorists assert that implicit measures purely tap another aspect of the attitude that self-report measures are unable to assess (Gawronski & Bodenhausen, 2006; Greenwald & Banaji, 1995) and that people can simultaneously hold different implicit and explicit attitudes towards the same attitude object; these attitudes may not be congruent (Wilson et al., 2000).

Whilst the notion of dual attitudes has gained traction with the advancement of dual process theories, the notion that people could have both an unconscious and conscious attitude can be seen as far back as Jungian theorising (Jung, 1971). According to Jung, "*the presence of two attitudes is extremely frequent, on conscious and the other unconscious*". Furthermore, Jung also posited that the content of each of these attitudes could differ. However, it is only with the advancement of attitude assessment techniques that such theorising has really been put to the test.

Implicit measures, such as the IAT, are thought to assess more automatic associations in the mind that are triggered whenever the perceiver comes into contact with the attitude object and elicit an evaluative response. Explicit measures, on the other hand, are thought to assess intentionally endorsed beliefs that result from the effortful processing of system 2 (Devine, 1989). This attitude is therefore much more controlled and thought through than the implicit attitude and may also account for why there is a divergence in measures that assess each. Dual attitude theorists propose the reason for the low correlations found in the research between implicit and explicit attitude measures is because there is a dissociation between the systems in the brain that evaluate attitude objects (Devine, 1989; Wilson et al., 2000). For example, repeated exposure to gender diversity issues and the adverse experiences faced by women may have led people to develop an attitude that is egalitarian towards women. However, at the same time they still may hold implicit associations that could hinder women's access to equal opportunities.

As noted previously, responses to measures of benevolent sexism are likely to be free from social desirability concerns. Whilst no longer endorsing hostile views towards women, people may maintain benevolent attitudes towards women, not seeing these as a problem due to the positive manner in which such views are framed. Therefore, correlations between explicit measures of benevolent sexism

and the IAT could be expected. However, correlations between hostile sexism and the IAT are not expected either because those with egalitarian views are unlikely to hold such explicit attitudes, or because those with hostile views are unlikely to be willing to express them on an explicit measures.

Hypothesis 6: There will be a positive correlation between benevolent sexism and the IAT; as benevolent sexism increases so will IAT scores.

3.32 Is the IAT the best predictor of gender discrimination?

A recent meta-analysis by Greenwald et al. (2009, p. 32) concluded that when a topic has high social sensitivity, *“the predictive validity of IAT measures significantly exceeded the predictive validity of self-report measures”*. Since effortful processing is often hindered during personnel decision-making due to time, motivation and/or cognitive limitations, the thoughtful consideration of an explicit attitude may be inhibited and consequently implicit attitudes are more likely to be a superior predictor of behaviour. So, whilst people may genuinely believe they are not biased (Pronin, 2007) nor explicitly endorse sexist or racist attitudes, implicit beliefs can still exist (Nosek et al., 2007). When implicit and explicit attitudes diverge, due to the unique circumstances surrounding personnel decision-making, it is the influence of the implicit attitude that is thought to prevail.

However, a closer look at the research suggests that there is limited evidence for such a conclusion and explicit measures may be equally valid predictors of behaviour. Whilst some research has found no significant relationships between explicit measures of racism and job hiring recommendations (Derous et al., 2009; Rooth, 2010; Son Hing et al., 2008), other IAT research has shown explicit measures of attitude to be significant predictors of behaviour (Blommaert et al., 2012; McConnell & Leibold, 2001; Rudman & Ashmore, 2007). For example, Blommaert et

al. (2012) found significant relationships between explicit measures, job suitability ratings and job hiring recommendations. In addition, Rudman and Ashmore (2007) found explicit measures of attitude to also act as significant predictors of behaviour; significant correlations between the Modern Racism Scale and verbal, defensive and offensive behaviour were observed, together with significant correlations between the feeling thermometer and defensive and offensive behaviours. In all cases the correlation coefficients, where significant, were larger than those displayed for the stereotype IAT. In their second study looking at the link between the IAT and budget cut decisions, correlations were observed between the feeling thermometer and budget decisions for both the Jewish-Christian and the Asian-White elements of the study. The feeling thermometer also predicted budget decisions for both these groups. So whilst they concluded that the stereotype IAT predicted discrimination and that these predictions were equal or superior to explicit measures, these findings do not completely rule out the value of explicit measures.

Furthermore, a recent meta-analysis by Oswald, Mitchell, Blanton, Jaccard, and Tetlock (2013), purely looking at the links between implicit race attitudes and behaviour, found that correlations observed between race-related criterion variables and the IAT were heavily influenced by studies of brain activity. Using brain activity as a proxy for discrimination is problematic since it is difficult to prove an empirical link to actual observed behaviour (Oswald et al., 2013). When neuroimaging studies were removed from the analysis, the IAT was found to be a poor predictor of all other behaviours including micro-behaviours, policy preferences and person perception. Furthermore, whilst explicit measures were also found to be weak predictors of such behaviours, they were found to perform equally as well, and on occasion better, than the IAT. As a consequence, Oswald et al. (2013, p. 188) concluded that *“the IAT provides little insight into who will discriminate against whom, and provides no more insight than explicit measures of bias”*.

For gender, there is limited evidence that the IAT outperforms explicit measures in predicting behaviour. As mentioned previously, since the expression of benevolent sexism may not be deemed inappropriate, responses to explicit measures of benevolent sexism are more likely to be free from social desirability concerns. As a consequence, they have the potential to be predictive of discriminatory personnel decisions and equally so to the IAT. Whilst Rudman and Glick (2002) found the IAT to be a better predictor of agentic women's social skills than any of the explicit measures employed, no other research has directly compared the ability of the IAT and explicit measures of gender attitudes to predict workplace discrimination. As a consequence, the superiority of the IAT over and above explicit measures remains unclear. Understanding when the IAT should be the tool of choice will help organisations to use it informatively and appropriately.

Hypothesis 7: Both the IAT and benevolent sexism will be equally valid predictors of personnel decisions.

3.4 Conclusion

Clarity on the predictive validity of the IAT may be gleaned by considering the differential effects cognition and affect have on behaviour and may shed light on what attitude type is more likely to lead to discrimination in the workplace. If the relationship between implicit attitude and behaviour depends more on either the cognitive or affective components of gender attitudes then there are implications for the manner in which discrimination is both detected and addressed within organisations.

Recent years have seen a divergence between implicit and explicit gender attitudes (Nosek et al., 2007) either because people are less willing to express negative gender attitudes or because they have developed implicit and explicit attitudes that

differ towards women in the workplace. As a consequence, hostile sexism may no longer be a valid predictor of behaviour. However, since benevolent sexism is often seen as positive and lacks social censure it is possible that this measure correlates with the IAT and will also predict workplace gender discrimination. Furthermore, benevolent sexism has the potential to be an equally valid predictor of behaviour as the IAT.

Chapter Four: Overview of Research Studies

4. Introduction

To explore the research hypotheses three empirical studies were conducted. Study 1 examined the ability of the IAT to predict discriminatory personnel decisions; those that favour men. It also explored whether the predictive validity of the IAT varies as a function of the attitude component it assesses, and the type of personnel decision it predicts. As such, study 1 tested hypotheses 1-3.

Studies 2 and 3 explored the predictive validity of an explicit measure of gender attitudes, namely benevolent sexism (hypothesis 4). It also re-tests hypotheses from study 1 to investigate the predictive validity of the IAT (hypothesis 5). Correlations between the implicit and explicit measures were tested (hypothesis 6) and then the predictive validity of benevolent sexism and the IAT were compared (hypothesis 7). Study 2 was conducted using a student sample, whereas study 3 utilised a sample of working professionals. Table 6 provides a summary of the all of the research hypotheses to be tested in each study. All research studies were given ethical approval by the Humanities and Social Sciences Research Ethics Committee at the University of Warwick.

4.1 Overview of Study 1

Implicit gender attitudes have been found to be widely held (Nosek et al., 2002; 2007) and equally so by men and women (Lynch, 2010; Nosek et al., 2002; 2007; Reuben et al., 2014; Rudman & Glick, 2002; Rudman & Kilianski, 2000).

Organisations are increasingly utilising the IAT as part of corporate diversity initiatives, however, implicit gender attitudes are only a problem if they influence behaviour and lead to discrimination (Amodio & Devine 2005; Amodio & Mendoza,

2010). At present there is a lack of empirical evidence linking the IAT to gender discrimination in the workplace.

Table 6.

Overview of studies and research hypotheses.

	Study 1	Study 2 (students) & 3 (professionals)
Hypotheses	<p>1a: Participants who have higher IAT scores are more likely to appoint men in promotion decisions.</p> <p>1b: Participants who have higher IAT scores are more likely to recommend a male related initiative (i.e., football) receives the most funding.</p> <p>2: The effect of IAT scores on personnel decisions will be observed for all forms of IAT (i.e., cognition and affect).</p> <p>3: Participants with higher combined IAT scores will be more likely to make personnel decisions that favour men (e.g., promote the male candidate, recommend a male related initiative receives the most funding).</p>	<p>4a: Participants who have higher benevolent sexism scores are more likely to appoint men in promotion decisions.</p> <p>4b: Participants who have higher benevolent sexism scores are more likely to recommend a higher starting salary for men.</p> <p>5a: Participants who have higher IAT scores are more likely to appoint men in promotion decisions.</p> <p>5b: Participants who have higher IAT scores are more likely to recommend a higher starting salary for men.</p> <p>6: There will be a positive correlation between benevolent sexism and the IAT; as benevolent sexism increases so will IAT scores.</p> <p>7: Both the IAT and benevolent sexism will be equally valid predictors of personnel decisions.</p>

The information processing limitations often surrounding personnel decision-making make it particularly vulnerable to the influence of implicit attitudes, particularly when the decision itself is not emotionally difficult. Therefore, the first study explores

whether the IAT predicts discrimination in three key personnel decision domains: promotion, redundancy and budget allocation. Similar to observations in the area of race (e.g., Derous et al., 2009; Rooth, 2010; Yogeeswaran & Dasgupta, 2010), significant links between the IAT and personnel decision-making are expected on the promotion task and the budget task. However, due to the negative impact redundancy has on an individual such decisions are likely to be emotionally difficult and thus prompt a greater sense of responsibility on the part of the decision-maker and lead to more effortful processing. When greater effortful processing is undertaken it is less likely that implicit attitudes will influence the decision outcome (Devine, 1989; Wilson et al., 2000).

Hypothesis 1a: Participants who have higher IAT scores are more likely to appoint men in promotion decisions.

Hypothesis 1b: Participants who have higher IAT scores are more likely to recommend a male related initiative receives the most funding.

The attitude component that an IAT assesses may shed light on research discrepancies. Whilst there is evidence that, for race at least, affect-based IATs are superior predictors of behaviour (Green et al., 2007; McConnell & Leibold, 2001; Ziegert & Hanges, 2005), little is known about the superiority of affect over cognition in predicting gender discrimination, and both have the potential to be valid predictors of personnel decisions that favour men. Research on affect-based gender IATs is limited, particularly in contexts where women violate gender roles. Furthermore, the predictive validity of such IATs has not yet been researched. Therefore, one aim of study 1 will be to pilot a Gender-Affect IAT to determine its ability to measure attitudes towards women who violate traditional gender roles, and to see if such attitudes predict personnel decisions that favour men.

Hypothesis 2: The effect of all IAT scores on personnel decisions will be observed for all forms of IAT (i.e., cognition and affect).

Scores which are high on both cognition and affect IATs suggest there is coherence and consistency in the attitude held toward women. In such circumstances it is argued that the IAT is more likely to predict personnel decisions than when scores on affect and cognition IATs diverge. Divergence between the attitude components weakens the strength of the overall attitude towards women thus reducing the predictive utility.

Hypothesis 3: Participants with higher combined IAT scores will be more likely to make personnel decisions that favour men (e.g., promote the male candidate, recommend a male related initiative receives the most funding).

Study 1 employed three IATs, each one assessing the different components of an attitude. The Gender-Career IAT assesses symbolic beliefs about the roles and traditions associated with men and women in society. Specifically, this IAT measures the speed and accuracy at which respondents categorise men and women with attributes associated with either career or family. Based on theory it is expected that symbolic beliefs about the traditional roles of men and women in society will be predictive of discrimination in the workplace. For example, participants who more easily associate men with career and women with family may be more likely take actions that preserve men in the role of breadwinner or leader, and ensure women remain in their traditional roles. As such, it is expected that men are more likely to be promoted than women by those who more strongly hold these implicit associations. However, since redundancy decisions may evoke more effortful processing on the part of the decision-maker, implicit symbolic beliefs are unlikely to predict redundancy decisions.

The Gender-Stereotype IAT assesses the stereotypes associated with both men and women. Specifically, this IAT measures the speed and accuracy at which respondents categorise men with traits associated with competence and women with traits associated with warmth. Since theorising suggests that it is the mismatch between the traits associated with women and those required to successfully fulfill a male sex-typed role that leads to discrimination (Cejka & Eagly, 1999; Eagly, 1987; Glick et al., 1995; Gorman, 2005; Heilman, 1983; Heilman & Eagly, 2008), it is expected that participants who more easily associate men with competence and women with warmth will be more likely to promote the male into a leadership position. As before, since redundancy decisions may evoke more effortful processing on the part of the decision-maker, implicit stereotypes are unlikely to predict redundancy decisions.

The Gender-Affect IAT measures the strength of associations of good and bad words with pictures of men and women depicted in male sex-typed roles. Should the perception of women in male-typed roles lead to a negative affective reaction participants will more easily associate pictures of men with good words and pictures of women with bad words. This negative reaction will lead to women being penalized in personnel decision-making. The stronger the negative reaction the less likely women will be promoted. Again, due to more effortful processing, affect is unlikely to predict redundancy decisions.

4.2 Overview of Study 2

Due to social desirability concerns, the predictive validity of explicit attitude measures has been criticised (Crosby et al., 1980; LaPiere, 1934; McNemar, 1946). However, attitudes towards women are not wholly negative (Glick & Fiske, 1996) and when the expression of an explicit gender attitude is not frowned upon it may be predictive of behaviour. Whilst links between hostile sexism and discriminatory behaviour are

lacking, possibly due to demand characteristics when completing the Ambivalent Sexism Inventory (ASI: Glick & Fiske, 1996), links may be observed with benevolent sexism. Benevolent sexism is characterised by subjectively positive thoughts and feelings towards women who need protecting by men. The expression of such paternalistic views are less likely to be frowned upon than hostile sexism and as a consequence respondents may be more willing to openly report their attitudes in this area. However, benevolent sexists still perceive women to be inferior and this could lead them to discriminate against them in the workplace. The link between benevolent sexism and discriminatory personnel decisions has yet to be explored in the literature.

Hypothesis 4a: Participants who have higher benevolent sexism scores are more likely to appoint men in promotion decisions.

Hypothesis 4b: Participants who have higher benevolent sexism scores are more likely to recommend a higher starting salary for men.

Relationships between the IAT and personnel decisions will also be explored in the second study, specifically looking at the predictive validity of the tool.

Hypothesis 5a: Participants who have IAT scores are more likely to appoint men in promotion decisions.

Hypothesis 5b: Participants who have higher IAT scores are more likely to recommend a higher starting salary for men.

Correlations observed between implicit and explicit attitude measures vary. For gender, some research has shown converge between the measures (e.g., Nosek et al., 2002), whilst other research has shown divergence between implicit and explicit gender attitudes (e.g., Nosek et al., 2007). Correspondence between measures is

more likely to occur when the people are both willing and able to express their explicit attitude openly. Since the expression of benevolent sexist views are less likely to be frowned upon, it is argued that there will be correspondence between benevolent sexism measures and the IAT. However, since the expression of hostile sexist attitudes are prone to social desirability concerns there is unlikely to be a relationship between hostile sexism and the IAT.

Hypothesis 6: There will be a positive correlation between benevolent sexism and the IAT; as benevolent sexism increases so will IAT scores.

Whilst the IAT is said to be a superior predictor of behaviour when the topic is of a sensitive nature (Greenwald et al., 2009), for gender there is no evidence to support this assertion. This is a gap in the literature that this thesis aims to address. Due to the potential absence of social desirability concerns attached to the measure, it is argued that benevolent sexism has the potential to be an equally valid predictor of personnel decisions as the IAT.

Hypothesis 7: Both the IAT and benevolent sexism will be equally valid predictors of personnel decisions.

Study 2 sets out to address the gaps in the literature and to provide a deeper understanding of the relationship between explicit and implicit measures of gender attitudes. Implicit gender attitudes were assessed via two of the IATs used in study 1, namely, the Gender-Career IAT and the Gender-Stereotype IAT. Explicit gender attitudes were measured using The Ambivalent Sexism Inventory (ASI: Glick & Fiske, 1996); this produces a score for both hostile and benevolent sexism. Discriminatory behaviour was assessed by participants completing personnel decision tasks in three areas; promotion, redundancy and salary allocation.

4.3 Overview of Study 3

The external validity of implicit and explicit attitude measures has been questioned in the literature (e.g., Blanton et al., 2009; Blanton & Jaccard, 2008; Landy, 2008; Mitchell & Tetlock, 2006; Salvaggio et al., 2009) raising the question of whether the results from student samples reflect that of real decision-makers. The purpose of study 3 is to explore whether the IAT and explicit measures of benevolent sexism are predictive of behaviour when the sample consists of working professionals, as opposed to students. The materials, method and procedure were the same as that used in study 2.

Chapter Five: Study 1 Method, Results and Discussion

5. Introduction

The purpose of this chapter is to report the findings pertaining to the first study, which explored the links between gender IATs and personnel decision-making. Prior research has found that implicit gender attitudes are widely held (Nosek et al., 2002; 2007) and equally so by men and women (Lynch, 2010; Nosek et al., 2002; 2007; Reuben et al., 2014; Rudman & Glick, 2002; Rudman & Kilianski, 2000). Whether such implicit associations are predictive of gender discrimination in the workplace is unknown, with current research providing mixed findings (e.g., Latu et al., 2011; Levinson & Young, 2010; Rudman & Glick, 2002).

The IAT's ability to predict behaviour may depend on the attitude component the tool assesses – affect or cognition. Whilst there is evidence that, for race at least, affect-based IATs are superior predictors of behaviour (Green et al., 2007; McConnell & Leibold, 2001; Ziegert & Hanges, 2005), little is known about the superiority of one component over another in predicting gender discrimination. As noted previously, affect-based gender IATs have not been used in prior research. Therefore, one aim of the present study is to pilot the Gender-Affect IAT to determine its ability to both measure implicit affect-based attitudes towards women who violate traditional gender roles, and to see if such attitudes predict personnel decisions that favour men.

Additionally, the nature of the personnel decision itself may impact the predictive validity of the IAT, with some decisions prompting more effortful processing than others and therefore countering the impact of implicit attitudes. To date, little is known about how the decision type impacts the predictive utility of the IAT.

Study 1 sets out to address the gaps in the literature and to provide a deeper understanding on how the IAT behaves with regards to gender. The research hypotheses to be tested in study 1 are:

Hypothesis 1a: Participants who have higher IAT scores are more likely to appoint men in promotion decisions.

Hypothesis 1b: Participants who have higher IAT scores are more likely to recommend a male related initiative (i.e., football) receives the most funding.

Hypothesis 2: The effect of all IAT scores on personnel decisions will be observed for all forms of IAT (i.e., cognition and affect).

Hypothesis 3: Participants with higher combined IAT scores will be more likely to make personnel decisions that favour men (e.g., promote the male candidate, recommend a male related initiative receives the most funding).

5.1 Method

5.11 Participants

Participants were 89 students from the University of Warwick. Of these participants, 50 were female and 39 were male. Additionally, 35 identified as being white and 54 as members of other ethnic groups. A Chi-square test revealed no race differences by gender, $X^2(1) = 2.57, p = .11$. Just under half (47%) of the sample reported as native English speakers. A Chi-square test revealed that there were significant gender differences on native language, $X^2(1) = 7.97, p = .01$ with less female participants reporting English as their native language than male participants. Participants' age ranged from 18 to 50 with a mean of 22.8 ($SD = 4.1$) years. A Mann-Whitney U-test revealed that median age was not statistically significant between males and females, $U = 1007.5, z = .27, p = .79$. Finally, 72% of participants reported that they had work experience prior to university and so were familiar with

the workplace context. Again, a Chi-square test revealed no work experience differences by gender, $X^2(1) = .25, p = .62$.

5.12 Measuring implicit gender attitudes

As mentioned previously, the tripartite theory of attitudes (Rosenberg & Hovland, 1960) posits that an attitude consists of cognitive, affective and behavioural processes (Breckler, 1984; Eagly & Chaiken, 1993; Kothandapani, 1971; Ostrom, 1968; Zajonc & Markus, 1982; Zanna & Rempel, 1988). The cognitive component consists of not only the stereotypes a given individual associates with the attitude object but also the symbolic beliefs they hold about that object (Esses et al., 1993; Haddock et al., 1993). The affective component refers to the level of arousal an individual feels in response to the object in question and is often characterized by pleasant or unpleasant arousal, feelings or emotion. To assess each attitude component, three IATs were used, two of which were developed specifically for the present research. Inquisit 4.0 (2013) software and IAT computer scripts were used as a basis to develop each of the IATs.

5.12i The Gender-Career IAT

Used in prior research (e.g., Lynch, 2010; Nosek et al., 2002; 2007), the Gender-Career IAT assesses symbolic beliefs about the roles and traditions associated with men and women in society. Specifically, this IAT measures the speed and accuracy at which respondents categorise men and women with attributes associated with either career or family. Table 7 provides an overview of the names and attributes used in the Gender-Career IAT. The Inquisit IAT computer script included some names that were gender neutral (i.e., could be associated with both men and women). Since this could impact how participants categorised male and female, these names were changed to ensure they were gender specific (e.g., Daniel was changed to David, Michelle was changed to Maria).

Table 7.

IAT attributes and targets used for the Gender-Career IAT.

Attribute		Target	
<i>Career</i>	<i>Family</i>	<i>Male</i>	<i>Female</i>
Management	Home	Ben	Julia
Professional	Parents	John	Maria
Corporation	Children	David	Anna
Salary	Family	Paul	Emily
Office	Marriage	James	Rebecca
Business	Wedding		
Career	Relatives		

The Gender-Career IAT consists of a total of 180 trials, separated across seven test blocks. Blocks 1, 2 and 5 are practice trials, with blocks 3, 4, 7 and 8 being the critical double categorization trials from which IAT scores are calculated. The first block requires participants to categorise male and female names by pressing the left key (E) for male words and the right key (I) for female words (Figure 6).

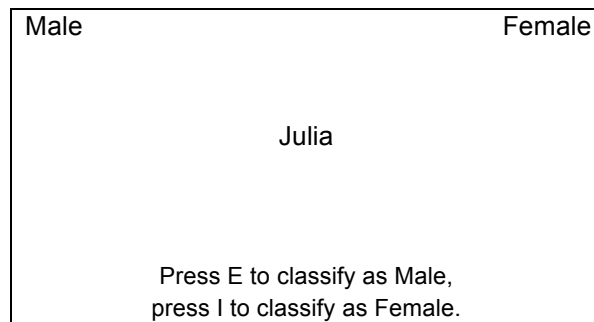


Figure 6. Example IAT screen for block 1 to classify female name into male or female category.

The second block requires participants to categorize career and family related attributes by pressing the left key (E) for attributes related to career and the right key (I) for attributes related to family (Figure 7).

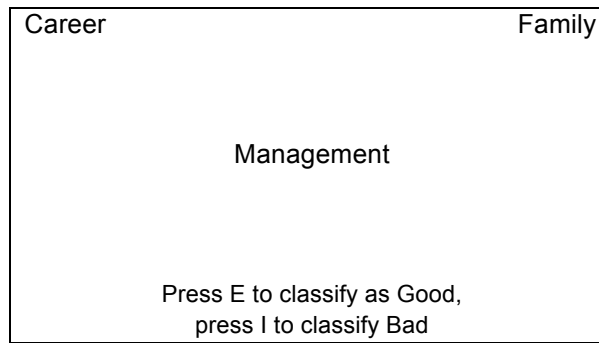


Figure 7. Example IAT screen for block 2 to classify career attribute into career or family category.

Blocks 3 and 4 present stimuli from all four categories sequentially. These blocks were presented in a manner either consistent or inconsistent with symbolic beliefs about gender roles. For example, the consistent order involved male and career concept labels being presented together on the left-hand side, and the female and family concept labels presented together on the right-hand side (Figure 8).

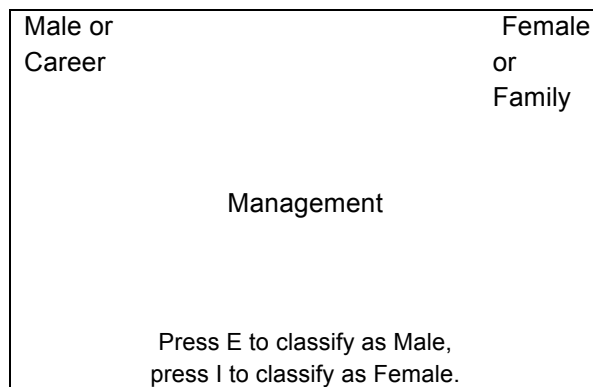


Figure 8. Example IAT screen for block 3 and 4 to classify career attribute into career or family category.

When inconsistent, the female target label was paired with the career attribute label, whereas the male target label was paired with the family attribute label. Participants again either press the left-hand key (E) or right-hand key (I) depending on the word displayed in the middle of the screen and the category to which it belongs. In the fifth block, participants were once again presented with male and female names, but in this block the concept labels were switched; female words were correctly categorised

by pressing the left key (E) and male words were correctly categorized by pressing the right key (I). In Block 6 and 7, double categorization were again presented, but this time they were opposite to that presented in blocks 3 and 4. For example, if pairings consistent with symbolic beliefs were displayed in blocks 3 and 4, then blocks 6 and 7 would present pairings inconsistent with symbolic beliefs. The side in which male and female target labels were presented was counterbalanced; half participants were presented with the female target label first on the left-hand side, the other half with the female target label first on the right-hand side. Table 8 outlines the structure of a Gender-Career IAT that is consistent with symbolic beliefs.

Table 8.

Example of the structure of the Gender-Career IAT.

Block 1	20 trials	Career	Family
Block 2	20 trials	Male	Female
Block 3	20 trials	Male + Career	Female + Family
Block 4	40 trials	Male + Career	Female + Family
Block 5	20 trials	Female	Male
Block 6	20 trials	Female + Career	Male + Family
Block 7	40 trials	Female + Career	Male + Family

5.12ii The Gender-Stereotype IAT

The Gender-Career IAT was used as a basis to develop a Gender-Stereotype IAT.

The names used were the same as those in the Gender-Career IAT but the attributes were amended to reflect stereotypes associated with men and women.

As noted previously, evaluations of groups fall across two dimensions (Judd et al., 2005) often referred to as “warmth” and “competence” (Cuddy et al., 2007; 2008; 2011; Fiske et al., 2002; Judd et al., 2005) or “agency” and “communality” (Abele & Wojciszke, 2007; Eagly et al., 2000; Williams & Best, 1990). Women are typically associated with warmth and communal traits (i.e., caring, helpful and sensitive),

whereas men are associated with competence and agentic (i.e., assertive, dominant and decisive). Therefore, the Gender-Stereotype IAT was developed to assess the strength of these gender stereotypical associations. The list of attribute words to be used in the IAT was developed by consulting literature that identified traits associated with communality, warmth, agency and competence (e.g., Cuddy et al., 2007; Cuddy, Fiske, & Glick, 2004; Cuddy et al., 2011; Eagly & Johannesen Schmidt, 2001; Eagly & Karau, 2002; Eagly & Steffen, 1984; Heilman, 2012; Rudman & Glick, 2002; Rudman & Kilianski, 2000; Rudman & Phelan, 2008; Rudman, Greenwald, & McGhee, 2001b). The full list of words generated can be found in Appendix A.

To minimise ambiguity of category membership (Rudman, 2011) literature on gender stereotypes (e.g., Bem, 1981; Blair & Banaji, 1996; Cejka & Eagly, 1999; Diekmann & Eagly, 2000; Eagly & Mladinic, 1989; Williams & Best, 1990) was consulted to ensure that the warmth and competence words selected were also gender related; attributes selected to reflect warmth were linked to stereotypical traits also associated with women, attributes selected to reflect competence were also associated with stereotypical traits of men. Furthermore, all attribute descriptors were positive, since the use of mixed positive and negative descriptors yields method-bound gender differences in the way the IAT is completed; individuals have a tendency to associate themselves and their gender-based in-groups with positive social desirable traits (Greenwald et al., 2002). Contrasting purely positive (or negative) attributes overrides in-group bias effects (e.g., Amodio & Devine, 2006; Rudman, Greenwald, & McGhee, 2001b). Table 9 provides an overview of the names and attributes used in the Gender-Stereotype IAT.

The procedure for completing the Gender-Stereotype IAT was the same as for the Gender-Career IAT. Table 10 outlines the structure of a Gender-Stereotype IAT that is consistent with stereotypical beliefs about the traits associated with men and

women. Again, the double categorisation tasks were presented in a counterbalanced order; half of the participants would complete the IAT in the way presented in Table 10, the other half would complete it with blocks 6 and 7 replacing blocks 3 and 4, and blocks 3 and 4 replacing blocks 6 and 7.

Table 9.

IAT attributes and targets used for the Gender-Stereotype IAT.

Attribute		Target	
<i>Competitive</i>	<i>Warm</i>	<i>Male</i>	<i>Female</i>
Determined	Caring	Ben	Julia
Aggressive	Gentle	John	Maria
Competitive	Understanding	David	Anna
Dominant	Compassionate	Paul	Emily
Forceful	Sympathetic	James	Rebecca
Decisive	Warm		
Competent	Cooperative		

Table 10.

Example of the structure of the Gender-Stereotype IAT.

Block 1	20 trials	Competitive	Warm
Block 2	20 trials	Male	Female
Block 3	20 trials	Male + Competitive	Female + Warm
Block 4	40 trials	Male + Competitive	Female + Warm
Block 5	20 trials	Female	Male
Block 6	20 trials	Female + Competitive	Male + Warm
Block 7	40 trials	Female + Competitive	Male + Warm

5.12iii The Gender-Affect IAT

Coined the '*women-are wonderful-effect*' (Eagly & Mladinic, 1994), prior research has found that both men and women evaluate women more positively on explicit attitude measures (Eagly et al., 1991; Eagly & Mladinic, 1989; 1994; Haddock & Zanna, 1994; Skowronski & Lawrence, 2001). Research on implicit measures of affect-based gender attitudes reveal a slightly different pattern; the '*women-are wonderful-effect*' remains for female respondents whereas the pro-female bias is diminished for

male respondents with them displaying more neutral affect-based gender attitudes (Cvencek, Greenwald, & Meltzoff, 2011; Nosek & Banaji, 2001; Richeson & Ambady, 2001; Rudman & Goodwin, 2004). As noted previously, the context within which a woman is perceived greatly influences explicit attitudes towards her; when perceived in traditional gender roles, attitudes are likely to be positive. In contrast, when perceived in non-traditional roles attitudes are likely to be negative (Glick et al., 1997).

Context has also been shown to influence implicit attitudes. When women are depicted in non-traditional roles, research has found that the pro-female bias disappears for male respondents but not female respondents (Carpenter & Banaji, 1998; Richeson & Ambady, 2001; Skowronski & Lawrence, 2001). Skowronski and Lawrence (2001) found that whilst female participants exhibited a pro-female bias regardless of context, male participants only exhibited a pro-female bias when occupational context was absent; when women were portrayed as soldiers, a traditionally male sex-typed role, the pro-female bias disappeared. Carpenter and Banaji (1998) found that male participants exhibited a pro-female bias when classifying males and female names in the absence of context, but when asked to classify male and female leaders, this pro-female bias disappeared with men displaying a preference for their in-group. Richeson and Ambady (2001) found that male participants IAT associations were more negative toward women when they were told that they would be working with a woman that would be their superior, as opposed to their peer or subordinate. The context within which an IAT is set has also been shown to influence racial attitudes (Barden, Maddux, Petty, & Brewer, 2004; Mitchell, Nosek, & Banaji, 2003). Barden et al. (2004) found that participants' implicit attitudes towards Asians were more positive when they were depicted in a classroom context than a basketball context, whereas attitudes towards black people

were more positive when they were depicted in a basketball context, as opposed to a classroom context.

In order to capture implicit affect-based attitudes towards women who violate traditional gender roles, it was necessary to depict women in male sex-typed roles. A picture, as opposed to a word, IAT was used since pictures are better able to convey contextual information. Prior research has shown no differences in effect sizes between picture based and word based IATs (Nosek et al., 2002; Rudman & Ashmore, 2007) and therefore the format of this IAT should not impact its performance in comparison to the word-based cognition IATs.

The Race-Picture IAT computer programme was used to develop the Gender-Affect IAT. The Race-Picture IAT uses pictures of black and white faces for the target stimuli and pleasant and unpleasant words for the attendant attitude attributes. The attributes used in the Gender-Affect IAT were the same as the Race-Picture IAT, but the images were amended and the target categories renamed 'Male' and 'Female'. Since backlash towards women primarily occurs when they violate traditional roles the decision was made to use images that depicted men and women in male sex-typed professions. In line with the literature, the perception of women in male-typed roles should lead to a negative affective reaction and thus participants response times should be quicker when pictures of men in male-dominated careers share the same response key with good words, and pictures of women in male-dominated careers share the same response key with bad words. In contrast, slower reaction times should be observed when pictures of women share the same response key as good words, and pictures of men share the same response key as bad words.

Once the context within which to frame the IAT had been decided, literature that identified male and female sex-typed professions was reviewed (e.g., Banaji &

Hardin, 1996; Beggs & Doolittle, 1993; Cejka & Eagly, 1999; Lenton, Blair, & Hastie, 2001). The list of professions generated can be found in Appendix B. From this list, professions were selected that could be easily identified as male sex-typed roles. For example, professions that have uniforms (e.g., army officer, airline pilot) are quickly identified and unambiguous in terms of their gender sex-type. Whereas, images of a men and women in suits are unlikely to convey information about the sex-type of the role since both men (e.g., executives) and women (secretaries) could wear suits to work.

Once the professions were selected, internet searches were conducted to find two pictures of individuals in each of the professions. Adobe Photoshop (Version 8.0) was used to remove the head of the person in each image and replace it with either the head of a male, or the head of a female. Additionally, background information was added to the image to further portray the nature of the profession. For example, an aeroplane was in the background of the images for the pilot. To ensure gender was the only salient feature, pictures of white individuals were used. Examples of the images used can be found in Figure 9 (see Appendix C for all images). Table 11 provides an overview of the pictures and attributes used in the Gender-Affect IAT.



Figure 9. Examples of male sex-typed role stimuli used in the Gender-Affect IAT.

Table 11.

IAT attributes and targets used for the Gender-Affect IAT.

Attribute		Target	
<i>Good</i>	<i>Bad</i>	<i>Male</i>	<i>Female</i>
Marvelous	Tragic	Male Judge	Female Judge
Superb	Horrible	Male Pilot	Female Pilot
Pleasure	Agony	Male Surgeon	Female Surgeon
Beautiful	Painful	Male Army Officer	Female Army Officer
Joyful	Terrible	Male Engineer	Female Engineer
Glorious	Awful	Male Orchestra Conductor	Female Orchestra Conductor
Lovely	Humiliate		
Wonderful	Nasty		

As with the other IATs, the Gender-Affect IAT consists of a total of 180 trials, separated across seven test blocks. Blocks 1, 2 and 5 are practice trials, with blocks 3, 4, 7 and 8 being the critical double categorization trials from which IAT scores are calculated. In the first block participants categorise male and female images by pressing the left key (E) if the image is of a male and the right key (I) when the image is of a female (Figure 10).

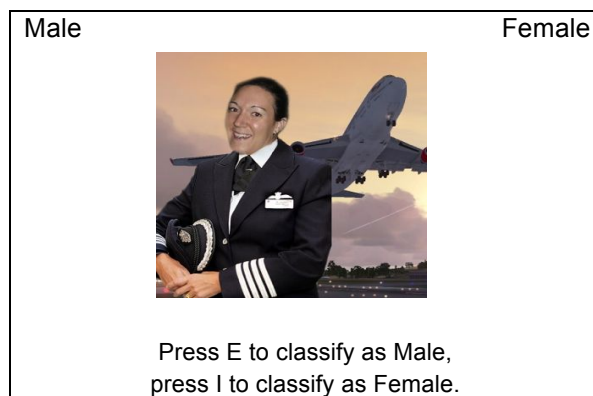


Figure 10. Example IAT screen for block 1 to classify an image of a female into the male or female category.

In the second block participants categorize good and bad related attributes by pressing the left key (E) for attributes related to good and the right key (I) for attributes related to bad (Figure 11).

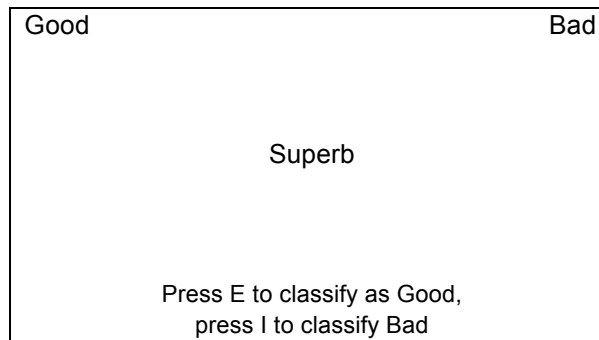


Figure 11. Example IAT screen for block 2 to classify a good attribute into the good or bad category.

Blocks 3 and 4 present stimuli from all four categories sequentially. These blocks were presented in a manner either consistent or inconsistent with affective reactions to women in male sex-typed roles. For example, the consistent order involved male and good concept labels being presented together on the left-hand side, and the female and bad concept labels presented together on the right-hand side (Figure 12).

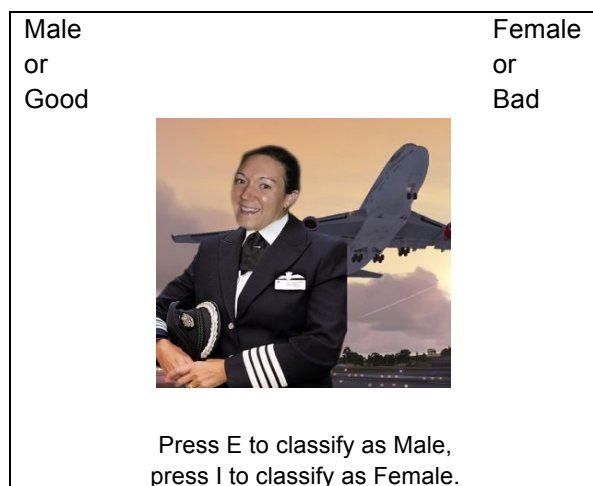


Figure 12. Example IAT screen for block 3 and 4 to classify the image of a female into the male or female category.

When inconsistent, the female target label was paired with the good attribute label, whereas the male target label was paired with the bad attribute label. Participants again either press the left-hand key (E) or right-hand key (I) depending on the word or image displayed in the middle of the screen and the category to which it belongs. In the fifth block, participants were once again presented with male and female images, but in this block the concept labels were switched; female images were correctly categorised by pressing the left key (E) and male images were correctly categorized by pressing the right key (I). In Block 6 and 7, double categorization were again presented, but this time they were opposite to that presented in blocks 3 and 4. The side in which male and female target labels were presented was counterbalanced; half of the participants were presented with the female target label first on the left-hand side, the other half with the female target label first on the right-hand side. Table 12 outlines the structure of a Gender-Affect IAT that is consistent with expected affect-based reactions to men and women when presented in male-dominated career roles.

Table 12.

Example of the structure of the Gender-Affect IAT.

Block 1	20 trials	Good	Bad
Block 2	20 trials	Male (pictures)	Female (pictures)
Block 3	20 trials	Male + Good	Female + Bad
Block 4	40 trials	Male + Good	Female + Bad
Block 5	20 trials	Female	Male
Block 6	20 trials	Female + Good	Male + Bad
Block 7	40 trials	Female + Good	Male + Bad

5.13 Measuring personnel decisions

Discriminatory behaviour was assessed by participants completing personnel decision tasks in three areas; promotion, redundancy and budget allocation. Whilst personnel decisions such as selection, promotion and budget allocation have been

explored in prior IAT research (e.g., Levinson & Young, 2010; Rudman & Ashmore, 2007; Rudman & Glick, 2002; Ziegert & Hanges, 2005), there is no research on the IAT and redundancy decisions.

Participants were informed that Ragley, a fictitious company, was undergoing a major restructure and needed to appoint a new Head of Sales and make some spending cutbacks. They had been asked to help Ragley make the decisions. In the promotion task, participants were presented with a job description for a Head of Sales role together with profiles from four individuals who had put themselves forward for the vacant position. The role selected was male sex-typed (a sales and a leadership position) and the job description contained stereotypically masculine traits, typical of such job descriptions. The candidate profiles were drafted by systematically ensuring they all contained the same substantive information but worded in different ways. The sex of the candidate was indicated via the candidate's name and there were two male and two female candidates. The application of the candidate's name, and hence gender, to each profile was counter-balanced. No other personal information was included. All else was equal in terms of knowledge, skills and experience.

The participants' task was to review the job description and candidate information and then rank the candidates in the order they would recommend them for the vacant position. The instructions emphasised the person they ranked as number one would be the person promoted. The gender of the person selected for promotion was the main outcome variable to be explored.

In the budget decision task participants were informed that as part of the cutbacks within Ragley a number of initiatives within the business were under review. Specifically, funding needed to be cut from three areas and ideally one of them

cancelled completely. These included men's 5-a-side football, women's netball and the supply of fruit in every office. The participant's task was to rank order which initiative should receive the most funding and which should receive the least funding and to indicate if funding should be completely withdrawn from any of three activities in question. Of critical interest was where football and netball were ranked in relation to each other. The dependent measure was therefore the initiative selected to receive the most funding out of football and netball.

In the redundancy decision task participants were informed that due to the tough economic climate Ragley also needed to make some cutbacks to the number of people in the finance team. Four individuals had been selected for potential redundancy and their task was to review the information provided and decide which individual should be made redundant. Again, the candidate profiles were drafted by systematically ensuring that they all contained the same information only worded in different ways. Gender was indicated via the individual's name and the use of he/she descriptors. There were two male and two female candidates. The application of names, and hence gender, was once again counter-balanced across the candidate profiles. The dependent measure was the gender of the individual selected for redundancy.

5.14 Procedure

Prior to running the main experiment a pilot study was conducted to establish whether the promotion and redundancy profiles were equally matched in terms of content when no gender was attached. A total of 89 participants took part in the study, of whom 56% were women. The sample consisted of both full-time workers (36%) and students (64%). A one-sample Chi-square test revealed that when no gender was attached there were no significant differences between the profile selected for promotion ($p = .74$) nor redundancy ($p = .11$). Furthermore, Chi-square

tests showed that there were no differences between the profiles selected for participant gender ($p = .11$; $p = .49$ for promotion and redundancy respectively) or occupational status ($p = .16$; $p = .37$ for promotion and redundancy respectively). Whilst there was no significant difference between the primary initiatives selected to receive the most funding ($p = .07$), there were significant differences between second and third choices. This result is in line with expectations. It was not possible to present the initiatives in a gender-neutral manner during the pilot hence some expression of gender bias would be likely. As noted previously, participants may opt for the neutral choice when selecting the initiative to receive the most funding due to social desirability concerns. It is possible that once the main decision is made they feel more at ease to express their bias in their second and third choices.

For the main study, participants were students from the University of Warwick who were recruited via the Decision Research at Warwick (DR@W: 2013) system for attracting research participants. Participants were invited to take part in a session that contained a number of decision tasks and questionnaires and were informed that the session would take a maximum of 90 minutes and that they would be paid £9 for their participation. A total of 97 participants signed up for the research. Eight participants were excluded from the analysis either because their error rates on the IATs were in excess of 25% (Rudman, 2011) or because all study tasks were completed within an unusually short period of time, suggesting the participant was not fully attending to the task. The remaining sample consisted of 89 participants.

On arrival at the laboratory each participant was allocated to a cubicle that contained a computer and a folder. They were asked not touch the computer or any of the research materials until instructed to do so. To avoid social tuning or experimenter effects (Lowery, Hardin, & Sinclair, 2001), the gender of the main researcher welcoming participants to the laboratory and administering the instructions was

counter-balanced across the data gathering sessions. Once all participants had arrived, the researcher read the instructions for the session. First, participants were informed that all of their responses would be anonymous, that their participation was voluntary and that they were free to withdraw at anytime without giving any reason and without being penalised or disadvantaged in any way. These rights were also made explicit in the information sheet and informed consent forms (Appendix D). Since knowledge of the purpose of the study may have influenced how participants responded, the true purpose of the study disguised. Therefore, next the participants were informed that the session contained a number of questionnaires and decision tasks each related to different research projects being conducted within the university. In reality, however, the study consisted of two interrelated phases.

The participants were told that some of the tasks they would complete would be on the computer, whereas others would be paper-based. The order in which they completed the study was counterbalanced; approximately half of the participants completed the personnel decision tasks first and the computer-based measures second, whereas the other half completed the computer-based measures first followed by the personnel decision tasks. Instructions were presented in the sequence appropriate to the order in which a given participant would complete each of the two phases. For example, for those participants completing the computer-based measures followed by the personnel decision tasks the instructions were as follows:

“The first set of tasks you will complete today will be on the computer. Instructions for these will be given on the screen. The first piece of information you will be asked for is your participant number. This is located on the yellow post-it note attached to your monitor. Once you have completed all the computer-based tasks you can start the paper-based tasks.

Under your keyboard you will see a cardboard folder. The instructions for the paper-based decision tasks are included in the folder. In addition, the folder contains three decision tasks, each presented in separate plastic folders. Work through the tasks in numerical order. Place each task back in the plastic folder and do not return to a task once completed. Once you have completed all of the paper-based decision tasks please put them all back in the cardboard folder and place them under your keyboard.”

A high cognitive load task was completed between the each of the two phases of the study to further distract participants from the true nature of the experiment.

Specifically, participants completed the Visual Digit Span test (Lumiley & Calhoun, 1934). Inquisit 4.0 (2013) software was used to programme all of the computer-based measures. This software uses the improved scoring algorithm (Greenwald et al., 2003) to calculate the *D*-score from the IAT data. The order in which the IATs were presented was counter-balanced to minimise order and practice effects. To minimise the potential effects of subject fatigue in completing consecutive IATs, demographic data was collected between the second and third IAT, as recommended by Rudman (2011). Finally, the order in which participants completed the personnel decision tasks was counter-balanced to minimize potential order effects.

Once all participants had completed all elements of the study they were paid for their participation and given an information sheet explaining the main focus of the experiment. The decision materials for Study 1 can be found in Appendix E.

5.2 Results

Prior to testing the main research hypotheses, exploratory analyses were conducted in order to better understand both the IAT data and the decision data and to see

whether the dependent and independent variables differed by demographic variables, including gender, age, ethnicity, work experience and whether English was the participant's native language. All data was analysed using IBM SPSS (v.21) for Mac. The improved IAT scoring algorithm was used to calculate *D*-scores for each participant on each IAT (Greenwald et al., 2003). Where data violated test assumptions, alternative non-parametric tests were run. No data transformations were conducted.

5.21 Preliminary analysis of IAT data

To begin, the internal consistency of each IAT was assessed. Internal consistency tests for the IAT are designed to assess whether measured response patterns are consistent across trial blocks. It is worth noting, however, that it is difficult to gauge an acceptable benchmark for reliability for the IAT since a number of empirical studies do not report internal consistencies (e.g., Blommaert et al., 2012; Deros et al., 2009; Green et al., 2007; McConnell & Leibold, 2001; Rudman & Heppen, 2003; Rudman & Kilianski, 2000; Vanman et al., 2004; Williams, Paluck, & Spencer-Rodgers, 2010; Yogeeswaran & Dasgupta, 2010), including those that research the predictive validity of gender IATs (e.g., Rudman & Glick, 2002; Latu et al., 2011; Levinson & Young, 2010). Furthermore, the consistency of an implicit attitude may vary across attitude domains and with little research on gender it is again difficult to determine a benchmark for reliability. Therefore, internal consistency in the present research was conducted to ensure there was reasonable consistency between IAT trial blocks. The internal consistency of each IAT was assessed by correlating the *D*-score from Blocks 3 and 6 with the *D*-score from Block 4 and 7 (e.g., Andrews, Hampson, Greenwald, Gordon, & Widdop, 2010; Rudman & Ashmore, 2007; Schnabel, Asendorpf, & Greenwald 2008; Turner & Crisp, 2010). The results show that the trial blocks were significantly correlated for each of the IATs (Gender-Career

IAT $r(89) = .39, p < .001$, Gender-Stereotype IAT $r(89) = .32, p < .01$, Gender-Affect IAT ($r(89) = .48, p < .001$).

Table 13 displays the means, standard deviations, and correlations for all IATs. *D*-scores for both the Gender-Career and Gender-Stereotype IAT were directionally the same. The Gender-Career IAT data reveal that, on average, participants produced *D*-scores ($M = .45, SD = .33$) consistent with symbolic beliefs about gender roles; participants more easily associated women with family and men with careers. The Gender-Stereotype IAT data reveal that, on average, participants produced *D*-scores ($M = .43, SD = .31$) consistent with gender stereotypes; men were more easily associated with competence traits and women were more easily associated with warmth traits. These findings are consistent with prior research that shows people have strong implicit gender attitudes (Nosek et al., 2002; 2007; Rudman & Glick, 2002; Rudman & Kilianski, 2000). Furthermore, independent samples *t*-tests revealed that there were significant differences between men and women's scores on all of the IATs. Specifically, female participants were more likely than male participants to associate men with career and women with family, a statistically significant difference of .20 (95% CI, .06 to .34), $t(87) = 2.79, p = .01$. Female participants were also more likely than male participants to associate competence traits with men and warmth traits with women, a statistically significant difference of .13 (95% CI, .00 to .26), $t(87) = -1.99, p = .05$. Again, this is in line with prior research that has found women's implicit gender attitudes to be directionally stronger than men's (e.g., Lynch, 2010; Nosek et al., 2002; 2007; Reuben et al., 2014; Rudman & Glick, 2002; Rudman & Kilianski, 2000). This suggests group membership does not protect the individual from exhibiting cognition-based attitudes, including stereotypes and symbolic beliefs, towards their own group (Greenwald & Banaji, 1995; Jost & Banaji, 1994).

Table 13

Study 1: Means, standard deviations and correlations for all IATs.

Measure	Mean	SD	Mean (M)	SD (M)	Mean (F)	SD (F)	CareerIAT	S/type IAT
Gender-Career IAT ^a	.45 (1.36)	.33	.34	.38	.53	.25		
Gender-Stereotype IAT ^b	.43 (1.39)	.31	.36	.32	.48	.29	.21*	
Gender-Affect IAT ^c	-.29 (-0.62)	.47	.04	.40	-.55	.33	-.28**	-.26*

Note: IAT effect sizes are reported as the *D* statistic - .15, .35 and .60 correspond to small, medium and large effect sizes, respectively (Greenwald et al., 2003). Cohen's *d* is presented in brackets next to the *D* statistic. Spearman rank order correlations are reported since the Gender-Career IAT was not normally distributed.

a. High scores indicate that, compared to women, men were more easily associated with careers

b. High scores indicate that, compared to women, men were more easily associated with agentic traits.

c. High scores indicate that, compared to women, good was more easily associated with pictures on men in male sex-typed roles.

* Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

N = 89

The Gender-Affect IAT showed a different pattern of results. The data reveal that, on average, participants produced *D*-scores ($M = -.29$, $SD = .47$) inconsistent with the anticipated results. Participants more easily associated good with photos of women in male sex-typed professions and bad with photos of men and male sex-typed professions. An independent sample t-test revealed female participants were more likely than male participants to associate good with pictures of women in male sex-typed roles and bad with pictures of men in male sex-typed roles, a statistically significant difference of $-.59$ (95% CI, $-.74$ to $-.43$), $t(87) = -7.59$, $p < .01$. Additionally, male participants' implicit associations, whilst positive in direction, were a lot weaker than those of female participants and 9 of the 39 male participants had negative IAT scores (so more easily associated women with good attributes and men with bad attributes). This suggests that how participants respond to the IAT is influenced by in-group bias (Greenwald et al., 2002); in-group members are more likely to associate their group with positive attributes and associate negative attributes with out-group members. Furthermore, women's automatic in-group bias was stronger than men's, a finding consistent with prior research (Nosek & Banaji, 2001; Richeson & Ambady, 2001; Rudman & Goodwin, 2004).

Based on prior research (e.g., Amodio & Devine, 2006) it was expected that there would be no correlation between affect- and cognition-based IATs. However Spearman rank order correlation analysis revealed that the Gender-Affect IAT was negatively correlated with both the Gender-Career IAT and the Gender-Stereotype IAT (Table 13). Due to the gender differences noted above in Gender-Affect IAT scores, further correlations analyses were conducted to explore the impact of gender on the relationships between the IATs. Table 14 shows that for men there was no correlation between the affect and cognitive IATs, but for women the Gender-Stereotype and Gender-Affect IAT remained negatively correlated. Therefore, whilst women have strong implicit gender stereotypes that are the same as men's (although often stronger), they also have an implicit preference for women over men.

Table 14.

Study 1: Correlations between cognition and affect-based IATs for male and female participants.

	Measure	CareerIAT	S/type IAT
Female	Gender-Career IAT		
	Gender-Stereotype IAT	-.16	
	Gender-Affect IAT	-.17	-.32*
Male	Gender-Career IAT		
	Gender-Stereotype IAT	.45**	
	Gender-Affect IAT	-.13	-.03

Note: Pearson Product Moment correlations reported since data met parametric assumptions.

* Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

N = 89

Independent samples t-tests revealed that there were no significant differences for any of the IATs based on participants' ethnicity, native language or work experience. Furthermore, Spearman rank order correlations revealed no significant correlations between age and any of the IATs.

5.22 Preliminary analysis of personnel decisions

5.22i Promotion decisions

Preliminary analyses of the outcome variables indicate that women were selected for promotion more often than men (Figure 13), with 48 participants selecting a female

candidate for promotion and 41 participants selecting a male candidate for promotion. However, a one-sample Chi-square test revealed that this difference was not significant ($p = .53$). Chi-square tests for association were conducted between each of the demographic variables and the gender of the candidate selected for promotion. In all cases, expected cell frequencies were greater than five. There was no association between the gender of the candidate selected for promotion and participant gender ($X^2(1) = .00, p = .99$), ethnicity ($X^2(1) = .00, p = .96$) or native language ($X^2(1) = .50, p = .48$). However, there was a statistically significant association between participant work experience and the gender of the candidate selected for promotion ($X^2(1) = 6.81, p = .01$). Those with work experience were more likely to promote the male candidate, whereas those with no work experience were more likely to promote the female candidate. A point-biserial correlation revealed that there was no relationship between the gender of the candidate selected for promotion and participant age ($p = .21$).



Figure 13. Study 1: Number of male and female candidates selected for promotion.

5.22ii Budget decisions

Of critical interest in the budget decision was where football and netball were ranked in relation to each other e.g., which one, when removing the ranking of the fruit

initiative, was selected to receive the most funding. Data were therefore coded so that if a participant ranked netball higher than football, it was coded as 0, and if the participant ranked football higher than netball, then this was coded as 1. A one-sample Chi-square test revealed that there was no significant difference between the initiative selected to receive the most funding ($p > .10$), with netball selected 43 times and football 42 times (Figure 14).

Chi-square tests for association were conducted between each of the demographic variables and the initiative selected to receive the most funding. In all cases, expected cell frequencies were greater than five. There was no association between the initiative selected to receive the most funding and participant gender ($X^2(1) = 3.40, p = .07$), ethnicity ($X^2(1) = 1.59, p = .21$), native language ($X^2(1) = .98, p = .32$), nor participant work experience ($X^2(1) = .30, p = .58$). A point-biserial correlation revealed that there was no relationship between the initiative selected to receive the most funding and participant age ($p = .56$).

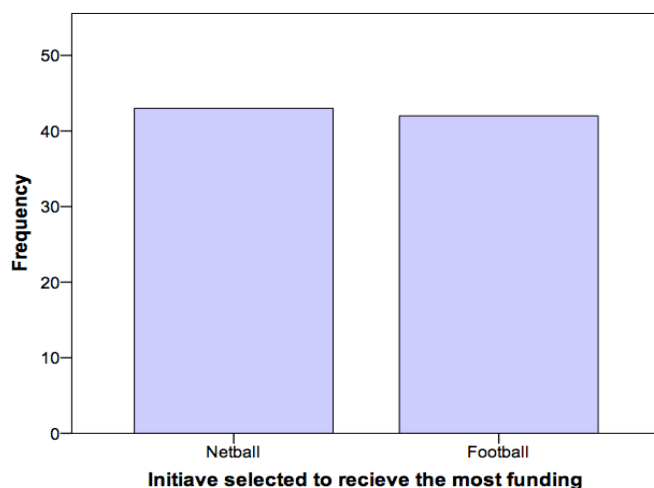


Figure 14. Study 1: Number of times netball and football were selected to receive the most funding.

5.22iii Redundancy decisions

For redundancy, a one-sample Chi-square test revealed that there was no significant difference between the gender of the employee selected for redundancy ($p > .10$),

with 42 of the participants recommending a man was made redundant and 43 of the participants recommending a female was made redundant (Figure 15). Chi-square tests for association were conducted between each of the demographic variables and the gender of the candidate selected for redundancy. In all cases, expected cell frequencies were greater than five. There was no association between the gender of the candidate selected for redundancy and participant gender ($X^2(1) = 2.65, p = .10$), ethnicity ($X^2(1) = 1.59, p = .21$), native language ($X^2(1) = .31, p = .58$), nor participant work experience ($X^2(1) = .03, p = .87$). A point-biserial correlation revealed that there was no relationship between the gender of the candidate selected for redundancy and participant age ($p = .90$).



Figure 15. Study 1: Number of male and female candidates selected for promotion.

Overall, as summarised by Table 15, participant gender differences were observed on each of the IATs. Additionally, whether a participant had work experience impacted on whom they promoted; those with work experience were more likely to promote the male candidate. Participant native language, age or ethnicity had no impact of the independent and dependant variables.

Table 15.

Study 1: Summary of the impact of demographic variables on IATs and decision outcomes.

	Demographic Variables				
	Gender	Ethnicity	Native Language	Work Experience	Age
Gender-Career IAT	✓	X	X	X	X
Gender-Stereotype IAT	✓	X	X	X	X
Gender-Affect IAT	✓	X	X	X	X
Promotion Decision	X	X	X	✓	X
Redundancy Decision	X	X	X	X	X
Budget Decision	X	X	X	X	X

5.23 The predictive validity of gender IATs

The following section reports the results of the main research hypotheses for study 1.

The predictive validity of the IAT for promotion and budget decisions are analysed first, with the expectation that participants who had higher IAT scores would be more likely to promote the male candidate and select the initiative that favours men (e.g., football) to receive more funding than an initiative that favours women (e.g., netball). Following these analyses, the predictive validity of the IAT was tested for redundancy decisions. As noted previously, no significant effects are expected for redundancy.

5.23i The predictive validity of the IAT for promotion decisions

Hypothesis 1a: Participants who have higher IAT scores are more likely to appoint men in promotion decisions.

A binary logistic regression was performed to determine whether the IAT has an impact on the likelihood participants would promote a male candidate. Participant demographic variables including age, gender, ethnicity, native language and prior work experience were entered in step 1 of the model as control variables, together with each of the IATs. Participant gender was coded as 0 for females and 1 for

males. Participant language was coded 0 for non-native English speakers and 1 for native English speakers. Ethnicity was coded 0 for non-white and 1 for white. Participant work experience was coded 0 for no work experience and 1 for work experience. Participant age was a continuous variable. Each IAT was also a continuous variable where higher values indicate stronger implicit associations in the expected direction. The dependent variable, the gender of the candidate selected for promotion, was coded 0 for female and 1 for male. Since logistic regression has no assumptions about the distribution of predictor variables (Tabachnick & Fidell, 2013), none of the variables entered into the model were transformed.

The full model containing all of the predictor variables was statistically significant $\chi^2(8, 89) = 17.17$ ($p = .03$), indicating that the model was able to distinguish between those who did and did not appoint the male candidate. The total model explained between 17.5% (Cox & Snell R Square) and 23.4% (Nagelkerke R Squared) of the variance in the candidate appointed and correctly classified 74.2% of the cases. Assumption of linearity of the logit was met for all IATs. Tests for multicollinearity indicated that a very low level of multicollinearity was present ($VIF = 1.22$ for the Gender-Career IAT, 1.13 for the Gender-Stereotype IAT, 1.93 for the Gender-Affect IAT, 1.98 for participant gender, 1.44 for participant ethnicity, 1.21 for participant age, 1.45 for native language and 1.09 for work experience). Additionally, all tolerance values were in excess of .1 (Menard, 1995).

Only two of the variables (the Gender-Stereotype IAT and participant work experience) made a statistically significant contribution to the model (Table 16). The strongest predictor of selecting a male candidate was participant work experience, which had an odds ratio of 5.8. This indicates that participants who had work experience were over 5.8 times more likely to appoint a male candidate than those who had no work experience, thus supporting the previous observed significant Chi-

square results for work experience. The Gender-Stereotype IAT had an odds ratio of .16. This indicates an inverse relationship between the likelihood of selecting a male candidate and the Gender-Stereotype IAT score; those who more easily associated men with competence and women with warmth were less likely to select the male candidate for promotion. Since this result is counter to expectations, hypothesis 1 is not upheld.

Table 16.

Study 1: Summary of binominal logistic regression analysis for demographic variables and all IATs predicting male candidate appointed for promotion (N = 89).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	-.53	.67	.63	1	.43	.59	.16	2.19
Participant Ethnicity	-.64	.59	1.15	1	.28	.53	.17	1.69
Participant Age	-.15	.09	3.07	1	.08	.86	.73	1.02
Participant Native Language	.26	.62	.18	1	.67	1.30	.39	4.34
Participant Work Experience	1.76	.60	8.73	1	.00	5.80	1.81	18.61
Gender-Career IAT	.41	.82	.25	1	.62	1.50	.30	7.51
Gender-Stereotype IAT	-1.84	.85	4.68	1	.03	.16	.03	.84
Gender-Affect IAT	.73	.71	1.51	1	.30	2.07	.52	8.30
Constant	3.14	2.17	2.09	1	.15	23.13		

Logistic regression analyses were also conducted to see whether any of the demographic variables interacted with the IATs to impact the gender of the candidate selected for promotion. For example, to assess for interaction effects between participant gender and the IAT, all demographic variables were entered into step 1 of the model, each of the IATs were entered into step 2 of the model and the interaction terms (gender x each IAT) were entered into step 3 of the model. No interaction effects were observed suggesting that gender differences in IAT scores did not have an impact on the gender of the candidate selected for promotion. A similar approach was adopted to assess whether IAT scores interacted with the remaining demographic variables to influence the gender of the candidate promoted. Again, no interaction effects were observed for participant ethnicity, native language or work experience. Whilst work experience is a significant predictor of the gender of the

candidate selected for promotion, this variable did not interact with any of the IATs to influence promotion decisions.

There was a significant interaction between participant age and Gender-Affect IAT scores ($Exp(B) = .61$ (95% CI, .38 to .99) $p = .04$). To understand the nature of this interaction, interaction effects were plotted based on procedures by Aiken and West (1991), and Dawson (2014).² These revealed that the stronger the associations between pictures of men in male sex-typed roles with good, and pictures of women in male sex-typed roles with bad for younger participants, the more likely they were to select the male candidate for promotion. The opposite was observed for older participants; higher IAT scores were linked to the enhanced likelihood of selecting the female candidate (Figure 16). However, some caution is needed on the robustness of this finding since outliers in participant age could have led to this result. For example, 91% of the sample was aged 18 to 26 year, and only two participants were aged over 30.

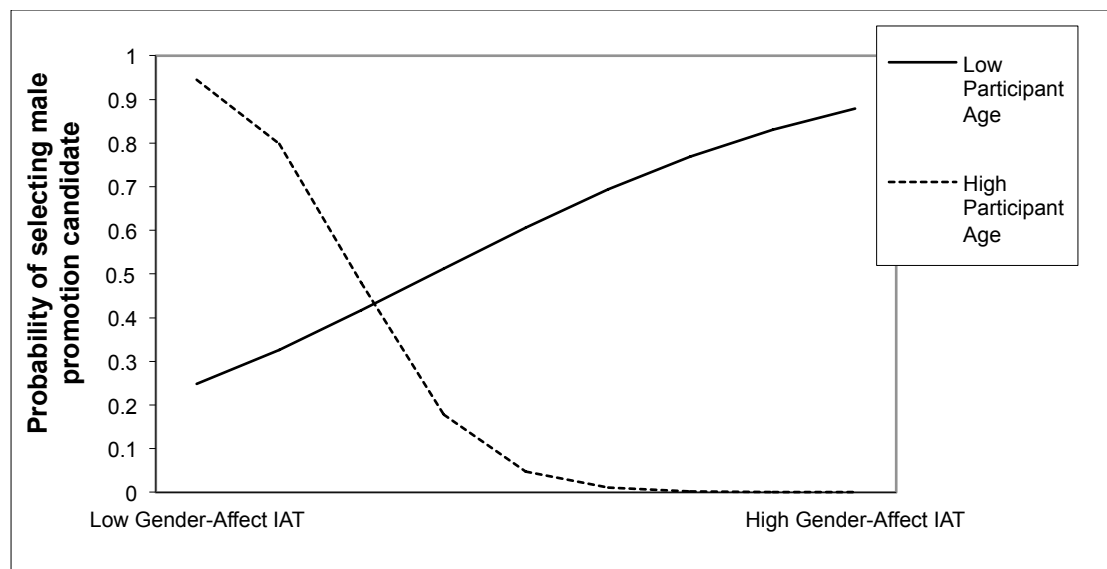


Figure 16. Study 1: The moderating effect of participant age on the relationship between the Gender-Affect IAT and the promotion decision.

² See <http://www.jeremydawson.co.uk/slopes.htm>

5.23ii *The predictive validity of the IAT for budget decisions*

Hypothesis 1b: Participants who have higher IAT scores are more likely to recommend a male related initiative (i.e., football) receives the most funding.

A binary logistic regression was performed to determine whether the IAT impacts upon the likelihood participants would select football to receive the most funding. Participant demographic variables and each IAT were entered into the model in step 1. All dichotomous variables were coded as before. Age was a continuous variable, as were each of the IATs (higher values indicate stronger implicit associations in the expected direction). The dependent variable, the initiative selected to receive the most funding, was coded 0 for netball and 1 for football.

The full model containing all of the predictor variables was not statistically significant $X^2(8, 85) = 11.07$ ($p = .20$), indicating that the model was not able to distinguish between those who did and did not select football to receive the most funding. The total model explained between 12.2% (Cox & Snell R Square) and 16.3% (Nagelkerke R Squared) of the variance in the initiative selected and correctly classified 69.4% of the cases. None of IATs made a statistically significant contribution to the model (Table 17). Therefore, hypothesis 1b was not upheld; participants with higher IAT scores were not more likely to choose football to receive the most funding. Whilst none of the IATs made a significant contribution to the model, participant gender was predictive; men were 5 times more likely than women to select football to receive the most funding.

Table 17.

Study 1: Summary of binominal logistic regression analysis for demographic variables and all IATs predicting football selected to receive the most funding (N = 85).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	1.64	.70	5.55	1	.02	5.15	1.32	20.18
Participant Ethnicity	-.76	.58	1.74	1	.19	.47	.15	1.45
Participant Age	-.16	.10	2.47	1	.12	.85	.70	1.04
Participant Native Language	-1.03	.64	2.64	1	.10	.36	.10	1.24
Participant Work Experience	.10	.54	.03	1	.86	1.10	.39	3.15
Gender-Career IAT	.19	.76	.06	1	.80	1.21	.27	5.38
Gender-Stereotype IAT	-.52	.85	.37	1	.55	.60	.11	3.17
Gender-Affect IAT	-.57	.69	.68	1	.41	.57	.15	2.20
Constant	3.56	2.51	2.01	1	.16	35.10		

Logistic regression analyses were also conducted to see whether any of the demographic variables interacted with the IATs to impact the initiative selected to receive the most funding. For example, the demographic variables were entered into step 1 of the model, each of the IATs were entered into step 2 of the model and the interaction terms (gender x each IAT) were entered into step 3 of the model. The same process was followed to separately test the interaction effect of each demographic variable in step 3 of the model. Whilst no interaction effects were observed between any of the IATs and participant ethnicity, other participant demographic variables were found to moderate the relationship the IATs and the budget decision.

Both participant gender ($Exp(B) = 173.62$ (95% CI, 2.14 to 14116.97) $p = .02$) and participant work experience ($Exp(B) = .00$ (95% CI, .00 to .32) $p = .02$) interacted with the Gender-Stereotype IAT to influence the initiative selected to receive the most funding. Interaction effects were plotted in order to understand the nature of these interactions (Aiken & West, 1991; Dawson, 2014). Figure 17 shows that as male participants Gender-Stereotype IAT scores increased so did their probability of selecting football increase. For female participants, an increase in Gender-Stereotype IAT scores decreased their likelihood of selecting football to receive the

most funding. A further logistic regression analysis, split by participant gender, revealed that the predictive validity of the Gender-Stereotype IAT was significant for female participants ($Exp(B) = .01$ (95% CI, .00 to .32) $p = .01$) but not male participants ($Exp(B) = 3.45$ (95% CI, .16 to 72.47) $p = .43$). However, without the interaction terms in the model the Gender-Stereotype is not a significant predictor, whereas participant gender is. It is therefore likely that these results reflect in-group bias – men supporting initiatives that are stereotypically male (football) and women supporting initiatives that are stereotypically female (netball) as opposed to implicit gender attitudes per se influencing the decision.

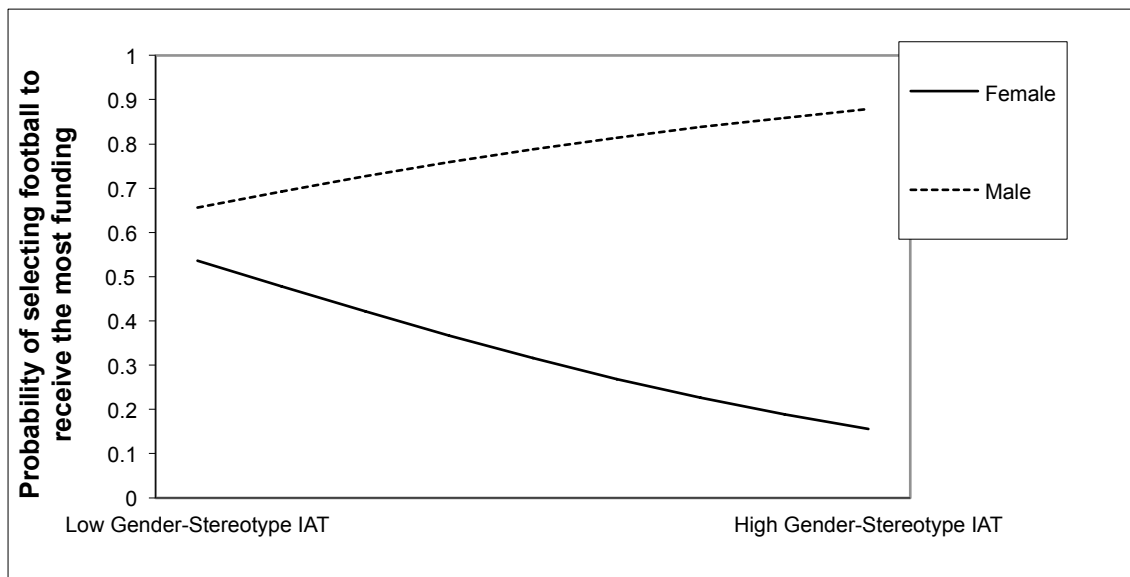


Figure 17. Study 1: The moderating effect of participant gender on the relationship between the Gender-Stereotype IAT and the budget decision.

Figure 18 demonstrates that whether or not participants had work experience also moderated the relationship between the Gender-Stereotype IAT and the budget decision; as IAT scores increased for those with work experience the probability of selecting football to receive the most funding decreases, whereas participants without work experience are more likely to select football to receive the most funding as their IAT scores increase. Further logistic regression analysis, split by participant work experience, revealed that there Gender-Stereotype IAT was a significant

predictor of the budget decision for those with prior work experience ($Exp(B) = .05$ (95% CI, .00 to .69) $p = .03$) but not for those with no work experience ($Exp(B) = 155.50$ (95% CI, .26 to 94985.47) $p = .12$).

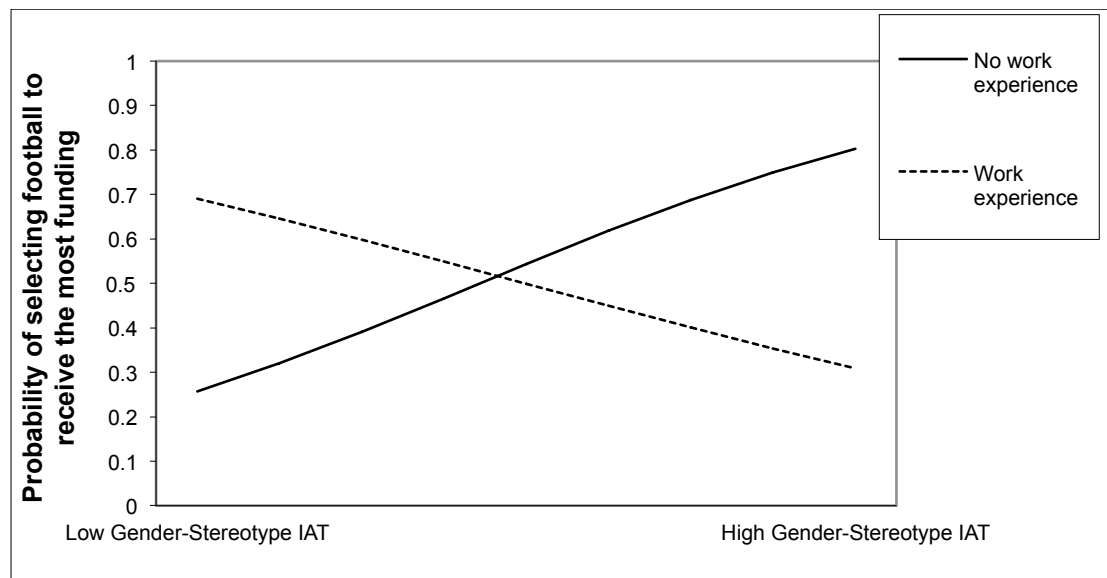


Figure 18. Study 1: The moderating effect of participant work experience on the relationship between the Gender-Stereotype IAT and the budget decision.

There was also a significant interaction between participant age and the Gender-Career IAT ($Exp(B) = .38$ (95% CI, .16 to .90) $p = .03$). Interaction effects were plotted in order to understand the nature of these interactions (Aiken & West, 1991; Dawson, 2014). These revealed that the more younger participants associated men with career and women with family, the more likely they were to select football to receive the most funding. The opposite was observed for older participants; higher IAT scores were linked to the enhanced likelihood of selecting netball to receive the most funding (Figure 19). Again, outliers in sample age could have led to these results so some caution is required in the interpretation of the moderating effect of participant age.

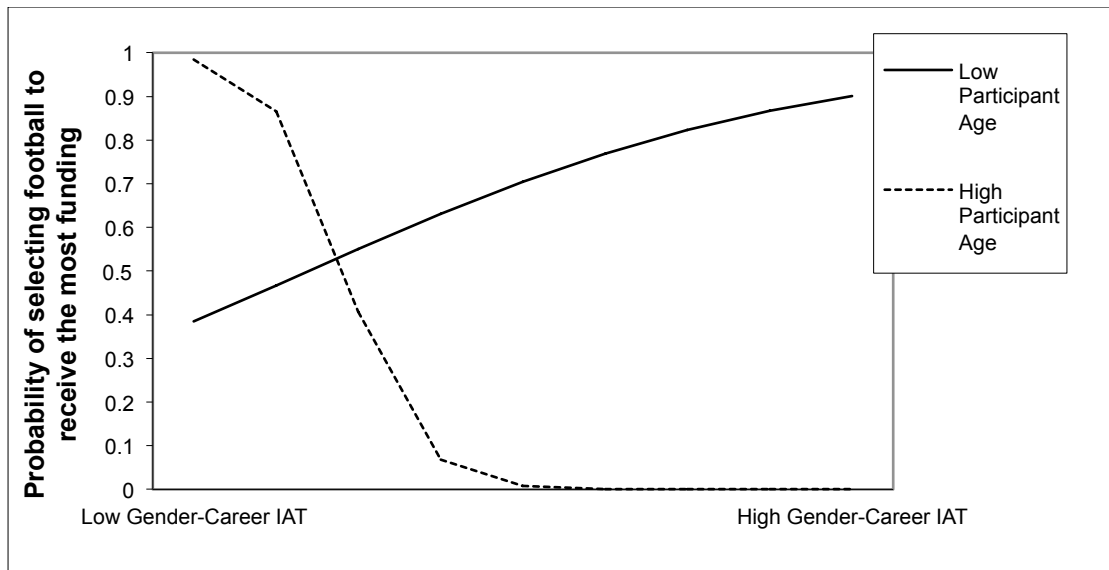


Figure 19. Study 1: The moderating effect of participant age on the relationship between the Gender-Career IAT and the budget decision.

Finally, participant native language appears to moderate the relationship between the Gender-Affect IAT and the initiative selected to receive the most funding ($Exp(B) = 13.73$ (95% CI, 1.21 to 156.28) $p = .04$). Plotted interaction effects (Aiken & West, 1991; Dawson, 2014) revealed that as Gender-Affect IAT scores increased for native English speakers so did the probability for selecting football to receive the most funding, whereas for non-native English speakers higher IAT scores were associated with a decrease in the likelihood of selecting football to receive the most funding (Figure 20).

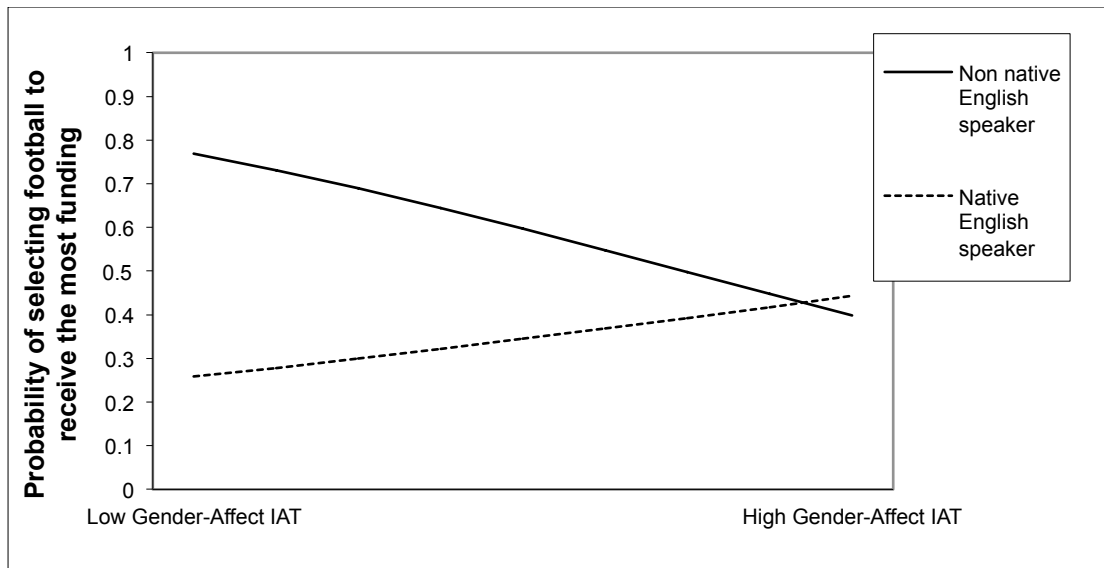


Figure 20. Study 1: The moderating effect of participant native language on the relationship between the Gender-Affect IAT and the budget decision.

5.23iii The predictive validity of the IAT for redundancy decisions

As noted previously, redundancy is an emotionally charged personnel decision with greater consequences for the person about whom the decision is being made than other kinds of personnel decisions. Therefore, when making redundancy decisions participants may engage in more effortful processing of the information and in doing so counter the impact of implicit gender attitudes on decision outcomes. It is therefore expected that no effects will be observed between the IAT and redundancy decisions. To test this assertion, a binary logistic regression was performed to determine whether the IAT impacts upon the likelihood participants would make a female, as opposed to a male, redundant. Each IAT was entered into the model in step 1 together with the control variables. All variables were coded as before. Each of the IATs were continuous variables where higher values indicate stronger implicit associations in the expected direction. The dependent variable, the gender of the candidate selected for redundancy, was coded 0 for male and 1 for female.

The full model containing all of the predictor variables was not statistically significant $\chi^2(8, 85) = 9.01$ ($p = .34$), indicating that the model was not able to distinguish between those who did and did not make the female candidate redundant. The total model explained between 10.1% (Cox & Snell R Square) and 13.4% (Nagelkerke R Squared) of the variance in the employee selected for redundancy and correctly classified 60% of the cases. None of the IATs made a statistically significant contribution to the model (Table 18). Therefore, as theorised, participants with higher IAT scores were not more likely to make the female employee redundant.

Table 18.

Study 1: Summary of binominal logistic regression analysis for demographic variables and all IATs predicting female employee selected for redundancy (N = 85).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	-.67	.64	1.11	1	.29	.51	.15	1.79
Participant Ethnicity	.75	.59	1.64	1	.20	2.17	.67	6.66
Participant Age	.04	.06	.39	1	.53	1.04	.92	1.18
Participant Native Language	.21	.57	.13	1	.72	1.23	.40	3.75
Participant Work Experience	-.40	.52	.58	1	.45	.67	.24	1.87
Gender-Career IAT	-.48	.78	.38	1	.54	.62	.13	2.86
Gender-Stereotype IAT	1.34	.80	2.79	1	.10	3.82	.79	18.42
Gender-Affect IAT	-.36	.69	.27	1	.60	.70	.18	2.72
Constant	-1.15	1.67	.48	1	.49	.32		

Logistic regression analyses were also conducted to see whether any of the demographic variables interacted with the IATs to impact the gender of the employee selected for redundancy. For example, the demographic variables were entered into step 1 of the model, each of the IATs were entered into step 2 of the model and the interaction terms (e.g., gender x each IAT) were entered into step 3 of the model. The same process was followed to test the interaction effect of each demographic variable separately in step 3 of the model. No interactions were observed between any of the IATs and participant gender, ethnicity or native language. However, participant age did moderate the relationship between the Gender-Stereotype IAT and the redundancy decision ($Exp(B) = 2.61$ (95% CI, 1.00 to 6.81) $p = .05$). Plotted interaction effects (Aiken & West, 1991; Dawson, 2014) revealed that the more older

participants associated men with competence and women with warmth, the more likely they were to select the female employee to be made redundant. The trend was the opposite for younger participants; higher IAT scores were linked to the enhanced likelihood of selecting the male employee for redundancy (Figure 21). As noted previously, these trends need to be interpreted with caution due to outliers in the age of the sample.

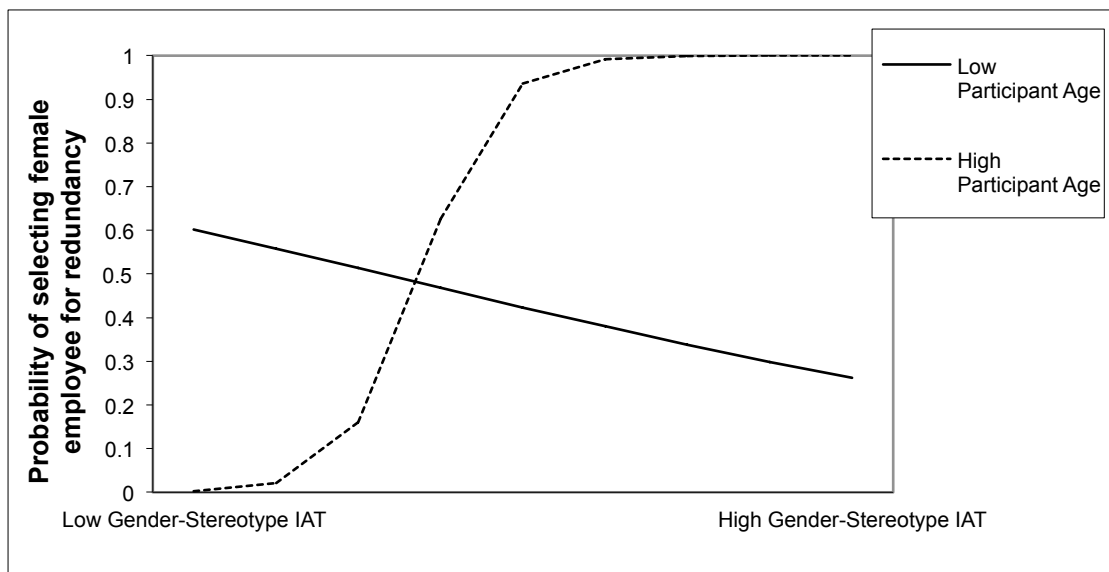


Figure 21. Study 1: The moderating effect of participant age on the relationship between the Gender-Stereotype IAT and the redundancy decision.

In addition, prior work experience moderated the relationship between the Gender-Career IAT and the redundancy decision ($Exp(B) = 257.36$ (95% CI, 3.57 to 18570.90) $p = .01$). As demonstrated by Figure 22, plotted interaction effects (Aiken & West, 1991; Dawson, 2014) revealed that the probability of selecting the female employee for redundancy decreased as Gender-Career IAT scores increased for participants with no work experience, whereas the probability of selecting the female employee for redundancy increased as IAT scores increased for those with work experience.

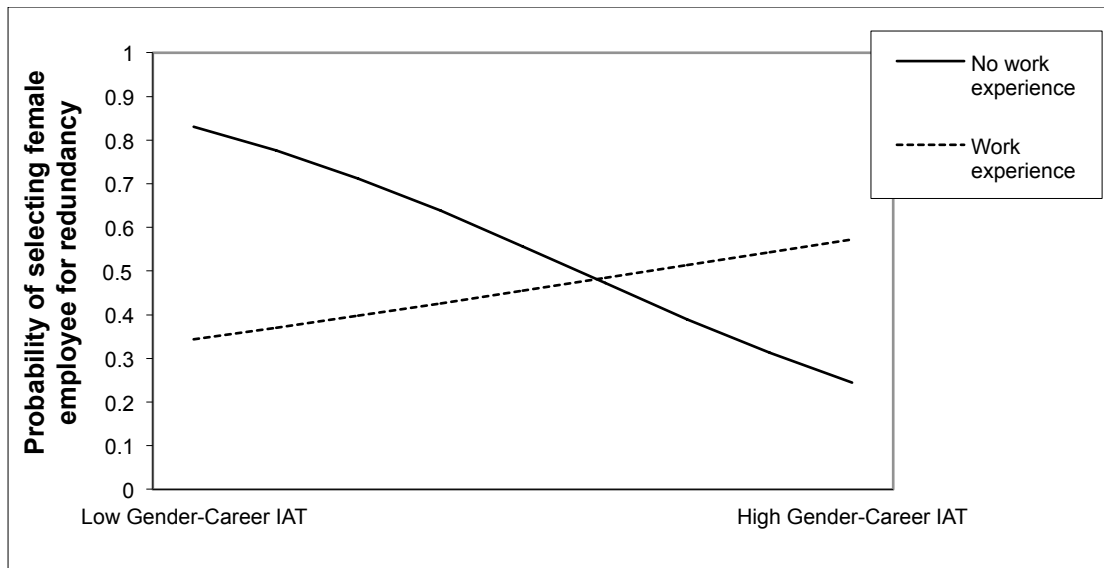


Figure 22. Study 1: The moderating effect of participant work experience on the relationship between the Gender-Career IAT and the redundancy decision.

5.23iv Cognition and affect-based IATs

It was theorised that the IATs ability to predict behaviour may depend on the attitude component the tool assesses – affect or cognition. Furthermore, it was argued that both cognition and affect-based IATs have the potential to be valid predictors of behaviour.

Hypothesis 2: The effect of all IAT scores on personnel decisions will be observed for all forms of IAT (i.e., cognition and affect).

The previous analysis highlights that hypothesis 2 cannot be upheld. For all of the personnel decisions, there was no evidence that the Gender-Career IAT or the Gender-Affect IAT predicted the outcome variables. Additionally, the Gender-Stereotype was only predictive of promotion decision; the more participants associated men with competence traits and women with warmth traits the less likely they were to select the male job candidate for promotion (and thus more likely to select the female job candidate), a relationship that was not anticipated.

Hypothesis 3: Participants with higher combined IAT scores will be more likely to make personnel decisions that favour men (e.g., promote the male candidate, recommend a male related initiative receives the most funding).

It was also argued that when there was consistency between cognition and affect-based attitudes, the IAT would be more likely to predict personnel decisions than when scores on affect- and cognition-based IATs diverge. To test for this possibility, a composite IAT score was computed by averaging the scores across the three IATs. Binary logistic regressions were then performed to determine whether the composite IAT score impacted upon whether participants: 1) were more likely to promote a male job candidate, 2) were more likely to recommend that football received the most funding and 3) were more likely to make a female employee redundant. As in prior analyses, participant demographic variables were entered as control variables in step 1 of the model together with the composite IAT score. All variables were coded as before.

For promotion decisions, the results revealed that the full model containing all of the predictor variables was not statistically significant $X^2(6, 89) = 10.86$ ($p = .09$), indicating that the model was not able to distinguish between those who did and did not promote the male candidate. The total model explained between 11.5% (Cox & Snell R Square) and 15.4% (Nagelkerke R Squared) of the variance in the candidate selected for promotion and correctly classified 69.7% of the cases. However, only work experience made a significant contribution to the model. The composite IAT score was not a significant predictor of promotion decision. Therefore, hypothesis 3 was not upheld.

The results for budgets decisions also revealed no significant effects. The full model containing all of the predictor variables was not statistically significant $X^2(6, 85) =$

10.41 ($p = .11$), indicating that the model was not able to distinguish between those who did and did not select football to receive the most funding. The total model explained between 11.5% (Cox & Snell R Square) and 15.4% (Nagelkerke R Squared) of the variance in the initiative selected and correctly classified 68.2% of the cases. The composite IAT score did not make a statistically significant contribution to the model, thus again hypothesis 3 was not upheld.

Finally, for redundancy decisions, the results revealed that the full model containing all of the predictor variables was not statistically significant $\chi^2(6, 85) = 5.83$ ($p = .44$), indicating that the model was not able to distinguish between those who did and did not make the female candidate redundant. The total model explained between 6.6% (Cox & Snell R Square) and 8.8% (Nagelkerke R Squared) of the variance in the employee selected for redundancy and correctly classified 57.6% of the cases. As expected, the composite IAT score was not a significant predictor of redundancy decision.

5.3 Discussion

The present study contributes to the literature on implicit gender attitudes in a number of ways. First, it looks at the ability of the IAT to predict gender discriminatory personnel decisions, an area where, to date, there has been limited research. Second, the study explores the distinction between cognition and affect-based gender IATs and their unique ability to predict personnel decisions.

5.31 Cognition-based IATs

Preliminary analyses revealed that similar to prior observations on implicit gender stereotypes (e.g., Nosek et al., 2002; 2007; Rudman & Glick, 2002; Rudman & Kilianski, 2000) participants exhibited strong implicit associations between men and career, and women and family. Participants also displayed strong implicit gender

stereotypes whereby men were more easily associated with competence traits and women were more easily associated with warmth traits. Additionally, female participants held significantly stronger implicit cognition-based implicit gender attitudes than men, again consistent with findings observed in prior research (e.g., Lynch, 2010; Nosek et al., 2002; 2007; Reuben et al., 2014; Rudman & Glick, 2002; Rudman & Kilianski, 2000). The use of positive attributes in both of the cognition IATs is likely to be a key reason why women also endorse these cognition-based gender attitudes. Social identity theory (Tajfel & Turner, 1979) asserts that individuals strive to maintain a positive self-image. When stereotype IATs contain negative attributes respondents are more likely to associate their own group with positive traits and the out-group with negative traits, leading to in-group bias effects in IAT responses (Greenwald et al., 2002; Rudman, 2011). For example, Richeson and Ambady (2001) found that women rejected the stereotype that they are incompetent on an IAT looking at associations between gender and competence/incompetence. Contrasting purely positive (or negative) attributes overrides in-group bias effects (e.g., Amodio & Devine, 2006; Rudman, Greenwald, & McGhee, 2001b). The Gender-Stereotype IAT employs positive attributes for both categories (e.g., competence and warmth). Positive stereotypes about ones in-group help people maintain a positive self-image. The switch from a negative to a positive emphasis may be why women are equally likely, if not more so, to endorse gender stereotypes; being described in positive terms is easier to assimilate into their self-identity than when they were being described in negative terms. Interestingly, although women reject the stereotype of incompetence, they will associate men with being more competent than women when the IAT is framed differently.

Although cognition-based implicit attitudes are strongly held, these did not predict behaviour as hypothesised. First, no main effects were observed for the Gender-Career IAT in predicting any of the personnel decisions. Second, the relationship

between the Gender-Stereotype IAT and the promotion decision, whilst significant, was not in the expected direction. Finally, participant demographic variables were found to moderate the relationship between the cognition-based IATs and some of the decisions.

5.31i The Gender-Career IAT

The predictive validity of the Gender-Career IAT has been explored in prior research (Levinson & Young, 2010) and similar to the present study was found to be unrelated to personnel decisions. For example, Levinson and Young (2010) found implicit associations about men and career, and women and family, to be strongly held. However, these implicit attitudes neither predicted job hiring decisions nor budget cut decisions. Likewise, in the present study, no main effects were observed for the Gender-Career IAT.

Participant age was, however, found to moderate the relationship between the Gender-Career IAT and the budget decision; the more men were associated with career and women with family, the more younger participants were likely to select football to receive the most funding. The opposite was observed for older participants; higher IAT scores were linked to a decreased likelihood of selecting football to receive the most funding.

Whether a participant had work experience also had a moderating effect on the redundancy decision; participants who more easily associated men with career and women with family, and who also had work experience, were more likely to make the female employee redundant than participants who had similar implicit associations but no work experience. Therefore, work experience seems to impact the application of implicit symbolic beliefs to redundancy decisions.

Similar to the present study, the Levinson and Young (2010) research was also conducted on a student population, however, the moderating effect prior work experience or participant age had between the IAT and decision-making was not explored. So whilst, on the surface, implicit symbolic beliefs about the roles of men and women in society do not seem to be translating into the decisions people make about men and women in the workplace, there are important demographic variables that need to be accounted for before the predictive validity of the Gender-Career IAT can be ruled out. Initial results from the present study suggest that when given the opportunity those with strong implicit symbolic beliefs who are older and/or have work experience are more likely to act upon their symbolic beliefs and discriminate against women by either making them redundant so they are able to fulfil their traditional role in society, or by supporting funding for activities that benefit men.

5.31ii The Gender-Stereotype IAT

In contrast to the Gender-Career IAT, the Gender-Stereotype IAT was designed specifically for the present study. However, it does have some similarities with the IAT used by Rudman and Glick (2002) in their research exploring the links between implicit gender stereotypes and work-based evaluations of women. The IAT used in the present study used warmth and competitive as the attribute categories, whereas Rudman and Glick (2002) used communal and agentic as the attribute categories. Both IATs, therefore, assess traits related to warmth and competence. Rudman and Glick (2002) found that, similar to study 1, implicit gender stereotypes were strongly held. However, the IAT was only predictive of social skills ratings of agentic women; participants who more easily associated men with agentic traits and women with communal traits rated the social skills of agentic women when they applied for feminised job roles lower than agentic men applying for the same role. They also found that agentic male applicants were rated as more hireable than agentic female applicants. However, the IAT was not predictive of this outcome. Rudman and

Glick's (2002) study therefore provides mixed evidence for the predictive validity of the IAT.

Adding to this literature, a different pattern of results was observed in the present study. Whilst the Gender-Stereotype IAT was predictive of the promotion decision the relationship was not in an expected direction; the more participants associated men with competence traits and women with warmth traits the less likely they were to select the male promotion candidate (and so the more likely they were to select the female promotion candidate). This finding goes against the 'lack of fit' (Heilman, 1983) or 'think manager, think male' (Schein, 2001) theorising that posits the key reason why women fare worse than their male counterparts when pay, performance evaluation and promotion are considered is because the traits associated with their gender do not match the traits associated with management and leadership positions.

One possible explanation for this finding comes from a body of research primarily led by Ryan and Haslam who have found that women are more likely to be selected for leadership positions above an equally qualified man in situations of economic downturn and when the organisation's performance was in decline, as opposed to growth (Haslam & Ryan, 2008; Ryan & Haslam, 2005; 2007). Of critical importance to the present study was their finding that a key reason why women are perceived to be more suited to such roles is because the traits stereotypically associated with women (e.g., warmth, sensitivity, intuitiveness) are believed to be better suited to managing stress situations (Haslam & Ryan, 2008). Therefore, in situations of organisational crisis it is posited that 'think crisis-think female' replaces the 'think manager-think male' phenomena (Ryan, Haslam, & Hersby, 2011). In the present study the fictitious company was depicted as being in financial difficulty – it needed to cut spending and also appoint a Head of Sales to help revenue growth, a role

critical to business success. Therefore, participants who more easily associated women with warmth traits and men with competence may have believed women better able to perform in this precarious leadership position.

The observed results for the Gender-Stereotype IAT could also be a consequence of correction processes (Wegener & Petty, 1995). Whilst the decision tasks and IATs were positioned as unrelated studies, students who volunteer for such research probably have enough experience of participating in research projects to know that there is often an element of deceit in how the studies are positioned. Therefore, participants may have guessed the purpose of the research and this may have influenced how they responded, particularly to the decision tasks. For example, requiring participants to complete three gender IATs may have raised their awareness that the research was looking in some way at gender. Whilst people may not be aware of their implicit associations, they may well have noticed that they responded slower or found the inconsistent double categorisation trials more difficult. This knowledge could have led them to correct for any bias they thought they might have shown on the IATs in the decision tasks. Research has found that when people notice that a bias could influence their assessments, they assess the direction of the influence and then adjust their responses in the opposite direction to the bias (Mussweiler & Neumann, 2000; Wegener & Petty, 1995; Wilson & Brekke, 1994). For example, Kawakami, Dovidio, and van Kamp (2005) conducted research to assess the impact non-stereotypic training would have on participants hiring decisions. They found that when participants had the opportunity to do so they would correct for the effects of this training by making decisions that were less favourable towards women.

Likewise, in the current study, participants may have noticed their IAT associations could influence their decisions and so they corrected for any effects by selecting

female candidates. This may be one reason why an association was found between the Gender-Stereotype IAT and the promotion decision. Participants may have recognised that they were quicker on stereotype consistent trials than stereotype inconsistent trials and when given the opportunity they could correct for this apparent bias in their decision-making by selecting the female candidate.

To test this possibility, logistic regression analyses were conducted, with task order entered as a moderator to see if it impacted the predictive validity of the IAT. Whilst no interaction effects were observed, further logistic regression analysis, splitting the sample by the order in which participants completed the IAT and decision task, revealed that the Gender-Stereotype IAT was predictive of promotion candidate choice but only for those participants who completed the IATs before the decision task; participants who more easily associated men with competence traits and women with warmth traits were less likely to promote the male job candidate when they completed the IAT before the promotion decision. This suggests participants may have had an awareness of how they responded on the IAT, giving them the opportunity to correct for the implicit gender biases in the promotion task.

Given IATs are hard to fake (Steffens, 2004), it is unlikely that completing the decision task prior to the IAT impacted how participants responded to the IAT. Indeed, independent sample t-tests revealed no significant differences in IAT scores based on task order. Therefore, if the IAT was a genuine predictor of promotion decisions, links between the IAT and promotion should have been observed for those who completed the decision tasks before the IATs. However, no effects were observed. Additionally, task order did not have an impact on the predictive validity of the IAT for any of the other personnel decisions. Future research could explore order effects in more depth. Whilst research has been conducted on how the order in which respondents complete explicit and implicit measures impact on IAT scores

(e.g., Nosek, 2005), research has not explored whether the order in which participants complete the outcome variable in relation to the IAT influences the results.

Interestingly, a number of participant demographic variables were found to moderate the relationship between the Gender-Stereotype IAT and the personnel decisions. Participant age moderated the relationship between the Gender-Stereotype IAT and the redundancy decision; the more older participants associated men with competence and women with warmth, the greater the probability of selecting the female employee for redundancy. The trend was the opposite for younger participants; higher IAT scores were linked to a reduced likelihood of selecting the female employee for redundancy.

Additionally, both work experience and participant gender moderated the relationship between the Gender-Stereotype IAT and the budget decision; participants with higher IAT scores and work experience were more likely to select netball to receive the most funding, and male participants were more likely to recommend football received the most funding.

The results for the Gender-Stereotype further support the notion that the moderating role participant demographic variables have on the relationship between the IAT and personnel decisions are important factors to explore. Indeed, one criticism levied during *Wal-Mart Stores, Inc. v. Dukes* (2011) was that the expert testimony could not say whether all decision-makers who had implicit bias would act in the same manner, nor distinguish who may act upon their implicit attitudes (Wax, 2010). Without a deeper understanding of for whom the IAT is predictive, statements about the overall predictive validity of gender-stereotype IATs need to be asserted with caution.

5.32 Affect-based IATs

Research on affect-based gender IATs is limited, particularly in contexts where women violate gender roles. Furthermore, the predictive validity of such IATs has not yet been researched. This study was therefore novel in developing and piloting the Gender-Affect IAT to assess affective reactions to women who violate traditional roles. Preliminary analyses of the Gender-Affect IAT show a different pattern of results to the cognition-based IATs.

Overall implicit affect-based attitudes were more favourable towards women than they were towards men. Coined the '*women-are wonderful-effect*' (Eagly & Mladinic, 1994), prior research has found that both men and women evaluate women more positively on explicit attitude measures (Eagly et al., 1991; Eagly & Mladinic, 1989; 1994; Haddock & Zanna, 1994; Skowronski & Lawrence, 2001). A closer look at the data revealed that there was a difference between male and female participants Gender-Affect IAT scores; female participants were more likely to associate pictures of women in male sex-typed roles with good attributes and pictures of men with bad attributes, whereas the reverse associations were observed for male participants. These results suggest that the measure was subject to in-group bias; both groups showed an implicit preference for their own gender. However, male participants in-group preferences were weaker than female participants in-group preferences. Similar results have reported by Cvencek et al. (2011) who found that children as young as four years show that same pattern of preferences; girls showed a stronger association with girls and good, whereas boys had more neutral affect-based gender attitudes. This trend seems to remain into adulthood with other research showing women have a significantly more positive implicit affect-based attitudes towards their own gender than do men (Nosek & Banaji, 2001; Richeson & Ambady, 2001; Rudman & Goodwin, 2004).

Occupational context, however, has been shown to alter the pattern of pro-female preferences. When women are depicted in non-traditional roles, research has found that the pro-female bias disappears for male respondents but not female respondents (Carpenter & Banaji, 1998; Richeson & Ambady, 2001; Skowronski & Lawrence, 2001). So whilst context does not appear to alter pro-female bias on the IAT for female participants, it does alter men's implicit affective attitudes towards women, particularly when the context suggests the woman is violating traditional gender roles. It is therefore likely that in the present study occupational context did have an impact on IATs scores, but only for male participants. However, men's in-group preferences were still weaker than women's in-group bias suggesting that the '*women-are-wonderful-effect*' may have in some way influenced male participants implicit responses leading to less extreme in-group preferences.

Overall, it appears that the '*women-are-wonderful-effect*' develops very early in life, can be observed on both implicit and explicit measures, and the attitudes are more firmly held for women than they are men, with men's affect-based attitudes switching to reflect and in-group bias when women are portrayed in male sex-typed roles. However, even in the presence of occupational context, men's in-group preferences are less pronounced than women's.

Whilst research has highlighted some interesting points about affect-based gender attitudes and how these are impacted by context, a critical question in the present study was whether these affect-based attitudes predict personnel decisions. No significant main effects were observed. It was hypothesised that those with higher Gender-Affect IATs scores (thus showing a preference for males over females when depicted in male sex-typed roles) would be more likely to promote the male job candidate. Given that IAT scores were not in an expected direction (i.e., showing an overall preference for females) the opposite could also be put forward as an

argument. Namely, participants with higher negative IAT scores would be more likely to select the female candidate for promotion. However, again no evidence was found to support this argument. Furthermore, given female participants exhibited such a strong in-group bias it could be argued that their stronger preference for females over males would lead to only female participants promoting the female job candidate. Again, there was no evidence to support this. Therefore, overall the Gender-Affect IAT was not predictive of personnel decisions.

Whilst no main effects for the Gender-Affect IAT were observed, participant age was found to moderate the relationship between the IAT and the promotion decision; the greater the associations younger participants had between pictures of men in male sex-typed roles with good, and pictures of women in male sex-typed roles with bad the more likely they were to select the male candidate for promotion. The opposite was observed for older participants; higher IAT scores were linked to a reduced likelihood of selecting the male candidate.

Participant native language also moderated the relationship between the Gender-Affect IAT and the budget decision; the more native English speakers associated pictures of men in male sex-typed roles with positive attributes, and pictures of women in male sex-typed roles with negative attributes, the more likely they are to select a male sex-typed initiative (football) to receive the most funding. This further supports the need to understand the moderating effects participant demographic variables have on the relationship between the IAT and behaviour.

5.33 Cognition versus affect IATs

Studies exploring the predictive validity of the IAT have not only contained IATs that were linked to behaviour but also had IATs that were found not to be predictive (e.g., Carpenter, 2000; Derous et al., 2009; Green et al., 2007; Levinson & Young, 2010;

Rudman & Ashmore, 2007; Rudman & Heppen, 2003). The IATs ability to predict behaviour may depend on the attitude component it is assessing. For example, Amodio and Devine (2006) found that implicit stereotype and implicit affect IATs had unique effects on different types of race behavior. To date, the affect-cognition distinction for implicit gender attitudes has not been explored in the literature. It was argued that since both affect and cognition have been shown to underpin discrimination against women in the workplace, both cognition- and affect-based IATs have the potential to be valid predictors of discriminatory personnel decisions. However, main effects were observed for the Gender-Stereotype IAT only, and then just for the promotion decision. Neither the Gender-Career IAT nor the Gender-Affect IAT had direct links to any of the personnel decisions. Whilst a great deal more research is required, preliminary results indicate that when it comes to promotion decisions gender stereotype IATs may have better predictive utility than symbolic belief or affect-based IATs.

When cognition and affect-based attitudes converge it was hypothesised that they would be more likely to predict personnel decisions than when the attitude components diverged. Affective and cognitive attitudes that converge are likely to give an indication of a more consistently held attitude about women. To test this assumption, a composite attitude score was calculated which was the average score of all three IAT *D*-scores combined. Analyses revealed that the composite IAT score was not predictive of any of the personnel decisions. Such findings are likely to be due to the in-group bias observed on the Gender-Affect IAT that would have weakened the overall composite IAT score. Further research is required to establish the combined effects of cognition and affect-based attitudes and this will rely on the ability of future implicit measures to capture the emotional backlash faced by women when they violate traditional roles.

Finally, according to Amodio and Devine (2006), correlations between affect and cognition IATs should not be expected since cognitive and affective components of implicit attitudes are conceptually distinct, a proposition they found support for in their research. However, the results from study 1 do not support this argument. The results revealed a negative correlation between the Gender-Stereotype and Gender-Affect IAT for female, but not male, participants. The more female participants endorsed gender stereotypes the greater pro-female bias they exhibited on the affect-based IAT.

5.34 Work experience

Interestingly, work experience was a significant predictor of the candidate selected for promotion; participants who reported having work experience prior to university were more likely to appoint the male candidate. Furthermore, work experience moderated the relationship between the Gender-Stereotype IAT and the budget decision; participants who had higher Gender-Stereotype IAT scores and work experience were likely to select netball to receive the most funding, than those who had similarly high IAT scores but no work experience. Work experience also moderated the relationship between the Gender-Career IAT and the redundancy decision; participants who had higher Gender-Career IAT scores and work experience were more likely to make the female employee redundant than participants with high Gender-Career IAT scores and no work experience.

Potential explanations for these findings are an area to be explored in future research. However, the results from the present study suggest that something happens when an individual enters the work force that influences their decision-making to favour the progression of men. This could be due to two factors. First, exposure to work environments where leadership and management are predominantly male may have influenced participants to select the candidate that

best reflects what they have been exposed to in the work environment e.g., male leaders. Second, work experience may have exposed participants to the emphasis organisations place on competence related traits. This in turn could have triggered the lack of fit (Heilman, 1983) phenomena whereby women are not seen to possess the traits required for senior positions. However, should lack of fit be an explanation then one would have expected the Gender-Stereotype IAT to be have been predictive of promotion decisions for those who had work experience, which was not the case.

5.35 Limitations

There are a number of limitations with study 1 that may account for why predictive relationships were not found. Potential limitations centre on:

- the design of the IATs;
- the decision material;
- the study sample.

5.35i The IATs

The Gender-Affect IAT suffers from a few design flaws that could have impacted the *D*-score. First, some of the good and bad attributes used in the Gender-Affect IAT may not have been free from gender stereotypes (Rudman & Goodwin, 2004; Rudman, 2011). The IAT was adapted from the Race-Picture IAT, with pictures of men and women in male-dominated roles replacing pictures of black and white faces. The words used in the race Race-Picture IAT however were not amended. It is possible that some of the words used may be more easily associated with one gender over another. For example, the words 'beautiful' and 'lovely' may be more easily associated with women than men, thus impacting the speed at which participants categorized good words; it is possible that when the categories female and good and male and bad were presented together, the task was somewhat easier

due to the association of words such as beautiful and lovely also with female. In such circumstances, faster reaction times could have led to the negative *D*-scores observed where overall, participants more easily associated women with good attributes and men with bad attributes. However, as noted previously, prior research has similarly found women to be rated more positively on affect-based IATs. Therefore, whilst the use of some gender related words might have somewhat impacted upon the results, it is unlikely that it was the sole cause of the observed effects.

Another limitation with the Gender-Affect IAT concerns the images used. The images could have been more closely matched so that male and female pictures were identical, aside from the head of the person attached to the body. Furthermore, equally neutral expressions could have been used across pictures to ensure facial expression did not impact speed of associations. For example, pictures where females were smiling could have positively influenced reaction times when presented with the good attribute category compared to pictures of females with a more neutral expression.

Finally, the use of a personalised affect-based IAT may have yielded different results. One criticism levied at IATs that use good/bad or pleasant/unpleasant attribute labels is that responses may be a reflection of cultural norms opposed to how the individual feels about the attitude object (Han, Olson, & Fazio, 2006; Karpinski & Hilton, 2001; Olson & Fazio, 2004). For example, how easily participants associated pictures of women in male sex-typed roles with pleasant and unpleasant words could be a reflection of society's stance toward working women opposed to respondents own personal attitudes towards women who violate traditional roles. Personalised IATs use 'I Like' and 'I Dislike' as attribute labels and therefore are thought to be a better indicator of whether the feelings associated with the attitude object are positive or

negative. The use of personalised affect-based IATs is therefore worthy of consideration in future research to see if different outcomes are observed.

Whilst there are some design problems with the affect-based IAT, it is not clear why more significant main effects were not observed for the cognition-based IATs. One potential confound was the use of names rather than gender labels (e.g., he, she, her, him) in the cognition-based IATs. Names could inadvertently trigger an association in the respondent that interferes with the categorisation task. For example, if the respondent knew competent females called Julia and Rebecca this may lead to them more easily associating some of the female names with competence opposed to warmth related traits. The use of gender descriptors in the present study would also have better aligned the cognition-based IATs to the Gender-Affect IAT where pictures of women were used instead of names. However, given the strength of the associations observed in the present research the use of names opposed to gender labels was unlikely to have had a major impact on the results.

It could also be argued that the use of both positive and negative traits for the 'competitive' category but only positive traits for the 'warm' category was a further confound. However, should this have been the case in-group biases would be expected where both men and women associated themselves with warmth since these are the more desirable traits to possess. In addition, whilst some of the competence attributes may appear negative, being aggressive, assertive and dominant are valued in certain contexts, such as the workplace.

Overall, the Gender-Career IAT has been widely used in prior research, but to date there is a lack of substantial evidence that the tool predicts actual behaviour, thus raising the question of whether the tool does more than report on implicit

associations. Rudman and Glick (2002) used an IAT similar to the Gender-Stereotype IAT and found that it was predictive of social skills ratings of agentic women but not actual hiring decisions. In the present study the Gender-Stereotype IAT performed in a way unexpected and contrary to the findings of Rudman and Glick (2001) thus raising questions over the tools ability to yield consistent results across studies.

5.35ii The decision materials

Another factor that could have impacted upon the results was the manner in which participants were asked to make the personnel decisions. Research has found that different response modes can yield different decision outcomes (Westenberg & Koele, 1992). Westenberg and Koele (1992) found ranking choice alternatives produced more compensatory information processing, than when asked to either select or reject choice alternatives. Therefore, asking participants to rank their choices in the present study may have prompted them to engage in more effortful processing thus countering the impact implicit gender attitudes had on the decision outcome. A possible area for future research could therefore be to see whether the predictive validity of the IAT varied as a function of whether participants were asked to rank, select or reject job candidates.

As noted previously, the relationship between the IATs and the budget decisions was moderated by several variables. For example, the relationship between the Gender-Career IAT and the budget decision was moderated by participant age, the relationship between the Gender-Affect IAT and the budget decision was moderated by participant native language, and both participant gender and work experience moderated the relationship between the Gender-Stereotype IAT and the budget decision. Whilst, as has been argued above, the results from study 1 suggest it is important to look at the moderating influence of demographic variables, four out of

the seven moderation effects were observed for the budget decision. This raises the question of whether there was something inherent in this particular decision that produced these effects. For example, the observed moderation effects between the IAT and the decision could be the result of different demographic groups having different attitudes towards sports such as football and netball. Netball, until recent years, has primarily been played in Commonwealth countries. Therefore, both knowledge of the sport and attitudes towards netball may be different in countries such as China who have had less exposure to it. In the present study, 27% of the sample reported as being from Chinese origin. Furthermore, a recent survey found teenage girls ranked netball as one of their least preferred sports.³ Differences in knowledge about, and attitudes towards, football and netball could have led to the effects observed, as opposed to gender attitudes per se. Since the attitudes toward the different sports cannot be ruled out as a contributing factor to the observed results, this is a potential limitation to the present study.

5.35iii The study sample

Over half of the sample were not native English speakers. Whilst this only influenced the relationship between the Gender-Affect IAT and the budget decision, there is possibility that non-native English speakers may not have fully understood all of the task requirements. This confound could potentially render all non-native English speakers data unreliable and is a major flaw in the experimental design that was not controlled for. However, the removal of non-native English speakers from the sample had no impact on the predictive validity of the IAT.

³ Cf. The Telegraph (May 2014). <http://www.telegraph.co.uk/women/mother-tongue/10851468/Obesity-crisis-How-playing-netball-is-making-your-daughter-fat.html>

5.4 Conclusion

Whilst strongly held implicit gender attitudes were revealed on all three IATs, these associative patterns failed to translate into discriminatory behaviour in the way expected. First, main effects were observed for the Gender-Stereotype IAT only, and then just for the promotion decision. Second, the nature of the relationship between the Gender-Stereotype and the promotion decisions was not in an expected direction, with stronger associations between male and competency and female and warmth predicting the promotion of a female, as opposed to a male candidate. Overall, the lack of main effects are surprising given that there is now an accumulating body of evidence for the predictive validity of the IAT in the domain of implicit race attitudes and workplace discrimination (e.g., Blommaert et al., 2012; Derous et al., 2009; Rooth, 2010; Son Hing et al., 2008; Yogeeswaran & Dasgupta, 2010).

As noted previously, there is limited research on the predictive validity of gender-based IATs within the workplace and where research has been conducted the results are inconclusive. Furthermore, within the implicit attitude literature there has been little research to test the affect-cognition distinction and no research in the domain of gender. It may well be that in the area of gender, the IAT does not behave as expected and the relationships between implicit gender attitudes and behaviour are more complex and less understood than they are for implicit racial attitudes.

A number of variables were found to moderate the relationship between the IAT and personnel decisions. This suggests that participant demographic variables such as age, gender and work experience need to be further explored to understand for whom the IAT is likely to predict behaviour.

Overall, generalisations about the IATs predictive validity, often present in the literature (e.g., Greenwald & Banaji, 2013; Jost et al., 2009; Kang, 2005), need to be

acted upon with caution. At present, for gender it is unclear when the IAT will predict behaviour, what types of IAT are more predictive than others, the types of behaviour the IAT will predict and to whom these predictions apply.

Chapter Six: Study 2 Method, Results and Discussion

6. Introduction

The purpose of this chapter is to report the findings from the second study. The aim of study 2 was to explore the value of explicit measures of gender attitudes, addressing two questions:

- Are they predictive when responses are free from social desirability concerns?
- How do they perform as predictors of behaviour compared to the IAT?

Whilst the predictive validity of explicit attitude measures has been criticised (Crosby et al., 1980; LaPiere, 1934; McNemar, 1946), it is not clear, for gender at least, whether such measures are redundant. Due to its seemingly positive stance toward women, holding and expressing benevolent sexist attitudes may not be deemed inappropriate. As a consequence, correlations between the IAT and benevolent sexism are expected. However, relationships between hostile sexism and the IAT are unlikely since people may not explicitly hold such attitudes, or they may be unwilling to express them.

Like hostile sexists, benevolent sexists still view women as inferior, whose place is in the home. These views may influence their decisions about women in the workplace, leading them to discriminate against them. Since the expression of benevolent attitudes is less likely to suffer from social desirability concerns, this measure has the potential to be predictive of personnel decisions. This is an area that has not yet been explored in the research.

It is claimed that when the topic is of a sensitive nature the IAT will be a superior predictor of behaviour (Greenwald et al., 2009). However, for gender, there is little evidence to support these assertions. Explicit measures of benevolent sexism, for the reasons aforementioned, have the potential to be equally likely to predict behaviour as the IAT.

Study 2 sets out to address gaps in the literature and to provide a deeper understanding of the relationship between explicit and implicit measures of gender attitudes and whether explicit measures are still of value, or are inferior, to the IAT. The research hypotheses to be tested are presented below.

Hypothesis 4a: Participants who have higher benevolent sexism scores are more likely to appoint men in promotion decisions.

Hypothesis 4b: Participants who have higher benevolent sexism scores are more likely to recommend a higher starting salary for men.

Hypothesis 5a: Participants who have higher IAT scores are more likely to appoint men in promotion decisions.

Hypothesis 5b: Participants who have higher IAT scores are more likely to recommend a higher starting salary for men.

Hypothesis 6: There will be a positive correlation between benevolent sexism and the IAT; as benevolent sexism increases so will IAT scores.

Hypothesis 7: Both the IAT and benevolent sexism will be equally valid predictors of personnel decisions.

6.1 Method

6.11 Participants

Participants were 78 students from the University of Warwick, of which 41 were female and 37 were male. All participants were native speakers of English, 57

identified as being White and 21 as members of other ethnic groups. A Chi-square test revealed no ethnicity differences by gender, $X^2(1) = 1.00, p = .32$. Participants' age ranged from 18 to 35 with a mean of 20.1 ($SD = 2.8$) years. A Mann-Whitney U-test revealed that median age was not statistically significant between males and females, $U = 784.5, z = .27, p = .79$.

6.12 Measuring explicit gender attitudes

The Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996) was used to measure explicit gender attitudes. The ASI contains 22 statements about men and women and their relationships in contemporary society. Participants are asked to indicate on a 5-point Likert scale the extent to which they disagree (1) or agree (5) with each statement. The ASI consists of two subscales: hostile sexism measures antipathy towards women, whereas benevolent sexism measures subjectively positive thoughts and feelings towards women. Examples of items include "*Women are too easily offended*" (hostile); "*Women should be cherished and protected by men*" (benevolent). The average score for each subscale is calculated by reverse scoring indicated statements and then averaging the score of all items. High scores indicate higher levels of hostile or benevolent attitudes toward women.

6.13 Measuring implicit gender attitudes

Implicit gender attitudes were assessed via the Gender-Career IAT and the Gender-Stereotype IAT used in Study 1. Due to the limitations previously noted regarding the Gender-Affect IAT this was not used in the current study.

6.14 Measuring personnel decisions

In order to better conceal the research intentions, the personnel decisions were embedded in an in-basket exercise adapted from previous research (e.g., Brief, Dietz, Cohen, Pugh, & Vaslow, 2000; Ziegert & Hanges, 2005). The in-basket

consisted of a number of emails, each requiring the participant to make managerial decisions. Amongst the decision tasks were three measures of discrimination: 1) a promotion decision, 2) a redundancy decision and 3) a salary recommendation.

The promotion task required participants to evaluate curriculum vitae's from two different individuals, one male and one female, who had been shortlisted for promotion and then select one of them to fill the vacant position. The job position remained the same as in Study 1 (Head of Sales - a male sex-type role). However, in the current study, the job description was removed and replaced with an email from HR that suggested the person suitable for the role should be strategic, decisive and driven. An email from the CEO further emphasised the need for someone who is *"a strong leader, who is decisive and can execute the strategy"*. The application of candidates' names, and hence gender, to each CV was counter-balanced, as was the order in which the CVs were presented.

The redundancy task required participants to evaluate personnel records for two members of staff, one male and one female, and decide which person to make redundant. Again, the application of names, and hence gender, to each personnel record was counter-balanced, as was the order in which the records were presented.

The salary task required people to recommend a starting salary for an IT Manager. They were informed that a number of people had now been interviewed for the position and a 'really good candidate' had been found. The salary expectations of the candidate were stated to be lower than the figure the company was expecting to pay. Based on the need to lower costs participants were asked to decide how much the candidate should be offered as a starting salary. Participants selected one of nine options; the lowest starting salary being £20-22,000 and the highest starting salary being £34-36,000, with increments of £2,000 between these two options. In

contrast to the promotion and redundancy decision tasks, the salary task employed a between-subjects design; half of the participants recommended a salary for a male candidate and the other half for a female candidate. Prior research has found that study design may influence the discriminatory outcome (Arvey, 1979; Davison & Burke, 2000; Martinko & Gardner, 1983; Olian, Schwab, & Haberfeld, 1988). For example, within-subject designs that require participants to compare multiple candidates may heighten the salience of minority characteristics such as gender or race (Finkelstein, Burke, & Raju, 1995; Olian et al., 1988) and lead to contrast effects (Judd et al., 2005). When all else is equal, gender may influence decision as a differentiating factor (Davison & Burke, 2000). In between-subjects design, participants only make a decision regarding a male or female target so gender may be less salient and have less impact on the decision. A between-subjects design was therefore adopted for the salary task to explore whether the design of the experiment influences the results.

6.15 Procedure

Prior to running the main experiment, a pilot study was conducted to assess whether the content of the promotion and redundancy profiles were judged to be equal when no gender was attached. A total of 39 participants took part in the study, of which 51% were women. 85% reported their ethnicity as White. A one-sample Chi-square test revealed that when no gender was attached there were no significant differences between the profile selected for promotion ($p = .51$), nor redundancy ($p = .75$). Furthermore, Chi-square tests showed that there were no significant differences between the profiles selected by participant gender for promotion ($p = .82$) and redundancy ($p = .08$). It was not necessary to assess the comparability of information in the salary task since this was a between-subjects design thus enabling all information to be an exact duplicate, bar the new recruits' name.

For the main study, participants were recruited via the University of Warwick SONA-System (2014) for attracting research participants. Due to potential confounds both native language and prior work experience could have on the results, those invited to participate in the research were required to be native English speakers with some prior work experience. To disguise the true nature of the research, participants were informed that the research consisted of two unrelated research studies being conducted within the university, one looking at managerial decision-making, the other exploring memory and attitudes. They were told that both studies would take no more than 30 minutes to complete and for their participation they would be paid a £5 Amazon voucher and that payment was contingent on completing both studies. Those interested in taking part signed up via the SONA system and each time an individual volunteered to take part the researcher received an email notification. On receiving this, the first study and its associated instructions were emailed to the individual. A total of 81 participants signed up for the research. Data from three participants were excluded from the analysis because their error rates on the IATs were in excess of 25% (Rudman, 2011).

The order in which participants completed the study was counterbalanced; approximately half of the participants completed the in-basket exercise first and the attitude measures second, the other half completed the attitude measures first followed by the in-basket exercise. The information sheet and consent form (Appendix F) was attached to the first study emailed to them and it was made explicit in the email that participation in the studies would be taken as confirmation of their consent to participate in the research. Once they had completed the first study, the second study was emailed to them. To allow for natural distraction between the two studies, and thus to further ensure the studies were seen as unrelated, a minimum time gap of one hour was implemented between completion of the first study and a participant receiving the second study.

The in-basket exercise introduced participants to a fictitious company who had seen recent decline in profit and so was implementing a major restructure of the business. Participants were informed that they are required to play the role of a Senior Executive in the company and, in that role, to make a number of managerial decisions. In order to make these decisions, a set of action alternatives would be given and they will be asked to choose among them. The instructions emphasized that at times they may feel that they would not want to choose any of the alternatives, however, in order to ensure comparability across research participants, it was important that they make a choice among the alternatives given. They were told to read each part very carefully, in the correct order, and to pay very close attention to all of the instructions and not skip any questions. The order in which the discrimination measures were embedded in the in-basket exercise was counterbalanced to minimise ordering effects.

The instructions for the attitude measures initially thanked them for agreeing to take part in the research on memory and attitudes and informed them that the study should take no longer than 15 minutes to complete. They were informed that they would need to complete the study on a desktop or laptop computer. They were also told part of the study measured the speed at which they categorise information so it was therefore vital that they complete this study without any interruptions and in one session. To ensure participants data could be matched to their in-basket exercise, each person was given a unique participant number to enter into the computer at the beginning of the task.

As in study 1, Inquisit 4.0 (2013) software was used to programme all of the attitude measures. Research by Nosek, Greenwald, and Banaji (2005) with a sample of over 11,000 showed that the order in which participants completed implicit and explicit measures does not alter the substantive results obtained. However, to

minimise explicit measures having a potential impact on implicit measures and vice versa, Inquisit was programmed so that half of the participants completed the implicit measures first, whereas the other half completed the explicit measures first. Additionally, the order in which the IATs were presented was counter-balanced to minimise the potential for order and practice effects. Demographic data were collected in between the two IATs. Once participants had completed all elements of the study they were paid for their participation. The decision materials for study 2 can be found in Appendix G.

6.2 Results

Prior to testing the main research hypotheses, exploratory analyses were conducted in order to better understand data from the implicit and explicit attitude measures and the decision data. Analyses were also conducted to see whether the dependent and independent variables differed by demographic variables, including gender, age, and ethnicity. All data was analysed using IBM SPSS (v.21) for Mac. The improved IAT scoring algorithm was used to calculate *D*-scores for each participant on each IAT (Greenwald et al., 2003). Where data violated test assumptions, alternative non-parametric tests were run. No data transformations were conducted.

6.21 Preliminary analysis of explicit attitude measure data

The means, standard deviations, and correlations for hostile and benevolent sexism are presented in Table 19. Non-parametric Spearman rank order correlations were performed on the data since tests of normality revealed that both variables violated parametric assumptions.

Table 19.

Study 2: Means, standard deviations and correlations for hostile and benevolent sexism.

Measure	Mean	SD	Mean (M)	SD (M)	Mean (F)	SD (F)	HS
Hostile Sexism (HS)	1.99	.89	2.23	.88	1.78	.86	
Benevolent Sexism (BS)	2.11	.76	2.22	.76	2.01	.76	.45**

Note: higher scores reflect higher levels of hostile or benevolent sexism

* Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

N = 78

Overall, mean scores for both hostile and benevolent sexism were similar, with men having slightly higher scores on both measures. Independent sample t-tests showed that this difference was statistically significant for hostile sexism. Male participants reported higher levels of hostile sexism than female participants, a statistically significant difference of .45 (95% CI, -.84 to -.05), $t(76) = -2.26$, $p = .027$. This is in line with prior research that has shown men's average hostile sexist scores are significantly higher than women's (Glick & Fiske, 1996). These results that have also been observed across 19 different countries, including the UK (Glick & Fiske, 1996; Glick et al., 2000). Since benevolent sexism scores violated parametric assumptions for female participants, a Mann-Whitney U-test was performed to explore participant gender differences on this measure. The results revealed no significant differences in benevolent sexism scores based on participant gender. Furthermore, independent sample t-tests revealed no significant differences in hostile sexism or benevolent sexism scores based on participant ethnicity. Spearman rank order correlations revealed no significant correlations between age and hostile sexism or benevolent sexism.

Similar to prior research (e.g., Glick & Fiske, 1996; 1997) there was a significant positive correlation between hostile and benevolent sexism scores (Table 19); participants who reported higher levels of hostility also reported higher levels of protection and affection towards women. When looking at the relationship between hostile and benevolent sexism based on participant gender, Spearman rank order

correlations revealed that hostile and benevolent sexism remained positively correlated for both men ($r = .43, p = .01$) and women ($r = .54, p < .01$), indicating that higher levels of hostile sexism were related to higher levels of benevolent sexism irrespective of participant gender.

6.22 Preliminary analysis of IAT data

In order to assess whether measured response trials were consistent across IAT trial blocks, internal consistencies for each IAT were calculated by correlating the *D*-score from Blocks 3 and 6 with the *D*-score from Block 4 and 7. The results show that the trial blocks were significantly correlated for the Gender-Career IAT ($r(78) = .39, p < .001$) and the Gender-Stereotype IAT ($r(78) = .34, p < .01$). Table 20 displays the means and standard deviations for the Gender-Career and Gender-Stereotype IAT, together with correlations between the measures. Non-parametric Spearman rank order correlations were performed on the data since tests of normality revealed that the Gender-Career IAT violated parametric assumptions.

Table 20.

Study 2: Means, standard deviations and correlations for IATs.

Measure	Mean	SD	Mean (M)	SD (M)	Mean (F)	SD (F)	CareerIAT
Gender-Career IAT ^a	.45 (1.32)	.34	.39	.39	.50	.29	
Gender-Stereotype IAT ^b	.44 (1.52)	.29	.40	.28	.47	.30	.154

Note: IAT effect sizes are reported as the *D* statistic - .15, .35 and .60 correspond to small, medium and large effect sizes, respectively (Greenwald et al., 2003). Cohen's *d* scores for the IATs are presented in brackets below the *D* statistic.

a. High scores indicate that, compared to women, men were more easily associated with careers

b. High scores indicate that, compared to women, men were more easily associated with competence traits.

* Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

N = 78

The *D*-scores for both the Gender-Career and Gender-Stereotype IAT were directionally the same. The Gender-Career IAT data reveal that, on average, participants produced *D*-scores ($M = .45, SD = .33$) consistent with symbolic beliefs about gender roles; participants more easily associated women with family and men

with career. The Gender-Stereotype IAT data reveal that, on average, participants produced *D*-scores ($M = .44$, $SD = .29$) consistent with gender stereotypes; men were more easily associated with traits linked to competence and women were more easily with traits connected to warmth. These findings support the results from study 1 and are consistent with prior research that shows people have strong implicit cognition-based gender attitudes (Nosek et al., 2002; 2007; Rudman & Glick, 2002; Rudman & Kilianski, 2000).

As can be seen in Table 20, mean IAT scores for female participants are higher than those of male participants. Whilst this lends some support to prior research, including study 1, that has found women's implicit gender attitudes to be directionally stronger than men's (e.g., Lynch, 2010; Nosek et al., 2002; 2007; Reuben et al., 2014; Rudman & Glick, 2002; Rudman & Kilianski, 2000), in the present study, an independent t-test revealed that these differences were not significant.

Differences in IAT score based on participant ethnicity were observed however. Independent sample t-tests revealed there was a difference in Gender-Stereotype IAT scores based on participant ethnicity. Participants that reported their ethnicity as white were more likely than non-white participants to associate competence traits with men and warmth traits with women, a statistically significant difference of .15 (95% CI, .01 to .30), $t(76) = 2.12$, $p = .04$. There were no ethnicity differences in scores on the Gender-Career IAT.

Spearman rank order correlations revealed no significant correlations between age and the Gender-Career IAT. Significant negative correlations between age and the Gender-Stereotype IAT were observed ($r = -.24$, $p = .04$) suggesting as participant age decreased, IAT scores increased. Finally, the Gender-Career and the Gender-Stereotype IAT were not correlated (Table 20). This is in contrast to the findings in

study 1 where positive correlations were observed between the two measures. However, Spearman rank order correlations revealed that the IATs were positively correlated for male participants ($r = .44, p = .01$) but not for female participants ($r = -.12, p = .46$). This is similar to study 1 where again positive correlations between the Gender-Career IAT and the Gender-Stereotype IAT were only observed for male participants. In both studies the direction of the correlations for female participants, whilst not significant, was negative.

6.23 Preliminary analysis of personnel decisions

6.23i Promotion decisions

Two participants did not make a promotion decision, resulting in $N = 76$. Preliminary analyses of the outcome variables indicate that men were selected for promotion more often than women (Figure 23), with 40 participants selecting a male candidate for promotion and 36 participants selecting a female candidate for promotion. A one-sample Chi-square test revealed that this difference was not significant ($p = .73$). Chi-square tests for association were conducted between each of the demographic variables and the gender of the candidate selected for promotion. In all cases, expected cell frequencies were greater than five. There was no association between the gender of the candidate selected for promotion and participant gender ($\chi^2 (1) = .89, p = .35$) or ethnicity ($\chi^2 (1) = 1.74, p = .19$). A point-biserial correlation revealed that there was no relationship between the gender of the candidate selected for promotion and participant age ($p = .93$).

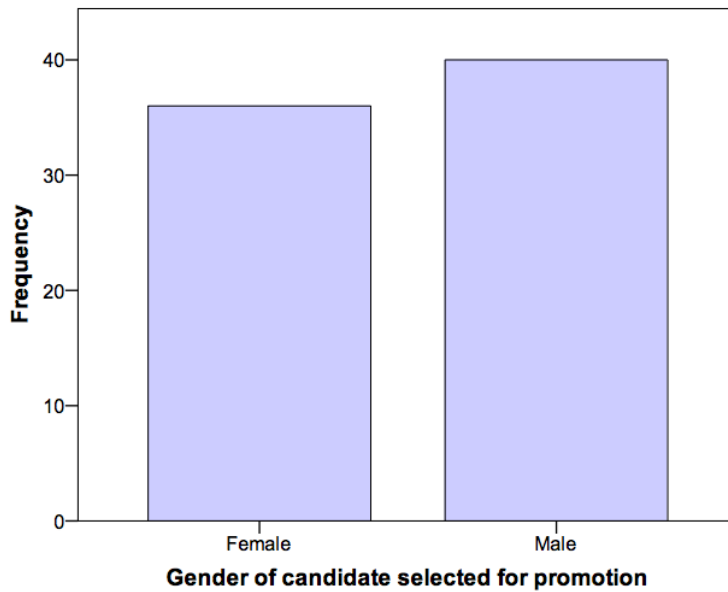


Figure 23. Study 2: Number of male and female candidates selected for promotion.

6.23ii Salary decisions

The salary decision task was a between-subjects design where approximately half of the participants recommended a starting salary for a newly recruited female IT manager and half of the participants recommended a starting salary for a newly recruited male IT manager. All information was held constant in the decision task information except the name (and hence gender) of the IT manager. Taking the mid-point of each salary band, preliminary analyses revealed that, on average, the female recruit was offered a higher starting ($M = \text{£}27,923.08$, $SD = 2968.12$) salary than the male recruit ($M = \text{£}27,359.97$, $SD = 3429.65$), however, an independent samples t-test revealed that this difference was not significant ($t(76) = .78$, $p = .44$).

An ordinal logistic regression analysis was run to determine: 1) whether employee gender predicted the salary amount recommended for the new recruit and 2) whether participant gender or age interacted with employee gender to influence the salary recommended for the new recruit. Initial analysis revealed assumptions of proportional odds to be violated. Since it is possible that these violations were due to

some salary bands only having a few responses, the salary bands were collapsed so that the initial eight salary bands were reduced to four. These amended salary bands were used for all future analyses of salary decisions, including those in study 3. The ordinal regression analysis was then re-run and the results revealed that the assumption of proportional odds was not violated ($p = .96$). No significant main effects for employee gender were revealed nor any interaction effects.

6.23iii Redundancy decisions

Preliminary analyses of the outcome variables indicate that men were selected for redundancy more often than women (Figure 24), with 41 participants selecting a male employee for redundancy and 37 participants selecting a female employee for redundancy. A one-sample Chi-square test revealed that this difference was not significant ($p = .73$). Chi-square tests for association were conducted between each of the demographic variables and the gender of the employee selected for redundancy. In all cases, expected cell frequencies were greater than five. There was a moderately strong association between gender and redundancy decision, $\phi = .23$, $p = .04$. As illustrated by Figure 25, female participants were more likely to make the male candidate redundant, and male participants were more likely to make the female candidate redundant, suggesting some in-group bias towards own group. No statistically significant association was found for participant ethnicity and employee selected, $X^2(1) = 2.29$, $p = .13$. Finally, a point-biserial correlation revealed that there was no relationship between the gender of the employee selected for redundancy and participant age ($p = .82$).

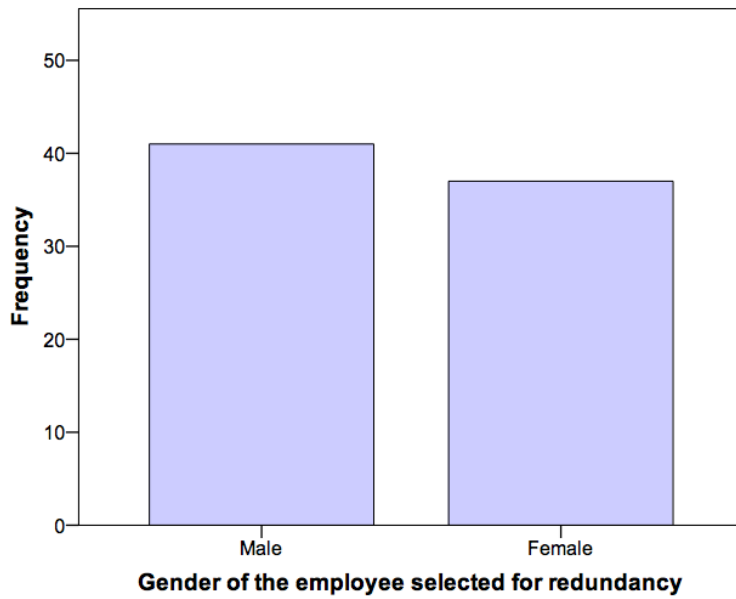


Figure 24. Study 2: Number of male and female employees selected for redundancy.

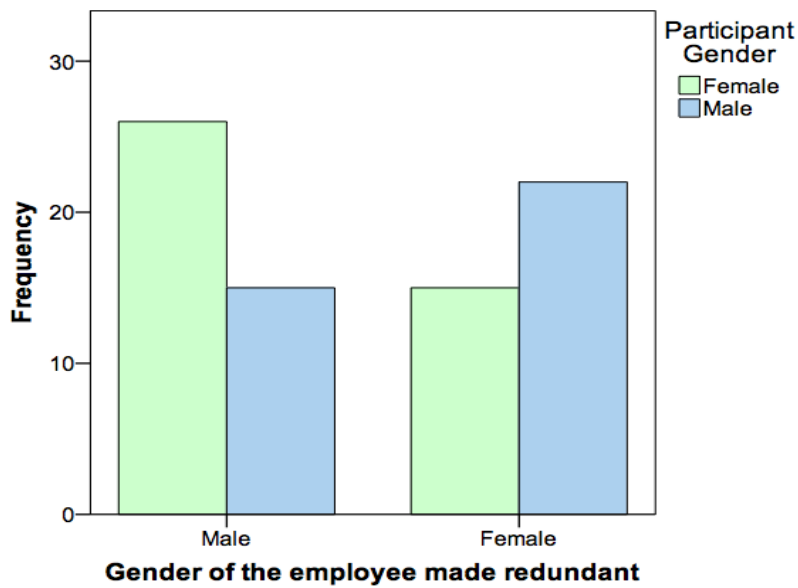


Figure 25. Study 2: Number of male and female candidates selected for promotion split by participant gender.

Overall, as summarised by Table 21, participant demographic data such as gender, ethnicity and age were found to impact some, but not all, of the dependent and independent variables. Significant participant gender differences were observed for hostile sexism scores (female scores were significantly lower than those of males)

and the redundancy decision (female participants were more likely to make male employee redundant, whereas male participants were more likely to make the female employee redundant). Differences were observed between white and non-white participants on the Gender Stereotype IAT; white participants were more likely to associate competence traits with men and warmth traits with women than non-white participants. Finally, a negative correlation was observed between participant age and Gender-Stereotype IAT scores; as participant age decreased, IAT scores increased.

Table 21.

Study 2: Summary of the impact of demographic variables on all attitude measures and decision outcomes.

	Demographic Variables		
	Gender	Ethnicity	Age
Hostile Sexism	✓	X	X
Benevolent Sexism	X	X	X
Gender-Career IAT	X	X	X
Gender-Stereotype IAT	X	✓	✓
Promotion Decision	X	X	X
Redundancy Decision	✓	X	X
Salary Decision	X	X	X

6.24 The predictive validity of benevolent sexism

The following section reports the results of the research hypotheses centred on whether an explicit measure of benevolent sexism predicts promotion, redundancy and salary decisions. Following these analyses, the predictive validity of hostile sexism was tested, but as noted previously, due to social desirability concerns relationships between hostile sexism and personnel decisions are not expected.

6.24i *The predictive validity of benevolent sexism for promotion decisions*

Hypothesis 4a: Participants who have higher benevolent sexism scores are more likely to appoint men in promotion decisions.

A binary logistic regression was performed to determine whether benevolent sexism scores had an impact on the likelihood participants would promote a male candidate. Two participants did not make a promotion decision so were excluded from the analysis, resulting in $N = 76$. Benevolent sexism, participant gender, participant ethnicity and participant age were entered into step 1 of the model. Participant gender was coded as 0 for females and 1 for males. Participant ethnicity was coded as 0 for non-white and 1 for white. Benevolent sexism was a continuous variable where higher values reflect higher levels of sexism. Participant age was also a continuous variable. The dependent variable, the gender of the candidate selected for promotion, was coded 0 for female and 1 for male. Since logistic regression has no assumptions about the distribution of predictor variables (Tabachnick & Fidell, 2013), none of the variables entered into the model were transformed. As can be seen from Table 22, no significant main effects were observed. Therefore, hypothesis 4a was not upheld; participants who had higher benevolent sexism scores were not more likely to promote the male candidate.

Table 22.

Study 2: Summary of binominal logistic regression analysis for benevolent sexism, participant gender, ethnicity and age predicting male candidate appointed for promotion (N = 76).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	.41	.48	.75	1	.39	1.51	.59	3.85
Participant Ethnicity	.54	.56	.94	1	.33	1.72	.58	5.10
Age	-.09	.13	.47	1	.49	.92	.72	1.17
Benevolent Sexism	-.09	.31	.08	1	.78	.92	.50	1.69
Constant	1.44	2.77	.27	1	.60	4.24		

Logistic regression analyses were also conducted to see whether any of the control variables (age, gender or ethnicity) interacted with benevolent sexism to impact the gender of the candidate selected for promotion. For example, to assess the interaction effects between participant gender and benevolent sexism, participant gender, participant ethnicity and participant age were entered into step 1 of the model, benevolent sexism was entered into step 2 of the model and the interaction term (gender x benevolent sexism) was entered into step 3 of the model. Significant interaction effects were observed.

The full model containing all of the predictor variables and the interaction terms was statistically significant $X^2(1, 76) = 10.34$ ($p < .01$), indicating that the model was able to distinguish between those who did and did not appoint the male candidate. The total model explained between 16.2% (Cox & Snell R Square) and 21.6% (Nagelkerke R Squared) of the variance in the candidate appointed and correctly classified 61.8% of the cases. Assumption of linearity of the logit was met for all continuous variables. Tests for multicollinearity indicated that a very low level of multicollinearity was present ($VIF = 1.04$ for benevolent sexism, 1.04 for participant gender, 1.10 for ethnicity and 1.08 for age). Additionally, all tolerance values were in excess of .1 (Menard, 1995).

As displayed by Table 23, findings revealed that benevolent sexism, participant gender and the interaction between these two variables made a statistically significant contribution to the model. Of these, the interaction between benevolent sexism and participant gender was the strongest predictor of selecting a male candidate. To understand the nature of this interaction, interaction effects were plotted based on procedures by Aiken and West (1991), and Dawson (2014). As can be seen from Figure 26, as benevolent sexism scores increased for male participants so did the probability of selecting the male promotion candidate. In contrast, as

female participants benevolent sexism scores increased, their likelihood of selecting the male candidate decreased.

Table 23.

Study 2: Summary of binominal logistic regression analysis exploring interactions between participant gender and benevolent sexism in predicting male candidate appointed for promotion (N = 76).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	-4.36	1.74	6.28	1	.01	.01	.00	.39
Participant Ethnicity	.33	.59	.31	1	.58	1.39	.44	4.42
Participant Age	-.04	.14	.10	1	.76	.96	.73	1.26
Benevolent Sexism (BS)	-1.25	.58	4.66	1	.03	.29	.09	.89
BS x Participant Gender	2.29	.80	8.24	1	.00	9.84	2.07	46.92
Constant	3.06	3.14	.95	1	.33	21.22		

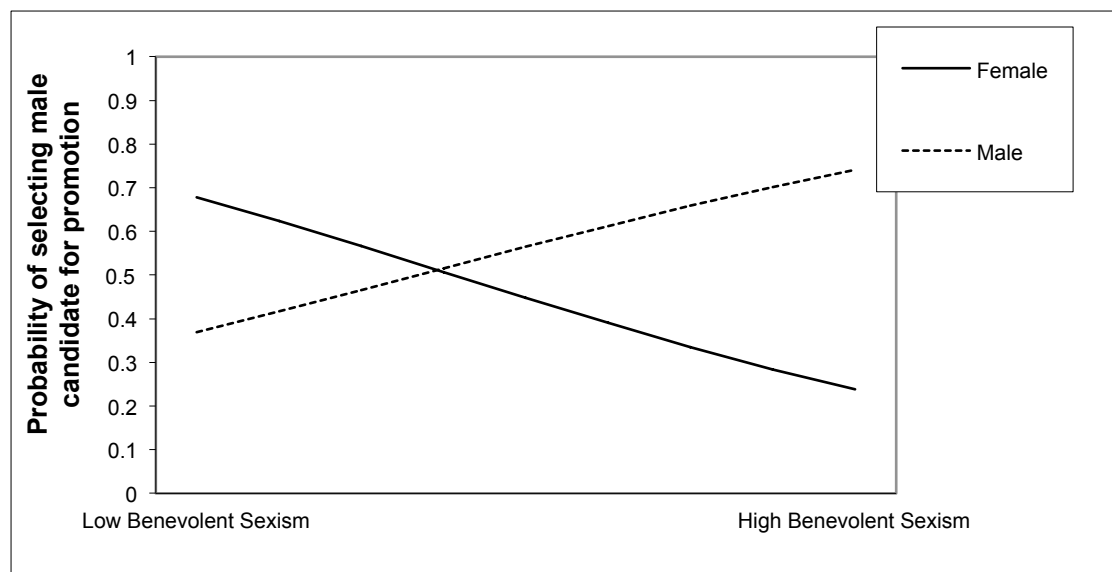


Figure 26. Study 2: The moderating effect of participant gender on the relationship between benevolent sexism and promotion decision.

The same procedure was then followed for both participant age and ethnicity, entering the interaction terms in step 3 of the model. The results revealed there were no interaction effects between ethnicity and benevolent sexism, nor age and benevolent sexism.

As noted previously, it was not expected that hostile sexism would be predictive of promotion decisions. To confirm this assumption, the above analysis was repeated, with hostile sexism replacing benevolent sexism in the models. There were no significant main effects for hostile sexism (nor any of the control variables). Additionally, there were no interaction effects between hostile sexism and participant gender, ethnicity or age.

6.24ii The predictive validity of benevolent sexism for salary decisions

Hypothesis 4b: Participants who have higher benevolent sexism scores are more likely to recommend a higher starting salary for men.

A moderated ordinal logistic regression analysis was performed to see if employee gender interacted with benevolent sexism to influence the salary recommended for the newly recruited IT manager. It was expected that those with higher benevolent sexism scores would be more likely to recommend a higher starting salary for the male recruit and a lower starting salary for the female recruit. The assumption of proportional odds was not violated ($p = .42$). No interaction effects were observed ($p = .14$). Therefore, hypothesis 4b was not upheld; benevolent sexism does not predict salary recommendations for male and female recruits.

An ordinal logistic regression was also conducted to see whether employee gender moderated the relationship between hostile sexism and the recommended salary amount. The assumption of proportional odds was not violated ($p = .31$). The results revealed no interaction effects between employee gender and hostile sexism ($p = .74$).

3-way interaction effects between employee gender, benevolent sexism and participant demographic variables were not possible due to sample size being too small and because of violations of assumptions of proportional odds.

6.24iii The predictive validity of benevolent sexism for redundancy decisions

Whilst it was not expected that benevolent sexism would predict redundancy decisions, a binary logistic regression was performed to test this assumption. As for promotion, the control variables, together with benevolent sexism, were entered into the model in step 1. All dichotomous variables were coded as before. The dependent variable, the gender of the employee selected for redundancy, was coded 0 for male and 1 for female.

The full model containing all of the predictor variables was not statistically significant $\chi^2(4, 78) = 7.01$ ($p = .14$), indicating that the model was not able to distinguish between those who did and did not make the female candidate redundant. The total model explained between 8.6% (Cox & Snell R Square) and 11.5% (Nagelkerke R Squared) of the variance in the employee selected for redundancy and correctly classified 64.1% of the cases. Whilst participant gender reached significance levels in the model, confidence intervals cross 1 and therefore this result is likely to be unreliable; it is possible that in the population the direction of the relationship is the opposite to what has been observed (Field, 2011). Critically, no significant main effects were observed for benevolent sexism (Table 24). Therefore, as theorised, participants who had higher benevolent sexism scores were not more likely to make the female employee redundant.

Logistic regression analyses were also conducted to see whether any of the demographic variables interacted with benevolent sexism to impact the gender of the employee selected for redundancy. For example, all demographic variables (gender,

age and ethnicity) were entered into step 1 of the model, benevolent sexism was entered into step 2 of the model and the interaction term (participant gender x benevolent sexism) was entered into step 3 of the model. No interaction effects were observed. The same procedure was followed for the remaining demographic variables (age and ethnicity). Again, no interaction effects were observed.

Table 24.

Study 2: Summary of binominal logistic regression analysis for benevolent sexism and control variables predicting female employee selected for redundancy (N = 78).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	.94	.49	3.78	1	.05	2.57	.99	6.65
Participant Ethnicity	.85	.58	2.13	1	.14	2.34	.75	7.34
Participant Age	.11	.11	.97	1	.32	1.11	.90	1.38
Benevolent Sexism	-.12	.32	.15	1	.70	.88	.47	1.65
Constant	-3.08	2.47	1.56	1	.121	.05		

Binary logistic regression analyses were also conducted to see if hostile sexism was predictive of redundancy decision. The analyses followed the format used previously, with hostile sexism replacing benevolent sexism in the models. There were no significant main effects for hostile sexism (nor any of the control variables). Additionally, there were no interaction effects between hostile sexism and participant gender, ethnicity or age.

6.25 The predictive validity of the IAT

6.25i The predictive validity of the IAT for promotion decisions

Hypothesis 5a: Participants who have higher IAT scores are more likely to appoint men in promotion decisions.

Before exploring whether benevolent sexism performs equally well to the IAT in predicting personnel decisions, analyses were conducted to see whether the IAT was predictive of personnel decisions. A binary logistic regression was performed to

determine whether IAT scores had an impact on the likelihood participants would promote a male candidate. Two participants did not make a promotion decision so were excluded from the analysis, resulting in $N = 76$. The Gender-Career IAT, Gender-Stereotype IAT, participant gender, participant ethnicity and participant age were entered into step 1 of the model. Participant gender was coded as 0 for females and 1 for males. Participant ethnicity was coded as 0 for non-white and 1 for white. Both of the IATs were continuous variables where higher values indicate stronger implicit associations in the expected direction. The dependent variable, the gender of the candidate selected for promotion, was coded 0 for female and 1 for male. Since logistic regression has no assumptions about the distribution of predictor variables (Tabachnick & Fidell, 2013), none of the variables entered into the model were transformed.

The full model containing all of the predictor variables was statistically significant $\chi^2(5, 76) = 12.11$ ($p = .03$), indicating that the model was able to distinguish between those who did and did not appoint the male candidate. The total model explained between 14.7% (Cox & Snell R Square) and 19.7% (Nagelkerke R Squared) of the variance in the candidate appointed and correctly classified 64.5% of the cases. Assumption of linearity of the logit was met for the Gender-Stereotype IAT but not the Gender-Career IAT. Tests for multicollinearity indicated that a very low level of multicollinearity was present ($VIF = 1.06$ for the Gender-Career IAT, 1.13 for the Gender-Stereotype IAT, 1.06 for participant gender and 1.13 for participant age). Additionally, all tolerance values were in excess of .1 (Menard, 1995).

As can be seen from Table 25, the Gender-Career IAT made a significant contribution to the model, with an odds ratio of .12. This indicates an inverse relationship between the likelihood of selecting a male candidate and the Gender-Career IAT; those who more easily associated men with career and women with

family were less likely to promote the male candidate. Therefore, hypothesis 5a was not upheld since the relationship between the Gender-Career IAT and the promotion decision was not in an expected direction. Whilst the Gender-Stereotype IAT was nearing significance ($p = .07$), confidence intervals cross 1 and therefore this result is likely to be unreliable; it is possible that in the population the direction of the relationship is the opposite to what has been observed (Field, 2011).

Table 25.

Study 2: Summary of binominal logistic regression analysis all IATs, participant gender, ethnicity and age predicting male candidate appointed for promotion (N = 76).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	.35	.51	.46	1	.50	1.42	.52	3.88
Participant Ethnicity	.61	.62	.99	1	.32	1.84	.55	6.12
Participant Age	-.02	.13	.02	1	.88	.98	.77	1.26
Gender-Career IAT	-2.09	.87	5.72	1	.02	.12	.02	.69
Gender-Stereotype IAT	1.72	.96	3.21	1	.07	5.58	.85	36.61
Constant	.05	2.72	.00	1	.99	1.05		

Further logistic regression analyses were conducted to establish whether any of the demographic variables interacted with either of the IATs to impact the gender of the candidate selected for promotion. For example, to assess the interaction effects between participant gender and IATs, participant gender, participant ethnicity and participant age were entered into step 1 of the model, the Gender-Career and Gender Stereotype IATs were entered into step 2 of the model and the interaction terms (participant gender x Gender-Career IAT, participant gender x Gender-Stereotype IAT) were entered into step 3 of the model. No significant interaction effects were observed for participant gender, age or ethnicity.

6.25ii The predictive validity of the IAT for salary decisions

Hypothesis 5b: Participants who have higher IAT scores are more likely to recommend a higher starting salary for men.

A moderated ordinal logistic regression analysis was performed to see if employee gender interacted with either of the IATs to influence the salary recommended for the newly recruited IT manager. It was expected that those with higher IAT scores would be more likely to recommend a higher starting salary for the male recruit and lower starting salaries for the female recruit. The assumption of proportional odds was not violated ($p = 1.00$). The results revealed that there were no interaction effects between employee gender and the Gender-Stereotype IAT ($p = .83$). Whilst the results were nearing significance for the Gender-Career IAT ($p = .08$) confidence intervals crossed 1 (95% CI, -.27 to 5.19) suggesting this results in likely to be unreliable (Field, 2011). Therefore, hypothesis 5b was not upheld; the IAT does not predict salary recommendations for male and female recruits.

As noted previously, 3-way interaction effects between employee gender, the IATs and participant demographic variables were not possible due to sample size being too small and because of violations of assumptions of proportional odds.

6.25iii The predictive validity of the IAT for redundancy decisions

For reasons noted previously, it was expected that no effects would be observed between the IAT and redundancy decisions. Binary logistic regression analyses were performed to test this assumption. As for promotion, the control variables, together with the IATs, were entered into the model in step 1. All dichotomous variables were coded as before. The dependent variable, the gender of the employee selected for redundancy, was coded 0 for male and 1 for female.

Participant gender was the only variable that made a significant contribution to the model (Table 26); male participants were almost 3 times more likely to make the female employee redundant. This mirrors results from the preliminary analysis that found female participants were more likely to make the male candidate redundant,

and male participants were more likely to make the female candidate redundant, suggesting in-group biases were in operation. As expected, neither IAT was predictive of the redundancy decision.

Table 26.

Study 2: Summary of binominal logistic regression analysis all IATs, participant gender, ethnicity and age predicting female employee selected for redundancy (N = 78).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	1.09	.51	4.65	1	.03	2.97	1.10	8.01
Participant Ethnicity	.77	.59	1.68	1	.20	2.15	.68	6.87
Participant Age	.11	.11	.89	1	.35	1.11	.89	1.38
Gender-Career IAT	1.09	.77	2.01	1	.16	2.97	.66	13.36
Gender-Stereotype IAT	.33	.87	.14	1	.71	1.39	.25	7.57
Constant	-3.94	2.55	2.39	1	.12	.02		

Following procedures noted before, further logistic regression analyses were conducted to establish whether any of the demographic variables interacted with either of the IATs to impact the gender of the employee selected for redundancy. No significant interaction effects were observed for participant gender, age or ethnicity. So whilst participant gender is predictive, it did not moderate the relationship between the IATs and redundancy decision.

6.26 Correlations between implicit and explicit measures

Hypothesis 6: There will be a positive correlation between benevolent sexism and the IAT; as benevolent sexism increases so will IAT scores.

Since hostile and benevolent sexism are highly correlated (Glick & Fiske, 1996), partial correlations were performed to explore the relationships between each explicit measure of sexism and the IATs. As can be seen from Table 27, there were no correlations between implicit and explicit attitude measures. Therefore, hypothesis 6 was not upheld.

Table 27.

Study 2: Correlations between explicit and implicit attitude measures.

Measure	All		Male		Female	
	HS	BS	HS	BS	HS	BS
Gender-Career IAT	.09	-.18	.17	-.24	.06	-.10
Gender-Stereotype IAT	-.07	-.06	.12	-.06	-.19	-.05

Note: All correlations are partial correlations, controlling for the positive relationship between hostile and benevolent sexism

HS = hostile sexism

BS = benevolent sexism

N = 78

6.27 The predictive validity of benevolent sexism when compared to the IAT

The final part of the analysis explores the question of whether the IAT is a better predictor of personnel decisions than benevolent sexism. It was argued that since benevolent sexism is unlikely to suffer from the social desirability issues associated with hostile sexism it: 1) has the potential to predict personnel decisions and 2) may perform equally well to the IAT in predicting such decisions. The analyses above have dealt with the first part of this proposition, so this section focuses on how well benevolent sexism performs in comparison to the IAT.

6.27i The predictive validity of benevolent sexism and the IAT for promotion decisions

Hypothesis 7: Both the IAT and benevolent sexism will be equally valid predictors of personnel decisions.

A binary logistic regression was performed to ascertain the effects of the IAT and benevolent sexism on the likelihood participants would select the male promotion candidate. Two participants did not make a promotion decision so were excluded from the analysis, resulting in $N = 76$. All predictor variables, together with the control variables (participant gender, ethnicity and age) were entered into step 1 of the model. Participant gender was coded as 0 for females and 1 for males.

Participant ethnicity was coded as 0 for non-white and 1 for white. The IATs and benevolent sexism were all continuous variables where higher values reflect higher levels of sexism or implicit associations in the expected direction. Participant age was also a continuous variable. The dependent variable, the gender of the candidate selected for promotion, was coded 0 for female and 1 for male. Since logistic regression has no assumptions about the distribution of predictor variables (Tabachnick & Fidell, 2013), all variables entered into the model were not transformed.

The logistic regression model containing all of the variables was statistically significant $X^2(6, 76) = 13.14, (p = .04)$, indicating that the model was able to distinguish between those who did and did not appoint the male candidate. The model explained between 15.9% (Cox & Snell R Square) and 21.2% (Nagelkerke R^2) of the variance in the gender selected for promotion and correctly classified 67.1% of cases. Assumption of linearity of the logit was met for all attitude measures, except the Gender-Career IAT. Tests for multicollinearity indicated that a very low level of multicollinearity was present ($VIF = 1.06$ for benevolent sexism, 1.14 for the Gender-Stereotype IAT, 1.07 for the Gender-Career IAT, 1.08 for participant gender, 1.14 for participant ethnicity and 1.13 for participant age). Additionally, all tolerance values were in excess of .1 (Menard, 1995).

Table 28 shows only the Gender-Career IAT made a significant contribution to the model; benevolent sexism did not. Hypothesis 7, that benevolent sexism will perform equally well to the IAT, was therefore not supported.

Table 28.

Study 2: Summary of binominal logistic regression analysis all IATs, benevolent sexism, participant gender, ethnicity and age predicting male candidate appointed for promotion (N = 76).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	.38	.52	.54	1	.46	1.46	.53	4.07
Participant Ethnicity	-.10	.08	1.54	1	.22	.91	.78	1.06
Participant Age	.01	.14	.00	1	.95	1.01	.77	1.32
Benevolent Sexism	-.14	.34	.18	1	.67	.87	.45	1.68
Gender-Career IAT	-2.17	.88	6.01	1	.01	.12	.02	.65
Gender-Stereotype IAT	1.67	.97	3.00	1	.08	5.33	.80	35.47
Constant	.60	2.92	.04	1	.84	1.81		

Whilst no predictions are made about hostile sexism, it was argued that due to social desirability concerns attached to the measure, it would not be predictive of the personnel decisions. To check this assertion, the above analysis was repeated, replacing benevolent sexism with hostile sexism in the model. As expected, hostile sexism did not make a significant contribution to the model.

6.27ii The predictive validity of benevolent sexism and the IAT for salary decisions

A moderated ordinal logistic regression analysis was performed to see if employee gender interacted with benevolent sexism, the Gender-Career IAT and the Gender-Stereotype IAT to influence the salary recommended for the newly recruited IT manager. The assumption of proportional odds was not violated ($p = .98$). The results revealed that there were no interaction effects between employee gender and any of the predictor variables ($p > .05$). Therefore, hypothesis 7 was not supported; neither the explicit nor implicit attitudes measures were predictive of salary recommendations for men and women.

6.27iii The predictive validity of benevolent sexism and the IAT for redundancy decisions

A binomial logistic regression was performed to ascertain the effects of benevolent sexism and the IATs on the likelihood participants would select the female employee for redundancy. As for promotion, the control variables, together with benevolent sexism and the IATs, were entered into the model in step 1. All dichotomous variables were coded as before. The dependent variable, the gender of the employee selected for redundancy, was coded 0 for male and 1 for female. As expected, the analysis revealed that neither benevolent sexism nor the IATs were predictive of redundancy decisions.

The above analysis was repeated to check the assumption that hostile sexism would not be predictive of the redundancy decision. As expected, none of the variables, including hostile sexism made a significant contribution to the model.

6.3 Discussion

The present study contributes to the literature on the predictive validity of gender attitude measures in a number of ways. First, it explores whether explicit measures of gender attitudes, when free from social desirability concerns, have the ability to predict discriminatory personnel decisions. To date, there is limited research on the links between benevolent sexism and personnel decision-making. Second, the ability of the IAT to predict personnel decisions is again tested since the predictive utility of this tool within the domain of gender is under researched. Finally, the study contributes to research on the correlations between implicit and explicit measures and adds to the debate on whether, in socially sensitive domains, the IAT is a better predictor of behaviour than explicit attitude measures.

6.31 Benevolent sexism

Preliminary analyses revealed similar to prior research (Glick & Fiske, 1996; 2001; Rudman & Glick, 2002; Rudman & Killianski, 2000), men's average hostile sexist scores are significantly higher than women's. Whilst the differences were not statistically significant, men also reported higher levels of benevolent sexism than women. Women's hostile and benevolent sexism scores showed more divergence than men's also supporting prior research that has found women, relative to men, are more likely to reject hostile, as opposed to benevolent sexism (Glick & Fiske, 1996).

There was a significant positive correlation between hostile and benevolent sexism, a finding again consistent with prior research (Glick & Fiske, 1996; 1997); participants who reported higher levels of hostility also reported higher levels of protection and affection towards women. Whilst these associations may seem at odds with one another, the main aim of both hostile and benevolent sexism is to ensure women remain inferior to men. Thus, they are considered "*two sides of a sexist coin*" (Glick & Fiske, 2011, p. 532). Benevolent sexism aims to encourage and reward women who fulfil traditional gender roles, whereas, hostile sexism punishes women who violate their gendered commitments.

Contrary to the hypotheses, benevolent sexism was not predictive of promotion or salary decisions. However, further analyses revealed that participant gender did moderate the relationship between benevolent sexism and the promotion decision. Specifically, the male job candidate was more likely to be promoted when male, but not female, participants had higher benevolent sexism scores. This suggests that benevolent sexism may be a useful predictor of promotion decisions, but only when the decision-maker is male.

It was argued that since benevolent sexists have subjectively positive feelings toward women they might not see the harm in expressing these views openly. In addition, they might not recognise that these views, whilst positive, still consider women inferior to men and therefore might not correct for them in their decision-making. As a consequence, links between benevolent sexism and behaviour will be revealed. Further supporting the argument that self-presentation might impact the relationship between explicit measures and behaviour comes from the finding that hostile sexism did not predict any of the personnel decisions, even when moderating variables were considered.

Interestingly, the present results are counter to previous research findings. First, it has been only been hostile, not benevolent, sexism that has been linked to negative evaluations of women who violate traditional gender roles (Gaunt, 2013; Sakalli-Uğurlu, 2010; Sakalli-Uğurlu & Beydoğan, 2002). Second, whilst the research is limited, only hostile sexism has been found to be predictive of discriminatory personnel decisions (Masser & Abrams, 2004); no links have been observed previously between benevolent sexism and personnel decisions. For example, whilst Masser and Abrams (2004) observed a negative relationship between hostile sexism scores and evaluations of a female being considered for a male sex-typed job role and subsequent hiring recommendations, no links were observed for benevolent sexism. Furthermore, Rudman and Glick (2002) found no correlations between either hostile or benevolent sexism and social skills ratings or hireability ratings of women. Therefore, this is the first time that links between benevolent sexism and personnel decision-making have been observed in the literature. Crucially, when looking at the predictive validity of benevolent sexism, the moderating role of the decision-makers gender needs to be considered in order for effects to be revealed.

6.32 The IAT

Preliminary analyses revealed that similar to study 1 and prior research (e.g., Nosek et al., 2002; 2007; Rudman & Glick, 2002; Rudman & Kilianski, 2000), participants exhibited strong implicit cognition-based gender attitudes. Participants more easily associated men with career and women with family. In addition, they held stronger associations between men and competence traits and women and warmth traits than they did the opposite associations. Again consistent with prior research (e.g., Lynch, 2010; Nosek et al., 2002; 2007; Reuben et al., 2014; Rudman & Glick, 2002; Rudman & Kilianski, 2000), IAT scores were higher for female than male participants. However, in the present study these differences were not statistically significant. As noted previously, the positive manner in which the gender differences are framed are likely to underpin why women are equally likely, if not more so, to endorse the stereotypical portrayal of their gender. Such descriptions are easy to assimilate into their self-identity and help women to maintain a positive self-image (Tajfel & Turner, 1979) and so are more readily accepted than negative stereotypes.

As noted previously, any attitude measure is *“only as good as its ability to predict human behaviour”* (McConnell & Leibold, 2001, p. 440). Therefore, a crucial question posed by this research is whether these implicit gender attitudes predict personnel decision-making. Out of the two IATs employed in the research, only the Gender-Career IAT was found to be predictive of promotion decisions. This is the first study to have found a link between the Gender-Career IAT and behaviour. However, the direction of the relationship was opposite from what was hypothesised; participants who more easily associated men with career and women with family were more likely to promote the female, not the male, candidate. Whilst no relationship between the Gender-Career IAT was observed in study 1, an inverse relationship between the Gender-Stereotype IAT and the promotion decision was observed. Given an inverse relationship between the IAT and the personnel

decision was again observed in the present study the question is once more raised as to why the IAT would predict the decision outcome in a manner contrary to expectations. If people more easily associate women with the home and men with a career why would they then take an action that promotes a woman above a man?

As argued previously, participants may have guessed the true purpose of the study and this could have impacted how they responded on the decision task. For example, requiring participants to complete two IATs and the Ambivalent Sexism Inventory may have indicated to them that all aspects of the research was looking at gender. Again, participants may have noticed that they responded more slowly to inconsistent categorisation trails. Such knowledge could have led them to correct for any bias they may have shown on the IAT in the decision task thereby leading to the inverse relationship observed between symbolic gender beliefs and the promotion decision.

Logistic regressions analyses were conducted to test this possibility, with task order entered as a potential moderator of the relationship between the Gender-Career IAT and the promotion decision. Whilst no interaction effects were observed, further logistic regression analysis, splitting the sample by the order in which participants completed the IAT and decision task, revealed that the Gender-Career IAT was only predictive of promotion candidate choice for those participants who completed the IAT before the decision task; participants who more easily associated men with career and women with family were less likely to promote the male job candidate when they completed the IAT before, but not after, the decision task. As observed in study 1, this again suggests that participants may have had an awareness of how they responded to an IAT, and this awareness will lead them to correct for their implicit gender biases in their decision-making. Such findings suggest that self-

presentation concerns can also influence the link between the IAT and personnel decision-making.

If the IAT was a genuine predictor of promotion decisions, links between the IAT and promotion should have been observed for those who completed the decision tasks before the IATs. However, no effects were observed. The findings of the present study further support the argument that, for gender at least, when IAT is completed in relation to the outcome variable may impact upon its predictive validity. Therefore, more research is required on such ordering effects.

Whilst the Gender-Stereotype neared significance for the promotion decisions, and in the expected direction, the observed results were unlikely to be reliable. As noted previously, Rudman and Glick (2002) used a similar IAT in their research and also failed to find direct links between their IAT and how hireable male and female agentic applicants were rated. For students at least, the present results suggest that gender stereotype IATs are not a reliable predictor of personnel decision; two studies have now found no links between a gender-stereotype IAT and personnel decision-making (e.g., the present study; Rudman & Glick, 2002) and study one observed predictions in the direction opposite to expectations. However, all of the research has been conducted with student samples. It will be interesting to see whether findings are replicated in the third and final study when a sample of working professionals are engaged.

In contrast to study 1, none of the participant demographic variables, including gender, age and ethnicity, moderated the relationship between the IATs and any of the personnel decisions. Whilst most of the moderations observed in study 1 related to the budget decision (a task not employed in the present study), the results from study 1 did reveal that whether a participant had work experience moderated the

relationship between the Gender-Career IAT and the redundancy decision. In the present sample, only those with work experience were eligible to volunteer to take part in the study. Based on the results of study 1 it could therefore be expected that the Gender-Career IAT would be predictive of redundancy decisions in study 2 since all of the sample had work experience. However, no such results were revealed. This therefore raises questions over the reliability with which the IAT predicts personnel decisions across studies. It also leads to concerns over generalised statements in the literature that assert the tool predicts “*socially and organizationally significant behaviors, including employment, medical and voting decisions made by working adults*” (Jost et al., 2009, p. 39). For gender at least, the IAT does not seem to behave in the way one would expect.

6.33 Benevolent sexism and the IAT

6.33i Correlations between implicit and explicit measures

Prior research has revealed some convergence between implicit and explicit measures of gender attitudes (Nosek et al., 2002; 2007). Self-presentation is a key factor believed to moderate the relationship between implicit and explicit measures (Nosek, 2007). When the topic is of a sensitive nature, people are less willing to explicitly report their true attitude toward the object and this leads to less correspondence between implicit and explicit measures. Since the expression of benevolent sexism is less likely to be frowned upon than hostile sexism it was argued that participants would be more willing to explicitly express benevolent sexism in questionnaire responses and as a consequence correlations with the IAT could be expected. However, no correlations were observed.

There could be a number of reasons for this finding. First, as noted above, participants may not have felt they could freely express their benevolent attitudes towards women and these self-presentation concerns led to the lack of

correspondence between the IAT and benevolent sexism. Second, as argued by some dual process theorists (e.g., Devine, 1989; Wilson et al., 2000), participants may simultaneously hold two distinct attitudes towards women that could differ. Explicit attitudes are said to reflect updated views toward the attitude object based on new knowledge and experiences. However, underneath the explicit attitude the originally formed attitude remains and this is what implicit measures assess. Therefore, in the present study, participants may genuinely have different implicit and explicit attitudes towards women and this led to the lack of correlations between measures. Furthermore, Nosek (2007, p. 68) suggests university cultures are “*hotbeds of egalitarian values*” and this sampling bias may somewhat account for the lack of correlations between the measures in the present study. In the research by Nosek et al. (2002; 2007), where moderate correlations were observed between explicit and implicit gender attitudes, the research was internet based and thus reached a more heterogeneous sample who due to anonymity afforded by the internet may not have felt the need to censure their explicit attitudes. In sum, dissociations between implicit and explicit attitude measures are therefore believed to primarily boil down to ‘*willing and able*’ constraints.

However, the literature has also started to unveil factors distinct from cognitive explanations that could influence the explicit-implicit attitude relationship (Payne, Burkley, & Stokes, 2008). For example, methodological differences between explicit and implicit measures could lead to the weak correlations observed (Hofmann et al., 2005; Kawakami & Dovidio, 2001; Wittenbrink, Judd, & Park, 1997). The task demands of implicit and explicit attitudes are very different. Explicit measures typically involve participants reading a verbal statement and then indicating their agreement or disagreement on Likert scales. In contrast, implicit measures, such as the IAT, replace sentences with single words pictures and participants are merely asked to categorise the word, as opposed to evaluate it. Therefore, the

measurement of both attitudes is quite different. According to Payne et al. (2008), this lack of structural fit between implicit and explicit measures is a key factor underpinning weak correlations between the measures. In their research, Payne et al. (2008) found that the correlations between implicit and explicit attitudes varied as a function of the structural fit between the measures; the more structural fit there was, the greater the correlations.

In the present research, there is an absence of structural fit between the IAT and the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996). For example, the explicit stimulus presented in the ASI is in the form of verbal statements whereas the IAT only presented words. The nature of the response required in each method also differed with the ASI requiring respondents to rate the verbal statement on Likert scales whereas the IAT required them to categorise words. Additionally, the IATs looked at comparisons between men and women, whereas the ASI only asked about women. Therefore, the results of the present study may not be the result of willing and able constraints but be a consequence of difference in task demands between the measures.

Finally, absent correlations between the IAT and the explicit measures in the present research may be because there was no conceptual correspondence between them (Ajzen & Fishbein, 1977; Hofmann et al., 2005). In research by Nosek et al. (2002; 2007) the explicit measure used directly corresponded to IAT. For example, to match the Gender-Science IAT respondents were asked to explicitly rate their attitude towards science and liberal arts. Likewise, for the Gender-Career IAT, participants were asked to explicitly rate their preference for career or family. The implicit and explicit measures were therefore aligned to tap the exact same conceptual attitude. In the present study the IATs did not have conceptual correspondence with either the hostile or benevolent sexism questions. The lack of

conceptual correspondence could explain why Rudman and Glick (2002) also found no correlations between their stereotype IAT and either hostile or benevolent sexism. Future research could explore this explanation further. For example, asking participants to explicitly rate stereotypes they associate with men and women would conceptually correspond to the Gender-Stereotype IAT. Here, a correlation would be expected.

In summary, it is possible that it is not merely social desirability concerns that moderate the relationship between explicit and implicit measures. Both conceptual correspondence and the structural fit between measures are important factors to be explored in future research.

6.33ii The IAT versus benevolent sexism as predictors of gender discrimination

Greenwald et al. (2009) argue that when the topic is of sensitive nature, due to both willing and able constraints, the IAT will be the superior predictor of behaviour. The results from study 2 support this argument. When entered into regression analyses with benevolent sexism, the IAT was the only variable in the model to have any predictive utility.

Whilst in the present study the Gender-Career IAT was the only valid predictor of behaviour, these results were not in an expected direction and were only significant for participants who completed the IAT before the decisions tasks. The results therefore suggest that correction processes were in operation. In situations where there was no opportunity to correct for the attitude in the decision (e.g., by completing the decision task before the IAT) the Gender-Career IAT was not predictive of behaviour. Therefore, based on the current research, it is premature to conclude that the IAT is a superior predictor of behaviour.

6.34 The decision domain

Similar to study 1, promotion was the only decision predicted by the measures. This raises the question of why promotion, as opposed to other decisions, such as salary allocation, budget allocation or redundancy, is being predicted. As mentioned previously, it was theorised that redundancy would not be predicted by attitude measures due to the more systematic processing that may take place when people undertake more emotionally challenging decisions. Whilst this is still possible, it does not explain why salary decisions were not predicted.

One explanation that might account for why, in the present study, an IAT would predict promotion but not salary decisions could be due to the nature of the role being considered in each decision task. The promotion task asked participants to promote a candidate to a of Head of Sales position. In contrast, the salary decision task asked people to recommend a starting salary for a newly recruited IT manager. Beyond the decision itself, there are also two other major factors that make the task different. First, the job role differs across the tasks. Second, the seniority of each positions used in each decision task differed. Research has found that when there are more women in a male sex-typed role then performance ratings are likely to be less impacted (Pazy & Oron, 2001; Sackett, DuBois, & Noe, 1991). Pazy and Oron (2001) found women's competence and performance was rated significantly lower than men's in parts of the organisation where women were underrepresented but not roles where there were more equal distributions of men and women. As noted previously, as employees progress towards senior management and leadership the representation of women in these positions significantly declines. Furthermore, the traits associated with leadership are stereotypically masculine (Brenner et al., 1989; Dennis & Kunkel, 2004; Heilman et al., 1989; Martell et al., 1998; Powell et al., 2002; Schein, 1975; Scott & Brown, 2006; Willemsen, 2002). As a consequence, the Head of Sales role is likely to be associated more with men than the IT Manager role.

Therefore, in the promotion task there could be a greater lack of fit between the role and the traits associated with women than in the salary task; women are seen as equally capable of performing in more junior roles where there are more women within the specialism, but less capable in senior roles where they are few women. The degree of maleness associated with the different roles in the decision tasks may therefore impact on the degree to which gender bias comes into play and may account for why promotion, but not salary, was predicted by the attitude measures. Therefore, it might not be the decision per se that influences whether the IAT is predictive but instead task characteristics such as seniority and degree of sex-typing associated with the role.

It is worth recalling however, that in the present study (and indeed study 1) inverse relationships were observed between the IATs and promotion. As noted previously, it is possible that participants recognised the pattern of their implicit associations and therefore corrected in their decision-making thus leading to women being promoted instead of men. Such actions would not rule out the influence task characteristics had on their decisions – in the salary task attitudes are not predictive for the reason aforementioned, but in the promotion task the IAT did predict the decision, but due to correction processes also operating, this was not in the expected direction.

Whilst there may be something inherent in the decision itself that determines whether an attitude measure will be predictive, study design could also be a reason for why significant results were observed for promotion decisions but not for salary decisions. The design of the promotion task was within-subjects where all participants reviewed a job application from both a male and female candidate. However, the salary decision was a between-subjects design where participants recommended a starting salary for either a male or female recruit. Prior research has found that study design may influence the discriminatory outcome (Arvey, 1979; Davison & Burke, 2000;

Martinko & Gardner, 1983; Olian et al., 1988). Within-subjects designs are likely to heighten the salience of minority characteristics such as gender or race (Finkelstein et al., 1995; Olian et al., 1988); when all else is equal, gender may be used as the differentiating factor (Davison & Burke, 2000). In between-subjects designs, participants only make a decision regarding a male or female target so gender may be less salient and have less impact on the decision. This could therefore be a reason why relationships were observed for promotion but not salary decisions.

6.35 Limitations

6.35i Internet based research

Since the present research was conducted over the internet, it is possible that distractions (that are minimised under laboratory conditions) could have impacted on participant reaction times when completing the IAT. To date, much IAT research has been conducted over the internet (Nosek et al., 2002; 2007) and one advantage of the measures is the ability to check response latencies, removing those abnormally fast or abnormally slow. In the present study, all response latencies for each participant were checked to ensure there were not any significant gaps in completing the IAT that may have suggested interruptions or distractions to the task.

6.4 Conclusion

Similar to study 1, participants were revealed to hold strong implicit gender attitudes on both the Gender-Career IAT and Gender-Stereotype IAT. However, these associative patterns failed to translate into discriminatory behaviour in the way expected. First, and in contrast to the previous study, no relationships were observed between the Gender-Stereotype IAT and the personnel decisions. Second, only main effects were observed for the Gender-Career IAT and then only for the promotion decision. Third, this relationship was not in an expected direction, with stronger associations between male and career and female and family predicting the

promotion of a female, as opposed to a male candidate. Further analysis revealed that this finding is likely to be due to correction processes (Wegener & Petty, 1995), since the Gender-Career IAT was only predictive for participants who completed the IAT before the decision tasks; such ordering of the task would have allowed them to correct for any bias they may have believed to have shown on the IAT in their subsequent decisions.

In the domain of gender there is limited research looking at the link between the IAT and discriminatory personnel decisions. This research adds to this literature but does not find substantial support for the predictive validity of the IAT. Whilst there is evidence for the predictive validity of the IAT in the domain of implicit race attitudes and workplace discrimination (e.g., Blommaert et al., 2012; Derous et al., 2009; Rooth, 2010; Son Hing et al., 2008; Yogeeswaran & Dasgupta, 2010) for gender the evidence remains scarce.

Benevolent sexism was found to be predictive of promotion decision, but only for male participants. Furthermore, when considered against the IAT the measure was not predictive, thus leading some support to Greenwald et al.'s (2009) assertions that when the attitude domain under investigation is of a sensitive nature the IAT is a superior predictor. However, this conclusion needs to be acted upon with some caution, mainly because the IAT behaved in a manner contrary to expectations in the present study and may be subject to correction processes (Wegener & Petty, 1995).

Chapter Seven: Study 3 Method, Results and Discussion

7. Introduction

The majority of research assessing the predictive validity of the IAT has been conducted in laboratory settings and with student samples thus raising questions over the external validity of such studies (Blanton et al., 2009; Blanton & Jaccard, 2008; Landy, 2008; Mitchell & Tetlock, 2006). The external validity of explicit measures has also been questioned with little research studying the links between the hostile and benevolent sexism and gender discrimination in real work settings (Salvaggio et al., 2009). Would similar results be observed if the research participants were working professionals instead of students?

In contrast to students, working professionals are more likely to be aware of diversity and inclusion policies, have more experience of making personnel decisions and feel more accountable for the decisions they make - all factors that could impact the links between attitudes and behaviour (Blanton et al., 2009; Landy, 2008). Whilst recent field studies have found the IAT to be predictive of personnel decisions for both race (Rooth, 2010) and weight (Agerström & Rooth, 2011), there is currently limited research upon which to draw any firm conclusions.

Study 3 aims to address these gaps in the literature and shed further light on whether the IAT and explicit attitude measures are predictive of workplace gender discrimination when the research sample consists of working professionals, as opposed to students. The research hypotheses are therefore the same as those in the second study.

Hypothesis 4a: Participants who have higher benevolent sexism scores are more likely to appoint men in promotion decisions.

Hypothesis 4b: Participants who have higher benevolent sexism scores are more likely to recommend a higher starting salary for men.

Hypothesis 5a: Participants who have higher IAT scores are more likely to appoint men in promotion decisions.

Hypothesis 5b: Participants who have higher IAT scores are more likely to recommend a higher starting salary for men.

Hypothesis 6: There will be a positive correlation between benevolent sexism and the IAT; as benevolent sexism increases so will IAT scores.

Hypothesis 7: Both the IAT and benevolent sexism will be equally valid predictors of personnel decisions.

7.1 Method

7.11 Participants

Participants were 90 working professionals, of whom 44 were female and 46 were male. All participants were native speakers of English and 93% reported their ethnicity as White. Participants' age ranged from 20 to 62 with a mean of 39.6 ($SD = 11.1$) years. A Mann-Whitney U-test revealed that median age was not statistically significant between males and females, $U = 1074.5$, $z = .51$, $p = .61$.

7.12 Measures

The measures used were identical to those used in study 2:

- *Explicit gender attitudes:* hostile and benevolent sexism was measured using the Ambivalent Sexism Inventory (Glick & Fiske, 1996).
- *Implicit gender attitudes:* implicit gender attitudes were assessed via the Gender-Career IAT and the Gender-Stereotype IAT.

- *Discrimination measure*: discriminatory behaviour was explored via participants completing the managerial decision in–basket, within which the three personnel decisions of interest were embedded (promotion decision, redundancy decision and salary recommendation).

7.13 Procedure

Professional services firms were contacted and asked if they would be willing to advertise an opportunity for their employees to participate in research in exchange for a £5 per participant donation to a charity of their choice. Organisations that were willing to participate were sent an invite (Table 29) to circulate to their employees. Employees who were interested in taking part were advised to email the researcher directly. On receiving emails from potential participants, the researcher emailed them the first study and its associated instructions. The procedure then followed that used in study 2.

A total of 97 people volunteered to take part in the research. Data from two participants were excluded from the analyses because their error rates on the IATs were in excess of 25% (Rudman, 2011). Data from five participants were excluded since they failed to complete any of the required decision tasks. The final sample therefore consisted of 90 participants. Once all participants had completed all elements of the study the appropriate donations were paid to the nominated charities.

Table 29.

Invite to participate in research.

You are invited to raise funds for (*insert charity*) by participating in research being conducted at the University of Warwick. It will take **no more than 20-30 minutes of your time** and **£5 will be donated** on your behalf for completing the research.

This research explores managerial decision-making, memory and attitudes. There are two studies to complete, both taking no more than 20-30 minutes. **The £5 donation to charity is contingent on you completing both studies.** All of your responses will be anonymous and only the researcher at the University of Warwick will have access to your data.

So, if you would like to support this important research and raise further funds for (*insert charity*) please email the research administrator, Jo Kandola, on phd11jk@mail.wbs.ac.uk. You will then be emailed each of the studies to complete. Please remember your involvement should take no more than 20-30 minutes and you will raise £5 for (*insert charity*).

7.2 Results

Prior to testing the main research hypotheses, exploratory analyses were conducted in order to better understand data from the implicit and explicit attitude measures and the decision data. Analyses were also conducted to see whether the dependent and independent variables differed by demographic variables, including gender and age. Less than 7% (6 participants) reported their ethnicity as non-white and hence it was not possible to explore the impact of ethnicity on the independent and dependent variables. All data was analysed using IBM SPSS (v.21) for Mac. The improved IAT scoring algorithm was used to calculate *D*-scores for each participant on each IAT (Greenwald et al., 2003). Where data violated test assumptions, alternative non-parametric tests were run. No data transformations were conducted.

7.21 Preliminary analysis of explicit attitude measure data

The means, standard deviations, and correlations for hostile and benevolent sexism are presented in Table 30. Non-parametric Spearman rank order correlations were

performed on the data since tests of normality revealed that hostile sexism scores violated parametric assumptions.

Table 30.

Study 3: Means, standard deviations and correlations for hostile and benevolent sexism.

Measure	Mean	SD	Mean (M)	SD (M)	Mean (F)	SD (F)	HS
Hostile Sexism (HS)	1.66	1.02	1.77	1.13	1.54	.88	
Benevolent Sexism (BS)	1.83	.78	2.05	.76	1.59	.75	.38**

** Correlation is significant at the .01 level (2-tailed)
N = 90

Male participants scores on both hostile and benevolent sexism were higher than female participants scores, a finding consistent with study 2 and other research (Glick et al., 2000; Glick & Fiske, 1996; Rudman & Glick, 2002; Rudman & Kilianski, 2000). Independent t-tests revealed that males reported higher levels of benevolent sexism than females, a significant difference of .46 (95% CI, -.78 to -.14), $t(88) = -2.90$, $p = .01$. There were no statistically significant gender differences for hostile sexism. Spearman rank order correlations revealed a moderate negative correlation between hostile sexism and participant age; increased age was associated with lower hostile sexism score ($r = -.210$, $p = .047$). There was no correlation between age and benevolent sexism.

Consistent with prior research (e.g., Glick & Fiske, 1996; 1997) and study 2, correlations between hostile and benevolent sexism were observed (Table 30). Furthermore, correlations were apparent for both male ($r = .33$ $p = .02$) and female ($r = .46$ $p < .01$) participants.

Finally, Mann-Whitney U-tests revealed the student sample in study 2 had significantly higher hostile sexism ($U = 2655.50$, $z = -2.72$, $p = .01$) and benevolent sexism ($U = 2751.00$, $z = -2.42$, $p = .02$) scores compared to the sample of working professionals in the present study.

7.22 Preliminary analysis of IAT data

As in the prior studies, to assess whether measured response trials were consistent across IAT trial blocks, internal consistencies for each IAT were calculated by correlating the *D*-score from Blocks 3 and 6 with the *D*-score from Block 4 and 7. The results show that the trial blocks were significantly correlated for the Gender-Career IAT ($r(90) = .38, p < .001$) and the Gender-Stereotype IAT ($r(90) = .34, p < .001$). Table 31 displays the means and standard deviations for the Gender-Career and Gender-Stereotype IAT, together with correlations between the measures. Non-parametric Spearman rank order correlations were performed on the data since tests of normality revealed that only the Gender-Stereotype IAT met parametric assumptions.

Table 31.

Study 3: Means, standard deviations and correlations for IATs.

Measure	Mean	SD	Mean (M)	SD (M)	Mean (F)	SD (F)	CareerIAT
Gender-Career IAT ^a	.53 (1.77)	.30	.49	.31	.57	.29	
Gender-Stereotype IAT ^b	.46 (1.44)	.32	.36	.33	.56	.29	.27*

Note: IAT effect sizes are reported as the *D* statistic - .15, .35 and .60 correspond to small, medium and large effect sizes, respectively (Greenwald et al., 2003). Cohen's *d* scores for the IATs are presented in brackets below the *D* statistic.

a. High scores indicate that, compared to women, men were more easily associated with careers

b. High scores indicate that, compared to women, men were more easily associated with agentic traits.

* Correlation is significant at the .05 level (2-tailed)

N = 90

The results from study 3 are consistent with those observed in the prior two studies and previous research (e.g., Lynch, 2010; Nosek et al., 2002; 2007; Reuben et al., 2014; Rudman & Glick, 2002; Rudman & Kilianski, 2000). Specifically, *D*-scores for both the Gender-Career IAT and Gender-Stereotype IAT were in the same direction and were higher for female participants than male participants.

The Gender-Career IAT data reveal that, on average, participants produced *D*-scores ($M = .53, SD = .30$) consistent with symbolic beliefs about gender roles; participants

more easily associated women with family and men with career. Whilst the scores of female participants were higher than males on the Gender-Career IAT, an independent t-test revealed that these differences were not statistically significant.

The Gender-Stereotype IAT data reveal that, on average, participants produced *D-scores* ($M = .46$, $SD = .32$) consistent with gender stereotypes; men were more easily associated with competence traits, and women were more easily associated with warmth traits. Independent t-tests revealed that these differences were statistically significant. Women were more likely than men to associate women with warmth traits, and men with competence traits, a significant difference of .20 (95% CI, .07 to .33), $t(88) = 3.13$, $p < .01$. Spearman rank order correlations revealed no significant correlations between age and either of the IATs.

As observed in study 1 (but not study 2), there was a positive correlation between the Gender-Career and the Gender-Stereotype IAT (Table 31). When exploring correlations by participant gender further analysis revealed that a correlation between the IATs was only apparent for female participants ($r = .40$, $p = .01$).

Finally, an independent samples t-test revealed that Gender-Stereotype IAT scores were not significantly different between the student sample in study 2 and the working professional sample in the present study ($t(166) = -.43$, $p = .67$).

Furthermore, a Mann-Whitney U-test revealed no significant differences in the Gender-Career IAT between the two samples ($U = 4003.00$, $z = 1.59$, $p = .12$).

However, whilst not significant, IAT scores in the present study were higher than those observed for the student sample.

7.23 Preliminary analysis of personnel decisions

7.23i Promotion decisions

One participant did not make a promotion decision, resulting in $N = 89$. Analysis revealed that women were selected for promotion more often than men (Figure 27), with 50 participants selecting a female candidate for promotion and 39 participants selecting a male candidate for promotion. A one-sample Chi-square test revealed that this difference was not significant ($p = .29$). Chi-square tests for association revealed there was not a statistically significant association between gender of the participant and gender of the candidate selected for promotion, $\chi^2(1) = 1.97, p = .16$. In all cases, expected cell frequencies were greater than five. A point-biserial correlation revealed that there was no relationship between the gender of the candidate selected for promotion and participant age ($p = .12$).

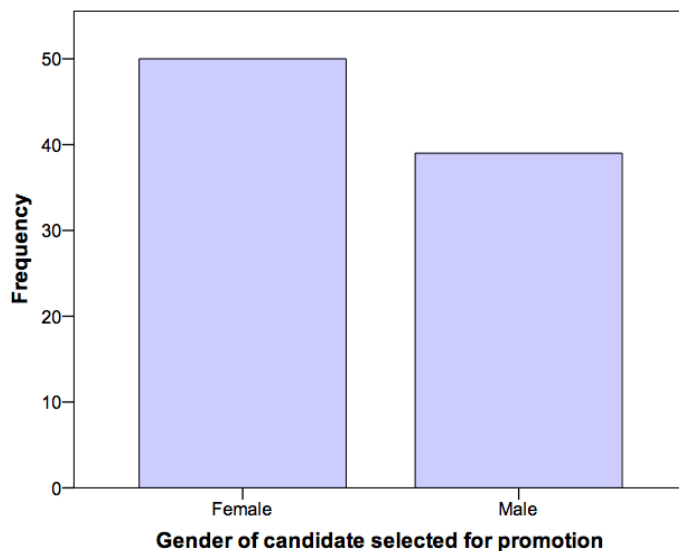


Figure 27. Study 3: Number of male and female candidates selected for promotion.

7.23ii Salary decisions

As in study 2, the salary decision task was a between-subjects design where approximately half of the participants ($N = 42$) recommended a starting salary for a newly recruited female IT manager and half of the participants ($N = 48$)

recommended a starting salary for a newly recruited male IT manager. All information was held constant in the decision task information except the name (and hence gender) of the IT manager. Preliminary analyses reveal that, on average, the male recruit was offered a higher starting ($M = £27375.00$ $SD = 3635.67$) salary than the female recruit ($M = £27095.24$, $SD = 3900.03$), however, an independent samples t-test revealed that this difference was not significant ($t(88) = -.35$, $p = .73$).

An ordinal logistic regression analysis was run to determine: 1) whether employee gender predicted the salary amount recommended for the new recruit and 2) whether participant gender or age interacted with employee gender to influence the salary recommended for the new recruit. No significant main effects for employee gender were revealed nor any interaction effects. The assumption of proportional odds was not violated ($p = .06$).

7.23iii Redundancy decisions

Nine participants did not make a redundancy decision, resulting in $N = 81$.

Preliminary analyses of the outcome variables indicate that men were selected for redundancy more often than women (Figure 28), with 44 participants selecting a male employee for redundancy and 37 participants selecting a female employee for redundancy. A one-sample Chi-square test revealed that this difference was not significant ($p = .51$). Chi-square tests for association revealed there was not a statistically significant association between gender of the participant and gender of the employee selected for redundancy, $X^2(1) = .11$, $p = .75$. A point-biserial correlation revealed that there was a significant negative relationship between the gender of the employee selected for redundancy and participant age ($p = .01$); as participant age increased so did the likelihood of making the male employee redundant.

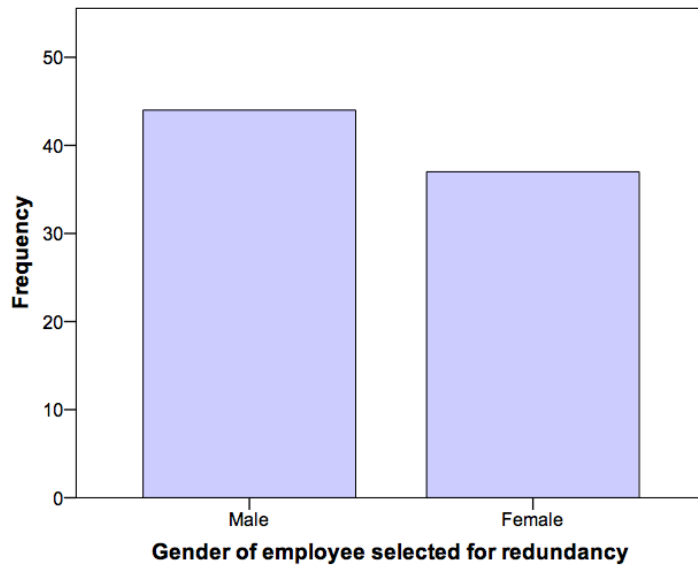


Figure 28. Study 3: Number of male and female employees selected for redundancy.

Overall, as summarised by Table 32, participant demographic data such as age and gender were found to impact some but not all of the dependent and independent variables. Significant participant gender differences were observed for both benevolent sexism scores (female scores were significantly lower than those of males) and the Gender-Stereotype IAT (female participant scores were significantly higher than males). There were also differences on hostile sexism scores according to participant age; increased age was associated with lower hostile sexism score. Finally, as age increased so did the likelihood of making the male employee redundant.

Table 32.

Study 3: Summary of the impact of demographic variables on all attitude measures and decision outcomes.

	Demographic Variables	
	Gender	Age
Hostile Sexism	X	✓
Benevolent Sexism	✓	X
Gender-Career IAT	X	X
Gender-Stereotype IAT	✓	X
Promotion Decision	X	X
Redundancy Decision	X	✓
Salary Decision	X	X

7.24 The predictive validity of benevolent sexism

7.24i The predictive validity benevolent sexism for promotion decisions

Hypothesis 4a: Participants who have higher benevolent sexism scores are more likely to appoint men in promotion decisions.

A binary logistic regression was performed to determine whether benevolent sexism scores had an impact on the likelihood participants would promote a male candidate. One participant did not make a promotion decision so was excluded from the analysis, resulting in $N = 89$. Benevolent sexism, participant gender and participant age were entered into step 1 of the model. Participant gender was coded as 0 for females and 1 for males. Benevolent sexism was a continuous variable where higher values reflect higher levels of sexism. The dependent variable, the gender of the candidate selected for promotion, was coded 0 for female and 1 for male. Since logistic regression has no assumptions about the distribution of predictor variables (Tabachnick & Fidell, 2013), none of the variables entered into the model were transformed.

As can be seen from Table 33, participant age was nearing significance, suggesting that older participants are more likely to select the male candidate. Critically, no significant main effects were observed for benevolent sexism. Therefore, hypothesis 4a was not upheld; participants who had higher benevolent sexism scores were not more likely to promote the male candidate.

Table 33.

Study 3: Summary of binominal logistic regression analysis for benevolent sexism, participant gender and age predicting male candidate appointed for promotion (N = 89).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	.36	.46	.61	1	.43	1.44	.58	3.55
Age	.04	.02	2.91	1	.09	1.04	1.00	1.08
Benevolent Sexism	.49	.31	2.58	1	.11	1.63	.90	2.97
Constant	-2.73	1.08	6.34	1	.01	.07		

Logistic regression analyses were also conducted to see whether any of the control variables (gender or age) interacted with benevolent sexism to impact the gender of the candidate selected for promotion. For example, to assess the interaction effects between participant gender and benevolent sexism, participant age and gender were entered into step 1 of the model, benevolent sexism was entered into step 2 of the model and the interaction term (participant gender x benevolent sexism) was entered into step 3 of the model.

The full model containing all of the predictor variables and the interaction term was marginally statistically significant $X^2(1, 89) = 3.58$ ($p = .06$), indicating that the model was able to distinguish between those who did and did not appoint the male candidate. The total model explained between 11.1% (Cox & Snell R Square) and 14.9% (Nagelkerke R Squared) of the variance in the candidate appointed and correctly classified 58.4% of the cases. Assumption of linearity of the logit was met for all continuous variables. Tests for multicollinearity indicated that a very low level of multicollinearity was present ($VIF = 1.12$ for benevolent sexism, 1.11 for participant gender and 1.03 participant age). Additionally, all tolerance values were in excess of .1 (Menard, 1995).

Table 34.

Study 3: Summary of binominal logistic regression analysis for interaction between benevolent sexism and participant gender in predicting male candidate appointed for promotion (N = 89).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	2.51	1.26	3.98	1	.05	12.25	1.05	143.53
Age	.04	.02	3.89	1	.05	1.04	1.00	1.09
Benevolent Sexism (BS)	1.16	.50	5.43	1	.02	3.18	1.20	8.43
BS x Participant Gender	-1.18	.64	3.38	1	.07	.31	.09	1.08
Constant	-4.11	1.37	9.02	1	.00	.02		

As displayed by Table 34, findings revealed that participant age, gender and benevolent sexism made a statistically significant contribution to the model. The interaction between benevolent sexism and participant gender was also nearing significance suggesting that participant gender differences in benevolent sexism scores had an impact on the gender of the candidate selected for promotion. To understand the nature of this interaction, interaction effects were plotted based on procedures by Aiken and West (1991), and Dawson (2014). As can be seen from Figure 29, as benevolent sexism scores increased for female participants so did the probability of selecting the male promotion candidate. In contrast, increases in male participants benevolent sexism scores appears to have little impact on their candidate choice. This trend differs from study 2, where higher benevolent sexism scores for male participants were related to an increased probability of selecting a male for promotion, whereas higher benevolent sexism scores for females were related to an decreased likelihood of selecting the male candidate. However, in the present study, the moderating role of participant gender on the relationship between benevolent sexism and the promotion decision is unlikely to be reliable since confidence intervals cross 1 (Field, 2011).

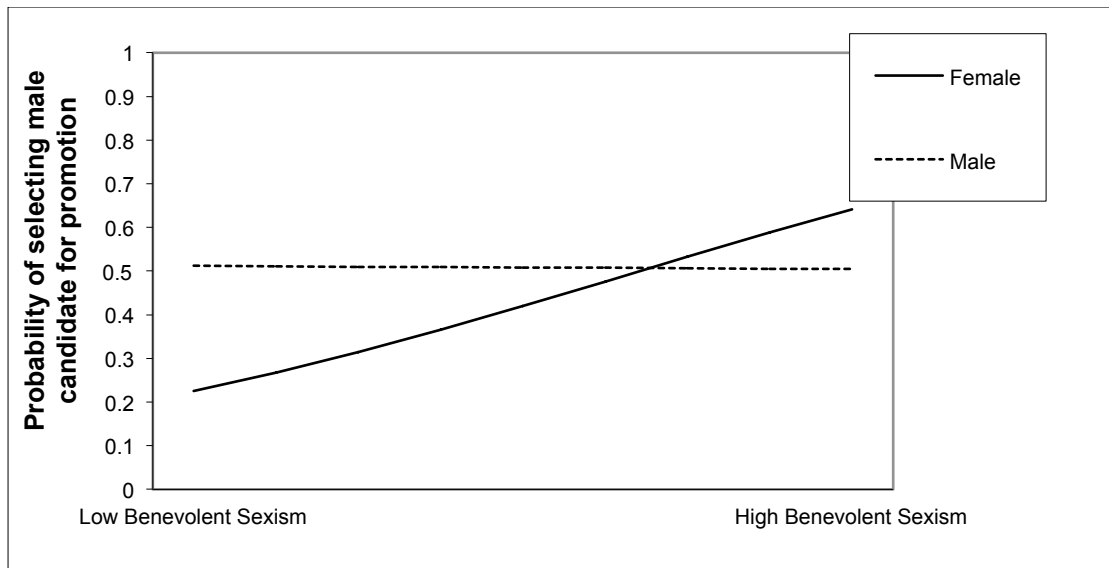


Figure 29. Study 3: The moderating effect of participant gender on the relationship between benevolent sexism and promotion decision.

As suggested by the previous model, participant age now made a significant contribution to the model, with older participants being more likely to select the male candidate. Further analysis revealed no interaction effects between participant age and benevolent sexism.

To confirm the assertion that hostile sexism would not be predictive of promotion decisions the above analyses were repeated, replacing benevolent sexism with hostile sexism in the models. The results revealed that hostile sexism was not a significant predictor of the promotion decision when entered into the model with only the control variables (participant gender and age). Additionally, there was no significant interaction between hostile sexism and participant age. However, significant interactions were observed between hostile sexism and participant gender (Table 35).

Table 35.

Study 3: Summary of binominal logistic regression analysis for interaction between hostile sexism and participant gender in predicting male candidate appointed for promotion (N = 89).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	2.15	.93	5.35	1	.02	8.54	1.39	52.61
Age	.03	.02	2.50	1	.11	1.03	.99	1.08
Hostile Sexism (HS)	.83	.40	4.31	1	.04	2.28	1.05	4.97
HS x Participant Gender	-.97	.49	4.02	1	.05	.38	.15	.98
Constant	-3.17	1.17	7.37	1	.01	.04		

The full model containing all of the predictor variables and the interaction term was statistically significant $X^2(1, 89) = 4.29$ ($p = .04$), indicating that the model was able to distinguish between those who did and did not appoint the male candidate. The total model explained between 10.0% (Cox & Snell R Square) and 13.4% (Nagelkerke R Squared) of the variance in the candidate appointed and correctly classified 66.3% of the cases. Assumption of linearity of the logit was met for all continuous variables. Tests for multicollinearity indicated that a very low level of multicollinearity was present ($VIF = 1.07$ for hostile sexism, 1.02 for participant gender and 1.06 for participant age). Additionally, all tolerance values were in excess of .1 (Menard, 1995).

Interaction effects were plotted based on procedures by Aiken and West (1991) and Dawson (2014) revealed that as hostile sexism scores increased for female participants so did the probability of selecting the male candidate for promotion. In contrast, increased hostile sexism scores for male participants' was associated with a slight decline in the likelihood of selecting the male promotion candidate (Figure 30).

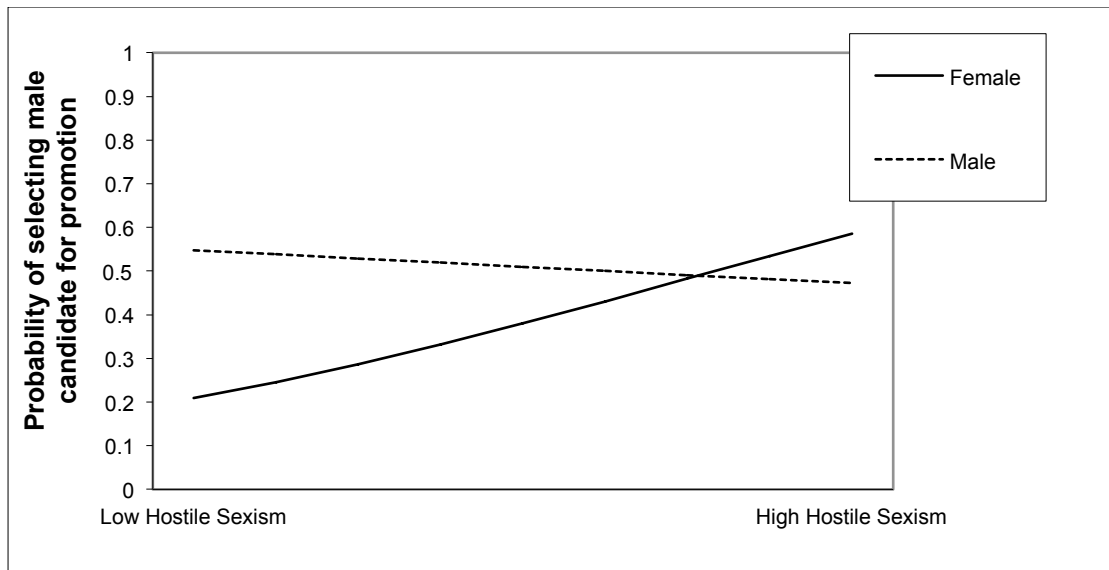


Figure 30. Study 3: The moderating effect of participant gender on the relationship between hostile sexism and promotion decision.

7.24ii The predictive validity of benevolent sexism for salary decisions

Hypothesis 4b: Participants who have higher benevolent sexism scores are more likely to recommend a higher starting salary for men.

As in study 2, a moderated ordinal logistic regression analysis was performed to see if employee gender interacted with benevolent sexism to influence the salary recommended for the newly recruited IT manager. It was expected that those with higher benevolent sexism scores would be more likely to recommend a higher starting salary for the male recruit and lower starting salaries for the female recruit. No interaction effects were observed ($p = .61$). However, the assumption of proportional odds was violated ($p < .01$). The inclusion of control variables (participant gender and age) seem to have led to this violation, therefore, these variables were removed from the model. The subsequent analysis, once again revealed there were no interaction effects between employee gender and benevolent sexism ($p = .70$). There were no violations of proportional odds ($p = .91$). Therefore,

hypothesis 4b was not upheld; benevolent sexism does not predict salary recommendations for male and female recruits.

An ordinal logistic regression was also conducted to see whether employee gender moderated the relationship between hostile sexism and the recommended salary amount. Since the assumption of proportional odds was violated when control variables were included in the model ($p < .01$), the analysis was run with both the inclusion and exclusion of control variables. In both instances, there were no interaction effects between employee gender and hostile sexism ($p = .76$ when controls included, $p = .68$ when controls excluded).

3-way interaction effects between employee gender, benevolent sexism and participant demographic variables were not possible due to sample size being too small and because of violations of assumptions of proportional odds.

7.24iii The predictive validity of benevolent sexism for redundancy decisions

A binary logistic regression was performed to test the assumption that benevolent sexism would not predict the gender of the employee selected for redundancy. Nine participants did not make a redundancy decision so were excluded from the analysis, resulting in $N = 81$. As for promotion, the control variables, together with benevolent sexism, were entered into the model in step 1. Participant gender was coded as 0 for females and 1 for males. The dependent variable, the gender of the candidate selected for redundancy, was coded 0 for male and 1 for female.

The full model containing all of the predictor variables was marginally statistically significant $X^2(3, 81) = 7.45$ ($p = .06$), suggesting the model was able to distinguish between those who did and did not make the female candidate redundant. The total model explained between 8.8% (Cox & Snell R Square) and 11.7% (Nagelkerke R

Squared) of the variance in the employee selected for redundancy and correctly classified 63.0% of the cases. Assumption of linearity of the logit was met for all variables. Tests for multicollinearity indicated that a very low level of multicollinearity was present ($VIF = 1.07$ for hostile sexism, 1.04 for participant gender and 1.05 for participant age). Additionally, all tolerance values were in excess of .1 (Menard, 1995).

As can be seen from Table 36, benevolent sexism was not predictive of the redundancy decision. However, participant age was a significant predictor, which had an odds ratio of .95. This indicates an inverse relationship between participant age and the likelihood of selecting a male candidate; older participants were more likely to make the male employee redundant.

Table 36.

Study 3: Summary of binominal logistic regression analysis for benevolent sexism and control variables predicting female employee selected for redundancy (N = 81).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	-.21	.49	.19	1	.67	.81	.31	2.11
Age	-.05	.02	5.31	1	.02	.95	.91	.99
Benevolent Sexism	.26	.32	.67	1	.41	1.30	.70	2.41
Constant	1.48	1.10	1.82	1	.18	4.41		

Logistic regression analyses were also conducted to see whether any of the demographic variables interacted with benevolent sexism to impact the gender of the employee selected for redundancy. For example, all demographic variables (gender and age) were entered into step 1 of the model, benevolent sexism was entered into step 2 of the model and the interaction term (participant gender x benevolent sexism) was entered into step 3 of the model. No interaction effects were observed. The same procedure was followed for participant age. Again, no interaction effects were observed.

The predictive validity of hostile sexism was also tested via logistic regression analyses, following the same procedure as for benevolent sexism. No main effects or interaction effects were observed.

7.25 The predictive validity of the IAT

7.25i The predictive validity of the IAT for promotion decisions

Before exploring the ability of benevolent sexism to perform equally well to the IAT in predicting personnel decisions, analyses were conducted to see whether the IAT was predictive of personnel decisions.

Hypothesis 5a: Participants who have higher IAT scores are more likely to appoint men in promotion decisions.

A binary logistic regression was performed to determine whether benevolent sexism scores had an impact on the likelihood participants would promote a male candidate. One participant did not make a promotion decision so was excluded from the analysis, resulting in $N = 89$. The Gender-Career IAT, Gender-Stereotype IAT, participant gender and participant age were entered into step 1 of the model. Participant gender was coded as 0 for females and 1 for males. Both of the IATs were continuous variables where higher values indicate stronger implicit associations in the expected direction. The dependent variable, the gender of the candidate selected for promotion, was coded 0 for female and 1 for male. Since logistic regression has no assumptions about the distribution of predictor variables (Tabachnick & Fidell, 2013), none of the variables entered into the model were transformed.

The full model containing all of the predictor variables was statistically significant $\chi^2(4, 89) = 10.93$ ($p = .03$), indicating that the model was able to distinguish between those who did and did not appoint the male candidate. The total model explained

between 11.6% (Cox & Snell R Square) and 15.5% (Nagelkerke R Squared) of the variance in the candidate appointed and correctly classified 62.9% of the cases. Assumption of linearity of the logit was met for both IATs. Tests for multicollinearity indicated that a very low level of multicollinearity was present ($VIF = 1.06$ for the Gender-Career IAT, 1.20 for the Gender-Stereotype IAT, 1.13 for participant gender and 1.05 for participant age). Additionally, all tolerance values were in excess of .1 (Menard, 1995).

As can be seen from Table 37, only the Gender-Stereotype IAT made a significant contribution to the model, with an odds ratio of 6.9. This indicates that participants who had higher Gender-Stereotype IAT scores were over 6.9 times more likely to promote a male candidate. Therefore, hypothesis 5a was upheld. In contrast to study 2, the Gender-Career IAT was not found to be predictive of promotion decision.

Table 37.

Study 3: Summary of binominal logistic regression analysis all IATs, participant gender and age predicting male candidate appointed for promotion (N = 89).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	.95	.49	3.69	1	.06	2.57	.98	6.75
Participant Age	.02	.02	1.13	1	.29	1.02	.98	1.07
Gender-Career IAT	-.92	.79	1.37	1	.24	.40	.09	1.87
Gender-Stereotype IAT	1.93	.81	5.70	1	.02	6.87	1.41	33.45
Constant	-2.03	.99	4.17	1	.04	.13		

Logistic regression analyses were also conducted to see whether either participant gender or age interacted with the IATs to impact the gender of the candidate selected for promotion. For example, to assess for interaction effects between participant gender and the IAT, gender and work experience were entered into step 1 of the model, each of the IATs were entered into step 2 of the model and the interaction terms (gender x each IAT) were entered into step 3 of the model. As can be seen from Table 38, significant interaction effects were observed suggesting that

gender difference in IAT scores did have an impact on the gender of the candidate selected for promotion.

The full model containing all of the predictor variables and interaction terms was statistically significant $X^2(2, 89) = 6.81$ ($p = .03$), indicating that the model was able to distinguish between those who did and did not appoint the male candidate. The total model explained between 18.1% (Cox & Snell R Square) and 24.2% (Nagelkerke R Squared) of the variance in the candidate appointed and correctly classified 74.2% of the cases. Assumption of linearity of the logit was met for all IATs. Tests for multicollinearity indicated that a very low level of multicollinearity was present ($VIF = 1.06$ for the Gender-Career IAT, 1.20 for the Gender-Stereotype IAT, 1.13 for participant gender and 1.05 for participant age). Additionally, all tolerance values were in excess of .1 (Menard, 1995).

Table 38.

Study 3: Summary of binominal logistic regression analysis for interaction between IATs and participant gender in predicting male candidate appointed for promotion (N = 89).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	3.62	1.35	7.22	1	.01	37.16	2.66	518.86
Participant Age	.02	.02	1.04	1	.31	1.02	.98	1.07
Gender-Career IAT	-.69	1.33	.27	1	.61	.50	.04	6.81
Gender-Stereotype IAT	4.67	1.68	7.76	1	.01	106.31	3.99	2834.53
Gender-Career IAT x Participant Gender	-.93	1.73	.29	1	.59	.39	.01	11.68
Gender-Stereotype IAT x Participant Gender	-4.16	1.93	4.63	1	.03	.02	.00	.69
Constant	-3.83	1.38	7.73	1	.01	.13		

Plotted interaction effects (Aiken & West, 1991; Dawson, 2014) revealed that the probability of promoting the male candidate increased more for female participants as their Gender-Stereotype IAT scores increased than it did for increases in male participants IAT scores (Figure 31). This suggests that as implicit associations between men and competence and women and warm become stronger they have more of an impact on female participants promotion decisions than they do men's.

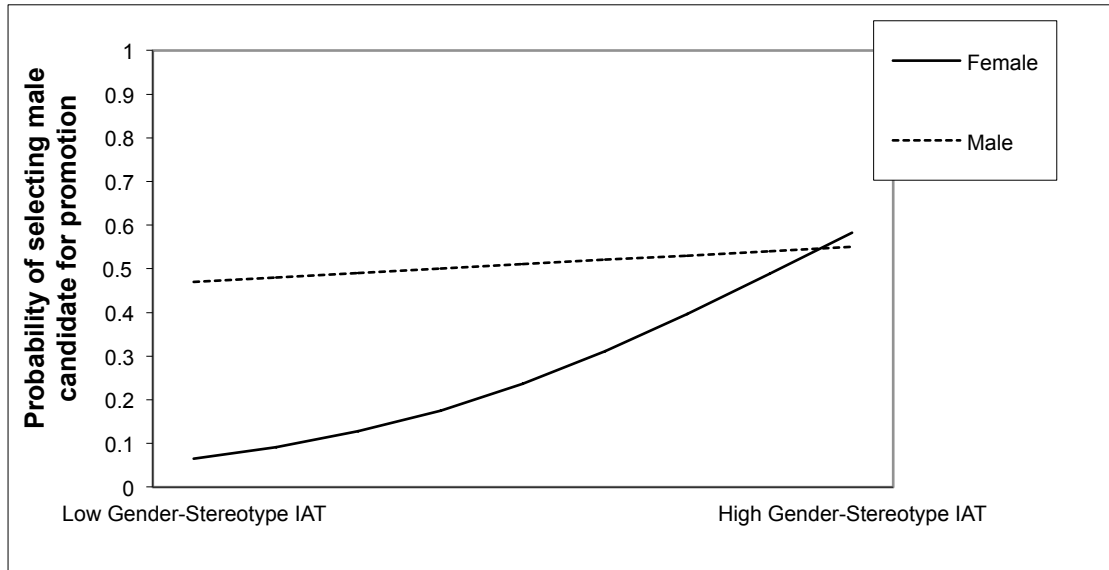


Figure 31. Study 3: The moderating effect of participant gender on the relationship between Gender-Stereotype IAT and promotion decision.

A similar approach was adopted to assess whether IAT scores interacted with participant age to influence the gender of the candidate promoted. No interaction effects were observed.

7.25ii The predictive validity of the IAT for salary decisions

Hypothesis 5b: Participants who have higher IAT scores are more likely to recommend a higher starting salary for men.

A moderated ordinal logistic regression analysis was performed to see if employee gender interacted with either of the IATs to influence the salary recommended for the newly recruited IT manager. It was expected that those with higher IAT scores would be more likely to recommend a higher starting salary for the male recruit and lower starting salaries for the female recruit. No interaction effects were observed for the Gender-Stereotype IAT ($p = .47$). Whilst results were nearing significance for the Gender-Career IAT ($p = .07$), confidence intervals crossed 1 (95% CI, $-.20$ to 5.35)

suggesting this results in likely to be unreliable (Field, 2011). Since the assumption of proportional odds was once again violated ($p < .01$), the analysis was re-run with the control variables (participant gender and age) excluded from the model. There was no violation of proportional odds ($p = .98$) in the subsequent analysis. As before, the results revealed no interaction effects between employee gender and the Gender-Career IAT ($p = .12$) or the Gender-Stereotype IAT ($p = .39$). Therefore, hypothesis 5b was not upheld; the IAT did not predict salary recommendations for male and female recruits.

As noted previously, 3-way interaction effects between employee gender, the IATs and participant demographic variables were not possible due to sample size being too small and because of violations of assumptions of proportional odds.

7.25iii The predictive validity of the IAT for redundancy decisions

Since redundancy may provoke more effortful processing, thus countering the impact of implicit attitudes on decisions, it is expected that no effects will be observed between the IAT and redundancy decisions. Binary logistic regression analyses were performed to test this assumption. Nine participants did not make a redundancy decision so were excluded from the analysis, resulting in $N = 81$. As for promotion, the control variables, together with the IATs, were entered into the model in step 1. All dichotomous variables were coded as before. The dependent variable, the gender of the employee selected for redundancy, was coded 0 for male and 1 for female. As expected, neither of the IATs predicted the redundancy decision. Participant age was the only variable that made a significant contribution to the model (Table 39); older participants were more likely to select the male employee for redundancy.

Table 39.

Study 3: Summary of binominal logistic regression analysis for IATs and control variables predicting female employee selected for redundancy (N = 81).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	.14	.51	.07	1	.79	1.15	.42	3.12
Participant Age	-.06	.02	6.65	1	.01	.94	.90	.99
Gender-Career IAT	.56	.78	.53	1	.47	1.75	.38	8.01
Gender-Stereotype IAT	.71	.82	.75	1	.39	2.02	.41	10.00
Constant	1.44	1.02	2.00	1	.16	4.20		

Logistic regression analyses were also conducted to see whether any of the demographic variables interacted with the IATs to impact the gender of the employee selected for redundancy. For example, all demographic variables (gender and age) were entered into step 1 of the model, both IATs were entered into step 2 of the model and the interaction terms for each IAT (participant gender x Gender-Career IAT, participant gender x Gender-Stereotype IAT) were entered into step 3 of the model.

The full model containing all of the predictor variables and interaction terms was statistically significant $X^2(2, 89) = 6.81$ ($p = .03$), indicating that the model was able to distinguish between those who did and did not appoint the male candidate. The total model explained between 18.1% (Cox & Snell R Square) and 24.2% (Nagelkerke R Squared) of the variance in the candidate appointed and correctly classified 74.2% of the cases. Assumption of linearity of the logit was met for all IATs. Tests for multicollinearity indicated that a very low level of multicollinearity was present ($VIF = 1.06$ for the Gender-Career IAT, 1.20 for the Gender-Stereotype IAT, 1.13 for participant gender and 1.05 for participant age). Additionally, all tolerance values were in excess of .1 (Menard, 1995).

As can be seen from Table 40, interactions between participant gender and the Gender-Stereotype IAT were nearing significance, however, since confidence

intervals cross 1 this results in unlikely to be reliable (Field, 2011). The same procedure was followed for participant age. No interaction effects were observed.

Table 40.

Study 3: Summary of binominal logistic regression analysis for IATs and control variables predicting female employee selected for redundancy (N = 81).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	3.13	1.27	6.10	1	.01	22.78	1.91	272.09
Participant Age	-.07	.02	7.73	1	.01	.93	.89	.98
Gender-Career IAT	1.72	1.27	1.84	1	.18	5.60	.47	67.60
Gender-Stereotype IAT	2.72	1.53	3.16	1	.08	15.17	.76	303.63
Gender-Career IAT x Participant Gender	-2.64	1.70	2.40	1	.12	.07	.00	2.01
Gender-Stereotype IAT x Participant Gender	-3.59	1.90	3.59	1	.06	.03	.00	1.13
Constant	.01	1.25	2.00	1	1.00	1.01		

7.26 Correlations between implicit and explicit measures

Hypothesis 6: There will be a positive correlation between benevolent sexism and the IAT; as benevolent sexism increases so will IAT scores.

Since hostile and benevolent sexism are highly correlated (Glick & Fiske, 1996), partial correlations were performed explore the relationships between the each explicit measure of sexism and the IATs. As can be seen from Table 41, there were no correlations between implicit and explicit attitude measures. Furthermore, partial correlations revealed no relationships between implicit and explicit measures for either male or female participants. Therefore, hypothesis 6 was not upheld.

Table 41.

Study 3: Correlations between explicit and implicit attitude measures.

Measure	All		Male		Female	
	HS	BS	HS	BS	HS	BS
Gender-Career IAT	-.03	-.18	-.05	-.05	.00	-.02
Gender-Stereotype IAT	-.08	-.06	-.10	.24	-.20	.20

Note: All correlations are partial correlations, controlling for the positive relationship between hostile and benevolent sexism

HS = hostile sexism

BS = benevolent sexism

N = 90

7.27 The Predictive validity of benevolent sexism when compared to the IAT

Hypothesis 7: Both the IAT and benevolent sexism will be equally valid predictors of personnel decisions.

7.27i The predictive validity of benevolent sexism and the IAT for promotion decisions

A binary logistic regression was performed to ascertain the effects of the IAT and benevolent sexism on the likelihood participants would select the male promotion candidate. One participant did not make a promotion decision so was excluded from the analysis resulting in $N = 89$. All predictor variables, together with the control variables (participant gender and age) were entered into step 1 of the model. Participant gender was coded as 0 for females and 1 for males. The IATs and benevolent sexism were all continuous variables where higher values reflect higher levels of sexism or implicit associations in the expected direction. Participant age was also a continuous variable. The dependent variable, the gender of the candidate selected for promotion, was coded 0 for female and 1 for male. Since logistic regression has no assumptions about the distribution of predictor variables (Tabachnick & Fidell, 2013), all variables entered into the model were not transformed.

The logistic regression model containing all of the variables was statistically significant $\chi^2(5, 89) = 12.09, (p = .03)$, indicating that the model was able to distinguish between those who did and did not appoint the male candidate. The model explained between 12.7% (Cox & Snell R Square) and 17.0% (Nagelkerke R^2) of the variance in the gender selected for promotion and correctly classified 64.0% of cases. Assumption of linearity of the logit was met for all attitude measures. Tests for multicollinearity indicated that a very low level of multicollinearity was present (*VIF*

= 1.19 for benevolent sexism, 1.27 for the Gender-Stereotype IAT, 1.06 for the Gender-Career IAT, 1.29 for participant gender, and 1.09 for participant age). Additionally, all tolerance values were in excess of .1 (Menard, 1995).

Table 42 shows that only the Gender-Stereotype IAT made a significant contribution to the model, with an odds ratio of 5.71. This indicates that as the Gender-Stereotype IAT score increases by 1 unit, people almost 6 times more likely to select the male promotion candidate. Furthermore, because the odds ratio and its confidence intervals are greater than 1 the relationship between the Gender-Stereotype IAT and the promotion decision found in this sample is likely to be true of the whole population. Since benevolent sexism was not predictive of the promotion decision, hypothesis 7 was not upheld. The results provide some evidence that the IAT will be a superior predictor of behaviour when attitude measures are used in sensitive domains (Greenwald et al., 2009).

Table 42.

Study 3: Summary of binominal logistic regression analysis all IATs, benevolent sexism, participant gender and age predicting male candidate appointed for promotion (N = 89).

	B	S.E	Wald	df	Sig.	Exp(B)	95% C.I. for EXP (B)	
							Lower	Upper
Participant Gender	.76	.52	2.12	1	.15	2.14	.80	5.93
Participant Age	.03	.02	1.54	1	.22	1.03	.99	1.07
Benevolent Sexism	.35	.32	1.14	1	.29	1.41	.75	2.66
Gender-Career IAT	-.84	.80	1.11	1	.29	.43	.09	2.06
Gender-Stereotype IAT	1.74	.82	4.47	1	.03	5.71	1.14	28.68
Constant	-2.70	1.20	5.08	1	.02	.07		

To check the assumption that hostile sexism will not be predictive of the promotion decision the above analysis was repeated, replacing benevolent sexism with hostile sexism in the model. As expected, hostile sexism did not make a significant contribution to the model.

7.27ii The predictive validity of benevolent sexism and the IAT for salary decisions

A moderated ordinal logistic regression analysis was performed to see if employee gender interacted with benevolent sexism, the Gender-Career IAT and the Gender-Stereotype IAT to influence the salary recommended for the newly recruited IT manager. No interaction effects were observed between employee gender and any of the predictor variables ($p > .05$). Since the assumption of proportional odds was once again violated ($p < .01$), the analysis was re-run with the control variables (participant gender and age) excluded from the model. There was no violation of proportional odds ($p = .90$) in the subsequent analysis. As before, the results revealed no interaction effects between employee gender and benevolent sexism ($p = .58$), the Gender-Career IAT ($p = .19$), or the Gender-Stereotype IAT ($p = .26$). Therefore, hypothesis 7b was not supported; neither the explicit nor implicit attitudes measures were predictive of salary recommendations for men and women.

7.27iii The predictive validity of benevolent sexism and the IAT for redundancy decisions

A binomial logistic regression was performed to ascertain the effects of benevolent sexism and the IATs on the likelihood participants would select the female employee for redundancy. Nine participants did not make a redundancy decision resulting in $N = 81$. As for promotion, the control variables, together with benevolent sexism and the IATs, were entered into the model in step 1. All dichotomous variables were coded as before. The dependent variable, the gender of the employee selected for redundancy, was coded 0 for male and 1 for female. As expected, the analysis revealed that neither benevolent sexism nor the IATs were predictive of redundancy decisions.

The above analysis was repeated to check the assumption that hostile sexism would not be predictive of the redundancy decision. As expected, none of the variables, including hostile sexism made a significant contribution to the model.

7.3 Discussion

One criticism levied at the IAT, and indeed explicit measures, is that the majority of research has been conducted in laboratory settings with student samples thus raising questions over the external validity of the results (Blanton et al., 2009; Blanton & Jaccard, 2008; Landy, 2008; Mitchell & Tetlock, 2006). The third and final study in the thesis contributes to the literature by replicating the methods and procedures used in study 2 in order to understand the predictive validity of implicit and explicit measures of attitudes when a sample of employed individuals is used, as opposed to students.

7.31 Benevolent sexism

Consistent with prior research (Glick et al., 2000; Glick & Fiske, 1996; Rudman & Glick, 2002; Rudman & Kilianski, 2000), and study 2, men showed higher levels of benevolent and hostile sexism than women. Whilst divergence was observed between hostile and benevolent sexism for women in the student sample, this was not the case for the working professionals. So whilst female students may be more accepting of benevolent, as opposed to hostile sexism (Glick & Fiske, 1996), this was not so for female working professionals.

Also consistent with prior research (e.g., Glick & Fiske, 1996; 1997), and study 2, positive correlations were observed between hostile and benevolent sexism; participants who reported higher levels of hostility also reported higher levels of protection and affection towards women. Interestingly, hostile and benevolent sexist attitudes were significantly lower in the professional sample than the student sample.

Whilst Nosek (2007, p. 68) suggests that universities are “*hotbeds of egalitarian values*”, work environments may be more so. With many organisations offering some form of diversity and inclusion training, together with the increased focus on gender equality resulting from the Davies Report (2011), working professionals may be acutely aware of the inappropriateness of expressing such attitudes or may genuinely believe themselves’ to be egalitarian, leading to lower levels of hostile and benevolent sexism being reported.

Of critical importance in the research was whether benevolent sexism would predict personnel decisions. It was hypothesised that since the expression of benevolent sexism is less likely to be frowned upon than hostile sexism it would be predictive of personnel decisions. However, similar to study 2, no significant main effects were observed for benevolent sexism and any of the personnel decisions. Neither did participant gender moderate the relationship between benevolent sexism and the promotion decision.

Whilst, for reasons aforementioned, hostile sexism was not expected to predict personnel decisions, participant gender did moderate the relationship between hostile sexism and the promotion decision; female participants who reported higher hostile sexism were more likely to select the male for promotion. In contrast, as hostile sexism scores increased for male participants, the probability of selecting the male candidate decreased. Such findings could be indicative of self-presentation concerns; a man is likely to be more concerned about being labelled a sexist than a woman which may lead them to either not express their views or to ensure they correct for their attitudes in their behaviour. Women, however, may not have the same self-presentation concerns. For example, they may not believe it is possible to be prejudiced against their own group. Or, they can more easily dismiss accusations of sexism since they are a woman too so how could they possibly be

sexist? Prior research has not explored the role of women's explicit gender attitudes in perpetuating the manifest gender inequalities observed in organisations so the results from the present study are an interesting base upon which to build further research.

7.32 The IAT

As previously observed, participants exhibited strong implicit cognition-based gender attitudes. Participants more easily associated men with career and women with family. In addition, they held stronger associations between men and competence traits and women and warmth traits than they did the opposite associations.

Furthermore, IAT scores were higher for female than male participants, consistent with the previous studies and prior research (e.g., Lynch, 2010; Nosek et al., 2002; 2007; Reuben et al., 2014; Rudman & Glick, 2002; Rudman & Kilianski, 2000). This positive framing of gender stereotypes and symbolic beliefs is likely to be the reason why women so readily accept them as part of their identity.

Interestingly, working professionals had stronger implicit gender associations than students. This result could be a reflection of prior research that has found a tendency for older IAT respondents to hold stronger implicit gender attitudes (Nosek et al., 2007). In the present study the mean participant age 40, whereas in study 2 the mean age was 20.

Variations between student and working professionals IAT scores may also result from the recent strengths based approach to valuing difference promoted within organisations and the media. For example, whilst there is little evidence to support the argument that there are differences between the skills and abilities of men and women (see Hyde, 2005), much is written in the popular press about how women

'bring something different' to organisations.⁴ Furthermore, in their desire to bring about equality, both women and organisations perpetuate the message that women bring unique skills that will balance those of men's and thus lead to a better performing business. For example, research by IDDAS in 2009 found that many of the female non-executive directors interviewed believed that they brought different perspectives and strengths to the board than men. In particular, they reported being more interested in promoting good team dynamics and building relationships than men (IDDAS, 2009), skills that are stereotypically linked to women. Working professionals may be more exposed to these messages than students and this may further reinforce their implicit gender attitudes.

"Women understand people better and are not embarrassed to talk about the issues. Men are less prepared to talk about individuals' needs. They talk more about the business issues, and outcomes and only then do they look at personnel, and reasons for particular performance." (quote from female non-executive director, IDDAS report, 2009, p. 10)

Of further interest is that whilst implicit attitudes were more strongly held for working professionals than students, the opposite was observed for explicit attitudes, with students showing significantly higher levels of hostile and benevolent sexism than working professionals. This again would support the argument that within organisations people may be less willing or able to express their explicit attitudes, than those studying in universities. Since implicit measures are harder to fake (Steffens, 2004) and bypass social desirability concerns, they are able to reveal deeply routed beliefs about men and women.

A key concern of this thesis is whether these implicit gender associations influence personnel decision-making. In contrast to studies 1 and 2, the Gender-Stereotype IAT was found to predict promotion decisions and in the manner expected;

⁴ see <http://www.forbes.com/sites/kathycapriano/2013/02/12/the-top-6-reasons-women-are-not-leading-in-corporate-america-as-we-need-them-to/> for an example of such writings

participants who more easily associated men with competence traits and women with warmth traits were more likely to promote the male candidate. Furthermore, participant gender moderated the relationship between the Gender-Stereotype IAT and the promotion decision – the more female participants associated men with competence traits and women with warmth traits the greater the probability of selecting the male promotion candidate. For male participants the trend was in the opposite direction; increased Gender-Stereotype IAT scores were associated with a marginal decline in the likelihood of selecting the male candidate. This finding is of interest since it suggests that women are not immune to discrimination against their own gender. Whilst endorsing positive stereotypes of their own group helps them maintain a positive self-image, these implicit beliefs have damaging consequences for gender equality in the workplace when women with hold these beliefs are involved in decisions about the progression of other females into senior roles.

Based on the present research, the argument that more women on selection and promotion panels will ensure women are not discriminated against does not hold up. If such women have strong implicit gender attitudes they may be more likely than their male counterparts to make decisions that favour men. Furthermore, the argument that more work needs to be done with men, since they are the ones holding women back also needs to be carefully considered. Many organisations are providing unconscious bias training to organisations. The majority of this has been with senior levels, who are predominantly male. Therefore, men may be more aware than women of how implicit bias affects decision-making and this awareness might account the moderating role of gender in the present study.

In contrast to the Gender-Stereotype IAT, the Gender-Career IAT was not found to be predictive of any of the personnel decisions, nor did any of the participant variables moderate the relationships between the Gender-Career IAT and the

decision. This mirrors the results from the first study where no main effects were observed for this IAT. However, the second study did reveal an inverse relationship such that participants who more easily associated men with career and women with family were more likely to promote the female, not the male, candidate. However, such findings were likely to be due to order effects where those who completed the IAT before the promotion decision had the opportunity to correct for their implicit associations. Overall, therefore, it does not appear that the Gender-Career IAT is predictive of promotion, budget, salary or redundancy decisions. Whilst the tool is useful to highlight peoples' associative patterns, its value beyond that is questionable.

7.33 Benevolent sexism and the IAT

7.33i Correlations between implicit and explicit measures

Whilst it was argued that social desirability concerns would prevent correlations between hostile sexism and the IATs, correlations with benevolent sexism were expected since the expression of this form of sexism may not be frowned upon. However, no correlations were observed between the IAT and either hostile or benevolent sexism. The absent relationships may well be the result of people being unable or unwilling to report their explicit attitudes, however, as discussed previously a number of other explanations are possible, including the lack of conceptual correspondence between the measures (Ajzen & Fishbein, 1977; Hofmann et al., 2005) or the lack of structural fit (Payne et al., 2008).

7.33ii The IAT versus benevolent sexism as predictors of gender discrimination

The present study found evidence to support the assertion by Greenwald et al. (2009) that the IAT will be a superior predictor of behaviour than explicit measures when the attitude domain under investigation is of a sensitive nature. In particular,

when the predictive validity of benevolent sexism was explored together with the IATs, only the Gender-Stereotype was predictive.

7.34 The decision domain

Once again, significant main effects were observed for the promotion decision only. None of the implicit or explicit measures were predictive of salary or redundancy decisions. This again raises the question of what is unique about promotion decisions that enable attitude measures to indicate whether the decision-maker will select a male or female candidate. As mentioned previously, one reason for the observed differences in the predictive validity of the IAT across decision tasks could be due to the study design; the promotion task was a within-subjects design requiring participants to evaluate both a male and female candidate, whereas, the salary task was a between-subjects design where participants only made a decision about a male or a female. Effects may have been observed for promotion because by having both a man and a woman to assess could heighten the salience gender (Finkelstein et al., 1995; Olian et al., 1988) leading to participants using this as a differentiating factor (Davison & Burke, 2000).

The difference between the roles used in each task is also a plausible explanation for why promotion but not salary decisions were predicted. The greater degree of maleness associated with the position in the promotion task may have led to a more salient lack of fit between women and the Head of Sales role.

7.35 Limitations

7.35i Internet based research

As in study 2, distractions could have impacted on participant reaction times when completing the IAT. However, all response latencies for each participant were

checked to ensure there were not any significant gaps in completing the IAT that may have suggested interruptions or distractions to the task.

7.4 Conclusion

Participants were found to hold strong implicit gender attitudes on both the Gender-Career and Gender-Stereotype IAT. However, only the Gender-Stereotype IAT was predictive of personnel decisions, and then for promotion only. The finding of the present study therefore begins to build some evidence that stereotype IATs have the capacity to predict promotion decisions. It is critical to note however, that these findings are unique to working professionals. In addition, the present study further highlights the caution with which generic statements about the predictive validity of the IAT should be made. Furthermore, whilst an IAT may predict one type of behaviour, it may not predict others. As was observed in the present study, only the promotion decision was predicted by the Gender-Stereotype IAT. Certain types of IAT may indeed predict certain forms of behaviour, but generalisations that *the IAT is* predictive do not hold true when the evidence is considered.

Whilst no links were observed between benevolent sexism and the personnel decisions, hostile sexism was found to be predictive of the promotion decision, but only for female participants. Additionally, participant gender moderated the relationships between the Gender-Stereotype IAT and the promotion decisions; female participants with stronger stereotype consistent associations were more likely to promote the male candidate. Working women therefore appear more prone than their male counterparts to apply both their implicit and explicit attitudes to their decision-making.

Finally, when considered with benevolent sexism, the IAT was found to be the only predictor thus adding to evidence that when attitude domain under investigation is of a sensitive nature the IAT is a superior predictor (e.g., Greenwald et al., 2009).

Chapter 8: General Discussion

8. Introduction

Women are under-represented at senior levels within organisations. They also fare less well than their male counterparts in reward and career-enhancing opportunities. Attitudes toward women in the workplace are thought to underpin these disparities and organisations are increasingly introducing attitude measures into diversity and inclusion initiatives with the aim of: 1) raising awareness amongst employees of implicit attitudes, 2) educating employees on how these attitudes can influence behaviour and 3) re-measuring after an intervention to assess whether the attitude has changed. The IAT is one of the most popular tools used to assess attitudes. According to Rudman (2011) the ability of a measure to predict behaviour is the '*gold standard*' with which to evaluate any new assessment technique. Furthermore, McConnell and Leibold (2001, p. 440) assert that, "*any psychological tool is only as good as its ability to predict human behaviour*".

Whilst the IAT is widely used, questions over the predictive validity of the measure have been raised and the evidence for the real world impact of the implicit attitudes is limited (Blanton et al., 2009; Landy, 2008; Tetlock & Mitchell, 2009; Wax, 2010). However, over recent years evidence that the IAT predicts workplace racial discrimination has been accumulating (e.g., Blommaert et al., 2012; Derous et al., 2009; Rooth, 2010; Son Hing et al., 2008; Yogeeswaran & Dasgupta, 2010). Little research, however, has been conducted exploring the ability of the IAT to predict gender discrimination. This thesis addresses this important gap in the literature.

The first set of hypotheses considered the predictive validity of gender IATs. Based on the findings in the domain of race, it was expected that gender IATs would predict personnel decisions that favour men. It was also hypothesised that since affect and

cognitive attitudes have been shown to underpin workplace gender inequalities, IATs based on both these aspects would be predictive of gender discriminatory personnel decisions. Since both affective and cognitive processes contribute to attitude formation (Edwards, 1990; Edwards & Hippiel, 1995), it was also hypothesised that when both implicit affect- and cognition-based IAT scores were high, their combined effect would be more predictive than when there was divergence between the scores.

The second set of hypotheses focused on the predictive validity of an explicit measure of gender attitudes, namely benevolent sexism, whether this measure was correlated with the IAT, and whether it was equally able to predict personnel decisions.

The results from three substantive studies produced expected and unexpected results. This chapter first provides an overview of the research findings. A discussion then follows on the methodological and theoretical explanations for the observed results. Consideration is then given to the implications the research has for the use of IATs within organisations and employment law. Additionally, the impact of the findings on prejudice intervention research is considered. Finally, the limitations of the research, together with future research directions, are discussed.

8.1 Overview of Research Findings

8.11 The predictive validity of cognition-based gender IATs

Consistent with prior research (e.g., Nosek et al., 2002; 2007; Rudman & Glick, 2002; Rudman & Kilianski, 2000), implicit cognition-based gender attitudes were observed across all three studies. The Career-Gender IAT revealed that men were more easily associated with career and women were more easily associated with family. The Gender-Stereotype IAT revealed stronger associations between men

and competence traits and women and warmth traits. Interestingly, in all studies the associations were more strongly held by female than male participants, again consistent with results of prior research (e.g., Lynch, 2010; Nosek et al., 2002; 2007; Reuben et al., 2014; Rudman & Glick, 2002; Rudman & Kilianski, 2000). This suggests group membership does not protect the individual from exhibiting cognition-based attitudes, including stereotypes and symbolic beliefs, towards their own group (Greenwald & Banaji, 1995; Jost & Banaji, 1994). According to System Justification Theory (Jost & Banaji, 1994) individuals seek to justify and explain the existing state of affairs. As such, a belief that men are competent and women are warm may help women justify why men are better suited to high-powered leadership roles and they are better suited to being the homemaker or fulfilling feminine sex-typed roles. Whilst positive, these stereotypes still lead to the same negative outcomes and as a consequence women may inadvertently be partly responsible for their own subordination (Jost & Kay, 2005).

Of critical importance, both to this thesis and the IAT literature, are the implications of these strongly held implicit associations. It was hypothesised that, similar to race research, the IAT would predict discriminatory personnel decisions such as promotion, budget and salary decisions. Although cognition-based implicit attitudes were pervasive across the studies, these associations did not consistently predict behaviour. In the first study, the only main effects observed were between the Gender-Stereotype IAT and the promotion decision. However, the relationship was not in the expected direction; stronger associations between men and competence and women and warmth increased the probability that the participant would promote the female candidate. In the second study, only the Gender-Career IAT was found to be predictive of the promotion decision but again in an unexpected manner; stronger associations with men and career and women and family increased the likelihood of selecting the female candidate. In the third and final study, the Gender-Stereotype

IAT was predictive of promotion decisions and in the manner expected. None of the other personnel decisions (budget, salary and redundancy) were predicted by either of the cognition-based IATs.

These findings were surprising for two reasons. First, the general consensus of the IAT literature is that the tool is predictive of behaviour (e.g., Gladwell, 2005; Greenwald & Banaji, 2013; Greenwald & Krieger, 2006; Jost et al., 2009; Kang, 2005; Kang & Banaji, 2006). Second, significant links between the IAT and workplace race discrimination have been observed (e.g., Blommaert et al., 2012; Deros et al., 2009; Rooth, 2010; Son Hing et al., 2008; Yogeeswaran & Dasgupta, 2010). Why might different results have been observed in these studies?

One factor to consider is demographics. Participant demographics appeared to moderate the relationships between the cognition IATs and the personnel decisions. In the first study, participant age moderated the relationship between the Gender-Career IAT and the budget decision; younger participants who held stronger associations between men with career and women with family were more likely to select football to receive the most funding. In contrast, older participants who had higher Gender-Career IAT were less likely to select football to receive the most funding.

Participant age was also found to moderate the relationship between the Gender-Stereotype IAT and the redundancy decision; the more older participants associated men with competence and women with career, the greater the probability of selecting the female employee for redundancy. The trend was the opposite for younger participants; higher IAT scores were linked to a reduced likelihood of selecting the female employee for redundancy.

Work experience also had a moderating effect on the relationship between the Gender-Career IAT and the redundancy decision; participants with work experience who also had stronger symbolic beliefs about gender roles were more likely to make the female employee redundant than participants who had similar implicit associations but no work experience. Work experience also moderated the relationship between the Gender-Stereotype IAT and the budget decision; participants with work experience and higher IAT scores were more likely to select netball to receive the most funding.

Finally, participant gender was found to moderate the relationship between the Gender-Stereotype IAT and the budget decision in the first study (male participants were more likely to recommend football received the most funding). In the third study, as IAT scores increased for female participants, so did their probability of promoting the male candidate. For male participants, higher IAT scores were associated with only a slight increase in the probability of promoting the man.

8.12 The predictive validity of affect-based gender IATs

Whilst pervasive implicit attitudes were observed for cognition-based IATs, a different pattern emerged for the Gender-Affect IAT. Research suggests that people may have a negative affective reaction to women who violate traditional gender roles and this underpins gender inequality in the workplace. The Gender-Affect IAT was designed to measure participants' affective reaction toward women when they were depicted in male sex-typed roles. Since women who violate traditional gender roles are more likely to provoke a negative reaction it was expected that participants would more easily associate pictures of men in male sex-type role with good attributes, and picture of women in male sex-type roles with bad attributes. It was further hypothesised that these affect-based reactions would lead to personnel decisions that favour men. For example, those who had stronger associations with male and

good, women and bad, would be more likely to promote the male candidate. The results were counter to expectations.

First, overall implicit affect-based attitudes were more favourable towards women than they were towards men; participants held stronger associations between pictures of women in male sex-typed roles and good attributes and picture of men with bad attributes. Whilst cognition-based attitudes were directionally the same for men and women, they differed on the Gender-Affect-based IAT; female participants were more likely to hold positive implicit affective attitudes toward women, whereas male participants were more likely to display a positive implicit affect-based attitude towards men. As such, the Gender-Affect IAT appears to suffer from in-group bias constraints where in-group members are more likely to associate their group with positive attributes and associate negative attributes with out-group members (Greenwald et al., 2002). Second, and critical to the present research, no main effects were observed between the Gender-Affect IAT and the personnel decisions.

Whilst no main effects were observed for the Gender-Affect IAT, interaction effects were revealed. Participant age was found to moderate the relationship with the promotion decision; younger participants who had stronger associations between pictures of men in male sex-typed roles with good, and pictures of women in male sex-typed roles with bad the more likely they were to select the male candidate for promotion. For older participants, the opposite was observed; higher IAT scores were linked to a reduced likelihood of selecting the male candidate.

Participant native language also moderated the relationship with the budget decision; more positive attitudes toward men the increased likelihood native English speakers would select football to receive the most funding.

8.13 The predictive validity of benevolent sexism

It was argued that since benevolent sexism may not be subject to social desirability concerns, questionnaire respondents would be more likely to express these attitudes openly and without censure. As a consequence it was hypothesised that: 1) benevolent sexism would predict personnel decisions that favour men, 2) it would be correlated with the IAT and 3) it would perform equally well as the IAT in predicting personnel decisions. No evidence was found to support the hypotheses. In particular, no correlations were observed between benevolent sexism and the IAT. Additionally, there were no main effects across two studies suggesting that the measure has limited predictive utility.

Whilst no main effects were observed, participant gender was found to moderate the relationship between benevolent sexism and the promotion decision, but only in the second study with student participants; as benevolent sexism scores increased for male participants so did the probability of selecting the male promotion candidate. In contrast, an increase in female participants' benevolent sexism scores was associated with a decreased likelihood of selecting the male candidate. Participant gender was also found to moderate the relationship between hostile sexism and the promotion decision in the study with working professionals; as hostile sexism scores increased for female participants so did the probability of selecting the male candidate for promotion. This result was unexpected for two reasons. First, due to willing and able constraints associated with explicit measures of hostile sexism, no links to personnel decisions were expected. Second, it was surprising to find that it was female, not male, participants' hostile sexist scores that predicted the promotion decision. Whilst some moderating effects of participant gender were observed for the explicit measures, the fact that these were not consistent across the studies calls into question the reliability with which hostile and benevolent sexism predict promotion decisions.

Overall, when considered against the IAT, benevolent sexism was not an equal predictor of behaviour, thus lending some support to Greenwald et al.'s (2009) assertion that when the attitude domain is of a sensitive nature the IAT is a better predictor of behaviour than explicit measures.

8.2 Methodological Explanations for the Findings

The results show that whilst implicit gender associations are strongly held, they were not consistently applied to decision-making in the manner the IAT literature suggests they should have been. The body of literature looking at the predictive validity of the IAT within the work domain is still relatively limited when compared to other research on the IAT. For gender, this research is more limited still. Understanding why the hypothesised predictive links were not observed for gender is of critical importance.

A number of methodological factors may account for the unexpected results and null findings. These include task order effects, design issues with both the IAT and decision tasks, and also a lack of experiment naivety on the part of student participants.

8.21 Task order effects

Task order effects may account for the observed inverse relationships between the IAT and promotion decisions. In both the first and second study, the IAT was found to be predictive of promotion decisions, but not in the direction expected; stronger implicit associations were linked to an increased likelihood of promoting the female candidate. However, further analysis revealed that this relationship was only present for participants who completed the IAT before the decision tasks. This suggests that participants may have some awareness of how they responded to the IAT and this insight allowed them to correct for their suspected biases in their decision-making by making decisions in the opposite direction to the perceived bias (Kawakami et al.,

2005; Mussweiler & Neumann, 2000; Wegener & Petty, 1995; Wilson & Brekke, 1994). As a consequence, the IAT may not wholly be immune to social desirability concerns. Whilst IAT responses are hard to fake (Steffens, 2004) participants are able to correct for their perceived biases in their decision-making when the situations affords the opportunity. What is interesting about the results, and counter to expectations, is that when there was no opportunity to correct for implicit bias in the decision (e.g., by completing the decision tasks before the IATs), the predictive links between the IAT and the promotion decision were no longer present in the first two studies.

It was posited previously that the glass cliff phenomena (Haslam & Ryan, 2008; Ryan & Haslam, 2005) could have caused the observed inverse relationships. This explanation is unlikely, however, given that implicit stereotypes or symbolic beliefs did not consistently predict the promotion of the female into the leadership position across all of the studies. Furthermore, whilst the stereotypes associated with women may lead people to believe they are better able to deal with crisis situations than men (Haslam & Ryan, 2008; Ryan et al., 2011), this would not explain why strong implicit attitudes that associated women with the home and men with career would lead to them promoting the woman over the man, as was observed in the second study.

Therefore, it appears that task order effects led to the observed inverse relationships. Of critical importance, however, is that when there was no opportunity to correct for the impact of implicit bias on decision-making, the IAT was not predictive of behaviour.

8.22 Design of the IAT

Additionally, there may have been some design issues with the Gender-Affect IAT that led to the null results. For example, the words used to depict good and bad

attributes may not have been free from gender stereotypes (Rudman & Goodwin, 2004; Rudman, 2011). This could have led to some of the good words being more easily associated with women and thus led to faster response times between pictures of women and good attributes and slower reaction times between pictures of men and good attributes. The images used in the Gender-Affect IAT could also have been more neutral across the stimulus to ensure factors such as smiling did not influence reaction times.

Whilst there are some design concerns with the Gender-Affect IAT, it still had the potential to predict behavior, albeit in a manner not hypothesised. For example, the IAT literature suggests that when associations are strongly held they are likely to predict behavior. In the present research, strong associations were observed; women were more easily associated with good attributes, and men were more easily associated with bad attributes. It could be argued that participants who had these strong associations would be more likely to promote the female candidate. However, this was not the case. The Gender-Affect IAT was not predictive of promotion decisions in either direction.

Another possible explanation for why limited significant results were observed could be due to the internal consistency of each of the IATs. If each respondent's reaction times are not consistent across IAT trial blocks then this may diminish the predictive validity of the measure. In the present research, internal consistencies ranged from .32 to .48, and in all studies, for all IATs, trial blocks were significantly correlated suggesting that response patterns were generally consistent across the trial blocks. It is difficult to determine, however, whether this is an acceptable level of reliability for the IAT since many of the studies looking at the predictive validity of the IAT do not report internal consistency scores for the IATs used (e.g., Blommaert et al., 2012; Derous et al., 2009; Green et al., 2007; Latu et al., 2011; Levinson & Young, 2010;

McConnell & Leibold, 2001; Rudman & Glick, 2002; Rudman & Heppen, 2003; Rudman & Kilianski, 2000; Vanman et al., 2004; Williams, Paluck, & Spencer-Rodgers, 2010; Yogeeswaran & Dasgupta, 2010) and hence there is a lack of data in the literature upon which to benchmark the results from the present research.

8.23 Design of decision tasks

Across the studies, the promotion decision was repeatedly linked to both the explicit and implicit measures, whereas, in the main, null effects were observed for the other personnel decisions. Whilst the predictions were not always as expected, the results do raise the question of what was unique about the promotion task that led to the observed effects?

Study design may account for the observed pattern of results. As noted previously, the promotion decision was a within-subjects design and the comparison of both a male and female candidate may have made heightened the salience of gender (Finkelstein et al., 1995; Olian et al., 1988), leading to its use as a differentiating factor when making the promotion decision (Davison & Burke, 2000). In contrast, the salary decision was a between-subjects design where participants had to recommend a starting salary for a male or a female recruit. As a consequence the new recruits' gender may have been less apparent in the salary task and thus been less likely to influence the decision. However, study design does not explain why no main effects were observed between the IATs and the budget decisions, which was also a within-subjects design.

The manner in which the decision was framed may have led to the null results observed in the first study. Here, participants were asked to rank their promotion, redundancy and budget choices. Research has found that asking people to rank, as opposed to select, their choice alternative leads to more compensatory information

processing (Westenberg & Koele, 1992). Therefore, the null results observed in the first study could be a consequence of the decision response mode. However, if decision framing was critical to the results, more significant results should have been observed in the second and third studies where participants were asked to select from choice alternatives, as opposed to rank their choices. However, similar null results were still observed in the second study.

Finally, many of the moderation effects observed in the first study were predominantly related to the budget decision. As noted previously, it is possible that attitudes and knowledge of different demographic groups toward netball and football influenced these results, as opposed to gender attitudes per se. Therefore, it is possible that the budget decision task was flawed in its design leading to no main effects being revealed.

8.24 The research sample

Whilst inverse relationships between the IAT and the promotion decision were observed for the student sample, the Gender-Stereotype IAT did predict in the manner expected for the sample of working professionals. Differences in outcomes could be a result of students being more attuned to the process of experimentation. Indeed, many students who volunteer for research have probably been subjects in a number of other research projects. As a consequence, they would have a greater awareness of the manipulations as well as the cover stories experimenters' use. Awareness of the true nature of the research may have led to them correcting for their IAT bias in the promotion decision. In contrast, working professionals are likely to have less knowledge of experimental designs and research manipulations and thus may have genuinely believed that the decision tasks were unrelated to the attitude measures.

8.3 Theoretical Explanations for the Research Findings

Whilst it is possible that methodological issues caused the observed outcomes, such issues cannot explain why so many null results were found. For example, if the IAT is as predictive as the literature suggests, it would be expected that the IAT would predict the promotion decision in the way hypothesised when participants completed the IAT after the decisions tasks. So whilst task order effects may have led to the inverse relationships observed between the cognition IATs and the promotion decisions, this does not explain why when the opportunity to correct for any perceived implicit bias was removed, the IATs did not predict the promotion decision. Furthermore, methodological issues don't explain why the Gender-Affect IAT was not predictive of the female candidate; if participants more easily associated pictures of women in male-dominated roles with good attributes then why did this not predict the selection of the female promotion candidate. Nor can within- or between-subjects design differences fully explain why promotion, as opposed to the other decisions, was the main area of behaviour to be predicted.

Therefore, it is possible that other factors, beyond experimental design issues, led to the observed results. For example, the IAT may only predict behaviour in a very select set of circumstances. Factors such as the IAT type, decisions characteristics and participant demographics may all influence whether predictive links are revealed. Indeed, when considering the predictive validity of explicit attitudes Zanna and Fazio (1982, p. 165) commented that it is vital to establish "*under what conditions, do what kinds of attitudes, held by what kinds of individuals, predict what kinds of behavior*". This remark appears to be pertinent to understanding the predictive validity of the IAT also.

8.31 IAT characteristics

The present research highlights that affect and cognition IATs behave very differently for gender than they do race. For example, research on implicit racial attitudes has found that affect-based attitudes towards white people are more positive than they are towards black people (Greenwald et al., 1998; Nosek et al., 2002; 2007).

Furthermore, low-status groups (i.e., black people) tend to view themselves less positively than high status groups (i.e., white people) (Nosek et al., 2002; Rudman, Feinberg, & Fairchild, 2002).

For gender, none of the above findings seem to apply. Similar to black people, when compared to (white) men, women are typically viewed as the low-status group (Rudman & Goodwin, 2004). For example, male births are more highly valued than female births, and new-borns are more likely to be named after their fathers than their mothers (Jost, Pelham, & Carvallo, 2002). Furthermore, men are more likely to be associated with power and authority (Rudman, Greenwald, & McGhee, 2001b). Together, such findings suggest men are more culturally valued than women. It would therefore be expected that, similar to race, affect-based attitudes would be more positive toward men than they are toward women. Additionally, women should also view their gender less positively than men do their in-group. However, the results from the present study, and other research, suggest this pattern of affect-based attitudes does not apply to gender. Unlike attitudes towards black people, attitudes towards women are often positive (Eagly et al., 1991; Eagly & Mladinic, 1989; 1994; Haddock & Zanna, 1994; Skowronski & Lawrence, 2001). Furthermore, although women are the low status group, their implicit affect-based attitudes are more positive towards their in-group than men's are, who have been found to hold more neutral affect-based attitudes (Cvencek et al., 2011; Nosek & Banaji, 2001; Richeson & Ambady, 2001; Rudman & Goodwin, 2004). Additionally, whilst occupational context does reduce men's pro-female bias, it does little to dampen

women's in-group bias (Carpenter & Banaji, 1998; Richeson & Ambady, 2001; Skowronski & Lawrence, 2001). Therefore, affect-based, gender IATs reap a different pattern of results than affect-based race IATs do.

So why is gender different to race? First, unlike other groups, women are not a minority. Second, there is greater inter-group contact between men and women than there typically is between white and black people. Boys and girls play together from birth, may have siblings of the opposite gender, and are often in equal proportions through the educational system. Furthermore, the majority of child rearing is still conducted by women, leading to boys developing strong maternal bonds that influence their attitudes towards women (Rudman & Goodwin, 2004). In contrast, white and black people may have very limited contact with each other throughout their lives. Finally, there is a great deal of co-dependency between men and women, with each relying on the other for partnership, reproduction and intimacy (Fiske & Stevens, 1993; Rudman & Goodwin, 2004). Again, this co-dependency is not manifest in racial relations. Such differences are likely to mean that attitudes towards women are more ambivalent than racial attitudes (Fiske & Stevens, 1993; Glick & Fiske, 1996).

In addition to the differences observed between race and gender on affect-based IATs, the attitude component that an IAT assesses may impact its predictive validity. Amodio and Devine (2006) posit that affect and cognition IATs predict uniquely different behaviours. Stereotype IATs are said to predict instrumental behaviours such as impression formation and judgements, whereas, affect-based attitudes predict consummatory behaviours such as approach and avoidance tendencies towards the attitude object. Whilst they found some evidence of this for race, it is not clear whether the same theorising applies to gender. Indeed, the present research suggests not. Therefore, not only is the predictive validity of the IAT influenced by

the attitude component that an IAT assesses but also attitude components that are predictive in one topic area (i.e., race) may not be predictive in another (i.e., gender). For example, the links between the IAT and racial discrimination have been observed mainly for affect-based IATs (e.g., Derous et al., 2009; Green et al., 2007; Lynch, 2010; McConnell & Leibold, 2001; Rooth, 2010). In contrast, less research has linked stereotype IATs to racial discrimination. Whilst Green et al. (2007) found the affect race IAT predictive of whether thrombolysis treatment was recommended for black patients, neither of the stereotype IATs used in the study were predictive of the physicians' decisions.

The opposite trend seems to apply to gender. No research has yet linked affect-based gender IATs to gender discrimination. However, there is some evidence that gender stereotype IATs are predictive. For example, Rudman and Glick (2002) found their stereotype IAT to be predictive of social skills ratings. Additionally, the present research found the Gender-Stereotype IAT to predict the promotion decision in the sample of working professionals. Whilst men show less in-group bias towards their own gender than women on affect-based measures, they are more likely to associate women with negative traits (Richeson & Ambady, 2001; Rudman, Greenwald, & McGhee, 2001b) and see them as being subordinate (Rudman & Kilianski, 2000). Furthermore, as was observed in the present research, when framed positively, women are equally as likely, if not more so, to endorse gender stereotypes. So whilst affect-based attitudes towards women show a different pattern of results to racial attitudes, cognition-based attitudes do not. Given that cognition-based gender IATs, when framed positively, do not suffer from in-group bias effects, they may be better predictors of behaviour for gender than affect-based IATs.

Overall, the present research highlights that affect- and cognition-based IATs behave differently for race and gender. Therefore, general statements about the predictive

validity of the IAT need to be made with caution. The attitude component that an IAT assesses may be an important factor in whether predictive links are observed. The present research suggests that whilst affect-based IATs predict racial discrimination, they will not be predictive of gender discrimination.

Finally, if gender does operate differently from race then it is possible that other attitude domains such as disability, age and sexual orientation may also yield a different pattern of results. Similar to gender, the ability of the IAT to predict workplace discrimination in these domains is under researched.

8.32 Decision characteristics

The basis of the research hypotheses was that when participants held strong implicit gender attitudes they would make decisions in the workplace that favour men. However, the results did not support this position with only promotion decisions being predicted. This raises the question of what was different about the promotion decision that led to the application of implicit attitudes? As noted previously, it is possible that the greater salience of gender in the within-subjects design, that are less apparent in within-subjects designs, led to promotion but not salary decisions being predicted. However, this would not explain why budget decisions were not predicted since this was also a within-subjects design.

An alternative explanation is that certain characteristics associated with the promotion decision led people to be more likely to act upon their implicit biases. First, the position candidates were being considered for was very male sex-typed when compared to the role in the salary decision task. Second, information was supplied in all three studies on the characteristics that were important to succeed in the role, all of which stereotypically masculine traits. As a consequence, the lack of fit between the position and the female candidate may have been exacerbated

resulting in those with stronger implicit attitudes being more likely to apply them to their decision-making.

Whilst it was argued that redundancy decisions would not be predicted due to decision-makers being more likely to engage in effortful processing thus reducing the application of implicit bias to the decision, this reasoning was not directly tested by the research. As a consequence, it is not clear why no main effects were observed for the redundancy decisions. An alternative explanation for the null results is that the nature of the role considered in the task, and the lack of criteria in the materials on how to make the decision, could have led to the observed outcome of no prediction.

Further support for the argument that decision characteristics impact upon the predictive validity of the IAT comes from research findings in the race domain. For example, the IAT was only predictive of job hiring decisions in Ziegert and Hanges (2005) research when there was direct encouragement for participants to select the white candidate; left to their own devices, participants did not apply their implicit race attitudes to their decision-making. Son Hing et al. (2008) found that only when there was ambiguity about job applicants' qualifications did the IAT predict hiring recommendations. Furthermore, Yogeeswaran and Dasgupta (2010) found that the IAT was only predictive of hiring decisions when there was correspondence between the IAT and the decision task. So, even in the domain of race, there is some legitimacy to the argument that the predictive utility of the IAT will only be revealed under very specific circumstances.

Although characteristics associated with the promotion decision task would explain why predictive links were observed, it does not explain why only the Gender-Stereotype IAT, but not the Gender-Career IAT, was predictive in the sample of

working professionals. Therefore, the attitude component the IAT assessed did seem to have an impact on the results, but why?

8.33 Correspondence between the IAT and the decision

The presence of predictive links could be due to the level of correspondence (Ajzen & Fishbein, 1977) between the IAT and the decision task. According to the correspondence hypothesis, stronger attitude-behaviour relationships will be observed when both the attitude and the outcome variable are measured with the same level of specificity (Ajzen & Fishbein, 1977). For example, a measure that asks respondents about their attitudes towards *going* to church is more likely to predict church going behaviour than a more general measure on attitudes towards religion (Greenwald et al., 2009).

Whilst research on explicit attitude measures has looked correspondence influences the attitude-behaviour relationship (Kraus, 1995) there is little research within the IAT literature directly exploring whether correspondence is a potential moderator of the relationship between the IAT and behaviour. Yogeeswaran and Dasgupta (2010) found that whilst the IAT predicted whether an Asian American would be hired for a national security job, it did not predict whether an Asian American would be selected for the same job role but this time situated within a corporate context. Based on their findings the authors claim that implicit bias is only likely to translate into action in situations where stereotypic attributes of the target group is salient and relevant in the decision situation, but not in situations where the same stereotype is not relevant.

Although other IAT research has not directly tested the correspondence hypothesis, a review of the literature suggests that it is an important moderator of the attitude-behaviour relationship. For example, in their meta-analysis Greenwald et al. (2009) found that the predictive validity of the IAT was greater when there was greater

correspondence between the IAT and the criterion variable. Lynch (2010) found participants who associated men more with career and women more with family were more likely to find jokes about the stereotypical roles of women more funny than those who have weaker associations. Furthermore, Rudman and Glick (2002) found that stronger associations between men and agency traits and women and communal traits were predictive of reduced social skills ratings of women when they were portrayed as having agency. Levinson and Young (2010) found those who more easily associated men with judge and women with paralegals were more likely to rank masculine traits as more desirable in a judge than female traits. In all of the aforementioned research, the significant results are likely to be due to a high level of correspondence between the IATs and the criterion measures.

Interestingly, Greenwald et al. (2009) also found similar results for explicit measures; the more there was correspondence between the measure and the criterion variable, the more likely it was to be predictive. Additionally, a meta-analysis on explicit attitude-behaviour relationships found predictive links were stronger when both attitude and behaviour measures had corresponding levels of specificity (Kraus, 1995).

Together, the results suggest that correspondence between an attitude measure and the behaviour is critical in determining whether predictions will be observed. It also suggests that when correspondence is present, explicit measures also have the potential to predict behaviour. The lack of correspondence between the decision tasks and measures of benevolent or hostile sexism may therefore account for why no main effects were observed for the explicit measures. However, there was correspondence between the Gender-Stereotype IAT and the promotion decision. Specifically, the Gender-Stereotype IAT measured associations between men and competence traits and women and warmth traits. The promotion task not only

focused on a male sex-typed role but also specified that the person sought to fill the role should be decisive, driven and a strong leader, all traits that are typically associated with men. It is therefore possible that the reason only main effect were observed between the Gender-Stereotype IAT and the promotion decision was because the decision task was a specific reflection of what the IAT was assessing.

Correspondence would therefore also explain the null results observed for all the other personnel decisions, and the Gender-Career IAT. For example, asking people whether football or netball should receive the most funding has no direct link to any of the IATs used in the research. Additionally, providing no information about the new recruit in the salary position make the criterion variable far removed from the IAT measures, in the same way asking people their attitudes towards religion are far removed from church attendance.

As noted previously, neither of the cognition-based IATs had conceptual correspondence with benevolent or hostile sexism. This may be a reason why no correlations were observed between the implicit and explicit measures (Ajzen & Fishbein, 1977; Hofmann et al., 2005). Equally, correspondence may explain why the IAT was found to be a better predictor of the promotion decision. Should an explicit measure have been employed that asked people to report the stereotypes they associate with men and women, thus mirroring the Gender-Stereotype IAT, both a correlation between the explicit and IAT should be expected. In addition, the explicit measures should be equally predictive of promotion since it would also have correspondence with the decision task. Therefore, it may not be that the IAT is a superior predictor of behaviour when the topic is of a sensitive nature (Greenwald et al., 2009), but rather it is the level of specificity between the measure and behaviour that is critical.

Overall, correspondence between the IAT and the decision seems to be important. Whilst this theorising would explain why significant results were observed between the Gender-Stereotype IAT and the promotion decision in the sample of working professionals, it does not explain why, when participants had no opportunity to correct for their IAT bias, predictive links were not seen between the Gender-Stereotype IAT and the promotion decision in the student samples. What it does indicate, however, is that the research sample also has an influence on whether predictive links are seen, even when there is correspondence between the IAT and the decision.

8.34 Sample characteristics

The majority of IAT research is conducted in the laboratory and on student samples. This has led to questions over the external validity of findings (e.g., Blanton et al., 2009; Blanton & Jaccard, 2008; Landy, 2008; Mitchell & Tetlock, 2006; Salvaggio et al., 2009). Landy (2008) argues that effects observed in the laboratory are unlikely to transfer to the workplace since working people will have training, experience, knowledge and a motivation not to discriminate. The results from the present research do support concerns over whether laboratory research with student populations transfer to real world decision-makers, but not in the manner expected. As noted previously, when participants did not have the opportunity to correct for their implicit attitudes in their decision-making, no predictive links were observed in either of the student samples. However, significant main effects were observed in sample of working professionals and in the expected direction. So whilst the research sample appears to play a critical role in the predictive utility of the IAT, for gender at least, these differences between samples did not manifest themselves in the manner Landy (2008) suggests; it was the working professionals, not the students, who were more likely to act upon their implicit biases.

The results from the first study also suggested participant work experience was an important moderator of the between the IAT and the decision tasks. For example, participants with work experience and who also had stronger implicit symbolic beliefs about the traditional roles of men and women were more likely to act upon these belief by making the female employee redundant than those with similar implicit beliefs but no work experience.

Together such results call into question Landy's (2008) argument that real world decision-makers will be less likely to act upon their implicit attitudes since that have more training, experience and motivation not to discriminate than student samples.

But why are working professionals more likely to act upon their implicit beliefs than students? Participant naivety may well be behind why significant main effects were only observed in the sample of working professionals. However, an alternative explanation is that exposure to work cultures may in some way reinforce implicit beliefs and their manifest outcomes. Indeed, as well as working professionals being more likely than students to apply the gender stereotypes to the promotion decision, working professionals also held stronger gender stereotypes and implicit beliefs about the roles of men and women than students.

Many organisations have predominantly male leadership teams. Additionally, in order to succeed within an organisation a great deal of emphasis is placed on competence related traits, which are stereotypically associated with men. When people enter full time employment they are likely to become acutely aware of what the leadership team looks like and what skills and abilities are valued within the business. Such knowledge may reinforce and strengthen the implicit gender beliefs they already hold and could trigger the 'lack of fit' (Heilman, 1983) or 'think manager,

think male' (Schein, 2001) phenomena whereby women are not seen to possess the traits required to be successful in senior positions.

Whilst having work experience may lead to people being more likely to act upon their implicit attitudes, the type of work experience they have may also be important. For example, there could have been huge variability in the nature of work experience student participants had in the first and second study. Working in a coffee outlet, for example, is vastly different from corporate work experience. This may account for why work experience was found to have an impact in the first study but did not produce more significant results in the second study where the sample was selected on the basis that they had some work experience. Therefore, it may not only be work experience that is important, but the type of work experience and the type of work environment they people have been exposed to that influences whether implicit attitudes will be acted upon.

The results also suggest that other participant demographic variables such as gender, age and ethnicity have an impact on the relationship between the IAT a personnel decisions. For example, participant gender was found to moderate the relationship between the Gender-Stereotype IAT in the third study; the probability of promoting the male candidate increased more for female participants as their IAT scores increased than it did for increases in male participants IAT scores. Participant gender also moderated the relationship between the promotion decision and benevolent sexism in the second study (when male, but not female, participants had higher benevolent sexism scores the male job candidate was more likely to be promoted) and hostile sexism in the third study (when female, but not male, participants had higher hostile sexism scores the male job candidate was more likely to be promoted).

What is interesting about these gender differences is that it is women's, not men's, promotion decisions that were more likely to be influenced by their implicit and explicit gender attitudes. Whilst this seems counter-intuitive, with much popular opinion that gender discrimination is a male against female phenomena, the present results suggest that women are not immune to acting upon sexist attitudes towards other women and therefore they could play a critical part in perpetuating gender disparities within organisations.

Finally, participant age moderated the relationship between the Gender-Stereotype IAT and the redundancy decision in the first study; the stronger the associations between men and competence, and women with career, for older participants, the greater the probability they would select the female employee for redundancy. Whilst research has looked at whether implicit attitudes are held equally by different demographic groups (Nosek et al., 2007), research has not explored how such differences influence behaviour, in different ways, for the different groups.

8.35 Attitude ambivalence

One final possible explanation for why a lack of consistent results was observed across the studies comes from literature on attitude ambivalence. Attitude ambivalence is characterised as simultaneous positive and negative thoughts and feelings towards an attitude object (DeMarree, Wheeler, Briñol, & Petty, 2014; Maio & Haddock, 2010; Thompson, Zanna, & Griffin, 1995). Research has found that ambivalent attitudes are less likely to be predictive of behaviour (Armitage & Connor, 2000; Connor & Armitage, 2008). Furthermore, research shows that when people have a high degree of attitude ambivalence they are more likely to engage in systematic processing of information related to their ambivalence than those with non-ambivalent attitudes (Clark, Wegener, & Fabrigar, 2008; Maio, Bell, & Esses, 1996). As noted previously, attitudes towards women are often ambivalent (Fiske &

Stevens, 1993; Glick & Fiske, 1996). In the present research, whilst participants held strong cognitive attitudes about the role and traits associated with men and women, the Gender-Affect IAT also revealed that, in the main, participants had a positive affective reaction to women depicted in male sex-type roles. This suggests that there may have been some ambivalence between affect- and cognition-based gender attitudes and this could account for why the IAT was found to be less predictive of gender discrimination than has been observed in other attitude domains. Furthermore, discrepancies between explicit and implicit attitudes have also been shown to increase effortful processing of information (Briñol, Petty, & Wheeler, 2006; Petty & Briñol, 2009; Rydell, McConnell, & Mackie, 2008; Windsor-Shellard, & Haddock, 2014). For example, Windsor-Shellard and Haddock (2014) found that those who had more ambivalent attitudes about their sexual orientation spent more time deliberating about questions related to their sexual orientation than those low on implicit-explicit ambivalence. In the present research, implicit attitudes were strongly held whilst explicit attitudes were much weaker. This explicit-implicit attitude ambivalence could also have led to more systematic processing in the decision tasks thus countering the impact the implicit attitude had on the decision outcome. In sum, the impact attitude ambivalence has on predictive validity if implicit and explicit attitude measures maybe a fruitful area to research further.

8.4 Research Implications

The empirical results highlight that not all personnel decisions are equally predicted by the IAT. They also highlight that not all IATs will equally predict personnel decisions. The research sample also seems to have an impact on the predictive links observed. Furthermore, no one factor seems to lead to predictive links being observed. Instead the interplay between factors seems to be important. Such findings have important implications for the use of the IAT within both organisations

and legal contexts. The results also have implications prejudice intervention research.

8.41 The use of implicit measures within organisations

The IAT was initially a 'hard sell' to organisations since results often indicated implicit attitudes people found difficult to accept they may hold. However, over recent years the use of the IAT within organisations has gained traction. The tool is mainly used to: 1) raise awareness of implicit attitudes, 2) educate employees on how these attitudes can influence behaviour and 3) re-measure the attitude after an intervention to assess whether the attitude has changed and hence whether there is a reduction of prejudice within the organisation. Not only are organisations requesting IATs to be part of diversity and inclusion training, the number of suppliers developing and selling IAT-type tools to organisations is increasing. Within the marketing of these tools generic claims are made over the predictive validity of the tool.⁵ For gender, there is a lack of empirical evidence to support the assertions. Whether the IAT merely highlights associative thinking or whether it further predicts behaviour is hotly debated. Therefore, the premise on which these tools are both being sold and used could be faulty. Practitioners have a responsibility to understand the complexity surrounding the IAT and its predictive validity in order to ensure organisations use it appropriately and as a consequence reap its benefits in certain contexts. In order for them to understand all the factors that impact the predictive validity of the IAT, academics need to ensure the conditions in which the tool does and does not predict behaviour are researched and clearly articulated so that generic statements about its predictive validity are avoided.

⁵ For an example of such marketing see <http://www.hogrefe.co.uk/business-psychometrics/unconscious-bias/implicitly.html>

The present research can help both IAT developers and organisational users gain greater insight into when and why they IAT may and may not predict behaviour. It also highlights that gender bias does not operate the same as race bias and thus general statements about implicit attitudes across the attitude domains cannot be made. Awareness needs to be raised on how different biases operate in different situations and who may be more susceptible to applying their biases to decision-making. Solving gender bias does not necessarily mean race bias, or indeed other biases, will also be addressed.

A deeper understanding of when the IAT does and does not predict behaviour will ensure interventions are developed that have a greater success of tackling discrimination. For example, the results from the present research suggest that women could play a crucial role in perpetuating gender inequalities. Recruitment or promotion panels with more women on them will not necessarily lead to more women being recruited or promoted into senior position since female recruiters may be more likely to apply their implicit gender stereotypes to their decisions than their male counterparts. Additionally, instead of men being the target demographic for gender diversity training, organisations may also need to ensure they target women.

Greater insight into when, and under what conditions, the IAT predicts behaviour will also ensure interventions aimed at raising awareness of implicit attitudes are tailored for different areas of discrimination. For example, it appears that affect-based IATs are better at predicting racial discrimination. However, the present research suggests stereotype IATs are better predictors gender discrimination. Therefore, the attitude components underpinning race and gender discrimination appear to differ. As noted previously, attempts to change attitudes need to be matched to the basis of the attitude (Drolet & Aaker, 2002; Edwards, 1990; Edwards & Hippel, 1995; Fabrigar & Petty, 1999; Mayer & Tormala, 2010; Petty & Wegener, 1998; See et al., 2008).

Emotional persuasion only works when the attitude is affect-based and thus may be more suited to race based discrimination. In contrast, interventions aimed at changing cognitive association patterns such as 'just say no' interventions (Gawronski et al., 2008; Kawakami et al., 2000) are more effective when the attitude is cognition-based and therefore are likely to have a greater impact for the reduction of gender discrimination.

8.42 Implicit measures and discrimination cases

There is debate in the legal field as to whether implicit bias evidence can be used in employment discrimination cases (e.g., Greenwald & Krieger, 2006; Kang et al., 2012; A. J. Lee, 2005; Tippett, 2011; Wax, 2010). In *Pippen v. Iowa* (2012) the expert testimony provided by Greenwald was based on his and colleagues meta-analysis on the predictive validity of the IAT (Greenwald et al., 2009) and centred on their findings that strongly held implicit attitudes predict discriminatory behaviour. However, the application of implicit bias was rejected on the grounds of causation; the court ruled that bias does not equal prejudice but merely reflects implicit attitudes. A key argument in the *Wal-Mart Stores, Inc. v. Dukes* (2011) trial was that implicit gender stereotypes held about women (e.g., they are less capable, less reliable and less committed) influenced key personnel decisions made about them, which led to them being paid less and promoted less than men. However, the evidence was again rejected on the grounds that it could not be proven that implicit stereotypes caused the decisions. Furthermore, expert testimony could not identify the proportion of decisions influenced by gender stereotypes, which managers might have acted upon their stereotypes nor which specific decisions were impacted (Wax, 2010). The criticisms of the implicit bias in both cases mirror concerns raised by this current thesis. For gender at least, implicit attitudes do not seem to: 1) predict all types of personnel decisions, 2) consistently predict the same personnel decision and 3) predict equally for all types of decision-maker. Understanding when and why

the IAT predicts is therefore of critical importance for the tool to have any credibility in future legal testimony.

8.43 Bias Reduction

Within the literature there is a vast amount of research exploring the effectiveness of different interventions in reducing prejudice (e.g., Batson et al., 1997; Crisp & Turner, 2009; Dasgupta & Asgari, 2004; Galinsky & Ku, 2004; Galinsky & Moskowitz, 2000; Gawronski et al., 2008; Kawakami et al., 2000; 2007; Moskowitz, Gollwitzer, Wasel, & Schaal, 1999; Plant et al., 2009; Rudman, Ashmore, & Gary, 2001a; Stewart & Payne, 2008; Todd, Bodenhausen, Richeson, & Galinsky, 2011; Turner, Hewstone, Voci, & Vonofakou, 2008; Vescio, Sechrist, & Paolucci, 2003; Wallaert, Ward, & Mann, 2010; Webb, Sheeran, & Pepper, 2011). The focus of such research seems to be: 1) can the intervention change implicit attitudes and 2) how enduring are the changes? The majority of studies cite changes in IAT scores as evidence that prejudice has been reduced. For example, Turner and Crisp (2010), using the IAT as measure of bias reduction, found that those young participants that were asked to imagine a positive interaction with an elderly person significantly reduced the strength of associations between young people and good and old people and bad compared to a control group. Likewise, imagining a positive interaction with a Muslim was found to create less negative implicit attitudes towards the out-group than the control group who was given no instruction prior to completing the IAT. They concluded that imagining intergroup contact has the potential to reduce implicit prejudice. In other research, Blair et al. (2001) asked participants to imagine a counter-stereotypical woman and then write a short paragraph describing this image. They found that those who engaged in counter-stereotypical imagery had substantially weaker implicit stereotypes, as measured by the IAT, than those in the no imagery condition. Rudman, Ashmore, and Gary (2001a) found individuals who enrolled onto prejudice and conflict seminars expressed less automatic racial

prejudice on the IAT at the end of the semester than those enrolled onto a seminar unrelated to race. Devine, Forscher, Austin, and Cox (2012) found that after 12 weeks participants enrolled in programme of interventions aimed at reducing prejudice showed significantly weaker IAT scores on the race IAT than those not enrolled in the programme. There is also evidence that even a simple directive such as being told not to stereotype can reduce stereotypical association on implicit measures (Wallaert et al., 2010; Webb et al., 2011). Finally, a recent study tested the effectiveness of 17 different approaches to reduce implicit bias, as measured by the IAT. Of those tested, 8 were found to be effective at reducing implicit preferences for white people compared to black people (Lai et al., 2014).

As can be seen from the above, most of the interventions use changes in IAT scores as an indication that the intervention has been successful in reducing prejudice. However, if the IAT is not linked to behaviour what is the benefit in trying to alter the implicit association? The majority of the research rarely goes onto to test whether reductions in discriminatory behaviour are also observed and very few laboratory studies have connected a reduction of implicit attitudes with a reduction of discriminatory behaviour (Paluck & Green, 2009). Where change in behaviour is explored, the focus is often behavioural intentions instead of actual behaviour (e.g., Esses & Dovidio, 2002) and only a few studies have looked at actual behavioural changes (e.g., Kawakami et al., 2007). Therefore, whilst research on how to alter implicit associations is interesting, its ability to make real world differences to those who are subject to discrimination could be very limited. As noted above, organisations are investing a vast amount of effort to attenuate implicit bias. However, if it is found that strong implicit associations have no impact on behaviour then it renders the efforts being made that try to alter these biased associations as redundant and pointless. Before any intervention can say that it has reduced

prejudice, it needs to be able to demonstrate that changes were observed at the behavioural level, instead of merely changes in IAT scores.

8.5 Limitations

In addition to the methodological limitations previously discussed, the present research has a number of other drawbacks. These primarily concern the ecological validity of the results. Whilst a population of working professionals were engaged in the final study, the research is still far removed from real workplace decision scenarios.

For example, making decisions on the basis of two CVs, as used in the present research, does not reflect real personnel decision-making situations (Blommaert et al., 2012). Instead, decision-makers often have some knowledge of the candidates about whom they are making decisions (Copus, 2005). For example, in a promotion situation line managers will know each of the candidates. In recruitment scenarios, once initial CV screening has been completed, interviews with potential candidates would commence. Closer contact with the candidates will bring more knowledge of their unique skills and abilities. Such individuating information is likely to reduce the use of stereotypes and heuristics during decision-making (Fiske & Neuberg, 1990; Kunda & Thagard, 1996) and therefore sever the links between implicit attitudes and behaviour. In the present research, no individuating information was provided and this may have led to a greater reliance on implicit stereotypes when making decisions than would normally be the case in real workplace decision scenarios where individuating information is available (Landy, 2008).

In addition, personnel decisions are rarely made in isolation. Promotion processes involve a great deal of consultation and often an interview with a panel of decision-makers. Therefore, unlike in the present research, no one person is responsible for

the decision. Whether implicit attitudes impact decision-makers at the group level is yet to be explored. Finally, unless the decision scenario within an organisation was an exact replica of the one used in the present research it is difficult to say how the IAT will link to behaviour. As noted previously, decision characteristics, as well as correspondence between the IAT and the decision both influence the predictive links. Overall, there is a need for more research on the predictive validity of the IAT where the decision scenarios more accurately reflect all the characteristics of the personnel decisions people encounter.

8.6 Future Research

This thesis highlights that research on the predictive validity of the IAT is still in its infancy. Whilst predictive links have been revealed, the circumstances that led to significant results are little understood. Therefore, there is a need to both tease out methodological factors that could impact the predictive utility of the tool, but also to establish the specific set of circumstances that will enhance the tools predictive validity, and how this differs across different attitude topics. To begin to build a clearer picture of the predictive validity of the IAT a number of next steps have been identified.

8.61 Establish the impact of task order effects

Prior research has looked at whether the order in which explicit and implicit measures are completed has an impact on IAT scores (e.g., Nosek et al., 2005). However, little research has looked at whether the order in which the IAT is measured in relation to the outcome variable impacts the predictive validity of the tool. Whilst Greenwald et al.'s (2009) meta-analysis found order of measurement had no impact on the correlations between the IAT and criterion variables, such effects were observed in the present research, but only for the student samples. As noted previously, the order in which participants completed the attitude measures

and the decision tasks appears to have influenced the results in the first two studies. When participants completed the IAT before the decision tasks predictive links were observed but not in the expected direction suggesting participants were correcting for their perceived biases. However, when there was no opportunity to correct for implicit bias in the decision (e.g., by completing the decision tasks before the IATs), the predictive links between the IAT and the promotion decision were no longer present in the first two studies. Since other research has found that participants are able to discern their associative patterns when completing the IAT (Monteith, Voils & Ashburn-Nardo, 2001) it is possible that they will correct for these in their decision-making. Furthermore, it is possible that the using IATs to raise awareness of bias may ironically lead to bias in itself. For example, if the IAT makes people aware of their implicit gender biases they may subsequently correct for them in their decision-making, leading to decisions that favour women over men.

8.62 Hold IATs stable

One advantage of the IAT is its adaptability to tap different constructs and different category associations (Nosek et al., 2007). However, the desire to develop new IATs has been at the cost of thorough testing to see whether a particular IAT predicts behaviour. For example, the Career-Gender IAT has been used in a number of research studies, but instead of robustly testing the predictive utility of this IAT research has moved on to develop and study new gender IATs. However, little follow up research is then conducted to see how the newly developed IAT behaves in different scenarios, predicting different behaviours, across different research samples. Instead, the cycle continues with IATs being developed without the evidence showing predictive validity.

Thoroughly exploring a particular IAT in a particular attitude domain will provide a deep understanding of the circumstances in which it does and does not predict

behaviour. Once these circumstances are understood, another IAT can be developed and robustly examined. In this manner a picture will emerge that highlights what types of IAT predict what types of behaviour, under what types of conditions and for what types of people. Without such data the IAT is in danger of merely being a method to detect associations rather than give clarity on when the associations will and will not lead to certain behaviour, a factor that is critical to understand if the tool is going to be of practical use both within business and discrimination law.

8.63 Correspondence

Whilst correspondence between attitude measures and behaviours has long been implicated as important to the predictive validity of a measure (Ajzen & Fishbein, 1977), little research has directly explored how correspondence impacts the IAT-behaviour links. However, the limited research that does exist suggests this plays a major role in the predictive utility of the tool (Greenwald et al., 2009; Yogeeswaran & Dasgupta, 2010).

Furthermore, conceptual correspondence seems to influence correlations between implicit and explicit measures (Ajzen & Fishbein, 1977; Hofmann et al., 2005).

Therefore, asking participants to explicitly rate the stereotypes they associate with men and women should produce positive correlations with the Gender-Stereotype IAT. Furthermore, since such an explicit measure would frame gender stereotypes in a manner that enabled women to maintain a positive self-image they are likely to be equally endorsed by men and women and also be predictive of behaviour. So whilst Greenwald et al. (2009) suggests that the IAT is a superior predictor of behaviour when the attitude domain is of a sensitive nature, it may not be the measure but the manner in which the attitude is expressed in the measure that matters.

8.64 Values

This thesis has primarily been concerned with the predictive validity of implicit and explicit attitudes. Whilst not within the scope of the present research, another dimension to consider in future research is how values influence personnel decision choices in the area of gender. Values are defined as abstract ideals e.g., equality that act as guiding principles to behaviour and decisions (Maio, Hahn, Frost, Cheung, 2009; Maio, Pakizeh, Cheung, & Rees, 2009). They are therefore more abstract than attitudes. It would be interesting to explore how values and attitudes work together to guide behaviour. For example, does a person who has a value of equality also have more positive gender attitudes than those who value equality less? Or, can a value of equality be divergent to gender attitudes and if so, which is more likely to guide behaviour and when?

8.7 Conclusion

The results from three substantive studies produced expected and unexpected results. First, and as expected, strongly held implicit gender attitudes were found across all three studies. However, these strongly held implicit associations did not consistently translate into behaviour in the manner predicted across each of the studies. Whilst a variety of methodological factors may have influenced the findings, they cannot fully explain the pattern of observed results. An alternative explanation for the results is that the predictive validity of the IAT will only be revealed under a very select set of circumstances.

What is clear from the research is that the relationship between implicit attitudes and behaviour are more complex than the literature supposes. Therefore, generic statements about the predictive validity of the tool should be avoided. Not all IATs predict behaviour, and for those that do, not all behaviours are predicted.

Furthermore, participant demographics and research samples both influence the predictive links.

In a commentary on the IAT literature, Fazio and Olson (2003, p. 301) point out, "*the literature, although booming, has not matured to the point at which many firm conclusions can be drawn*". In this respect, in such nascent research literature, an important challenge is to clarify not only what we *do* know, but also what we *do not* know. The variability of the results presented in this thesis has raised some important questions for the IAT literature in the area of gender bias. In future research, there is a need to tease out what factors have major influence on the predictive validity of the tool so that it is used appropriately and informatively within organisational settings and as part of legal testimony. The studies in this thesis together represent an important step in understanding how such research should proceed, challenging assumptions concerning the predictive effects of the IAT, establishing greater clarity about what we do not yet know about the IAT and gender bias, and therefore contributing to the maturation of the literature.

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Appendices

Appendix A

Traits associated with Warmth/Communality and Competence/Agency

Warmth/Communal traits	Competence/Agentic traits
Good natured	Intelligent
Friendly	Powerful
Collaborative	Efficacy
Trustworthy	Efficient
Empathy	Organised
Kind	Skillful
Helpful	Capable
Understanding	Individualistic
Warm	Competitive
Sincere	Independent
Communal	Challenging
Connected	Self-sufficient
Committed	Autonomous
Considerate	Hierarchical
Together	Competent
Kinship	Determined
Forgiving	Aggressive
Supportive	Ambitious
Interdependent	Task-focused
Compassionate	Dominant
Affectionate	Self-confident
Sympathetic	Decisive
Gentle	Forceful
Cooperative	Daring
Attached	Strong
Caring	Confident
Nurturing	Potent
Nice	Assertive
Loving	Bold
Protective	Successful
Pleasant	Leader
Giving	Dynamic
Obedient	Winner
Respectful	Analytical
Perceptive	Objective
Intuitive	Logical

Appendix B

Male and female sex-typed professions

Male	Female
Doctor	Nurse
Mechanic	Secretary
President	Housekeeper
Detective	Nanny
Executive	Assistant
Farmer	Homemaker
Lawyer	Receptionist
Athlete	Dietician
Fire-fighter	Teacher
Judge	Babysitter
Engineer	Typist
Carpenter	Servant
Architect	Cashier
Minister	Model
Truck driver	Hairdresser
Construction worker	Librarian
Miner	Dancer
Airline Pilot	Cheerleader
Carpenter	Bank teller
Surgeon	Dental hygienist
Army Officer	Social worker
Orchestra Conductor	Florist
Stockbroker	Cleaner
Race car driver	
Electrician	

Appendix C

Picture stimuli for Gender-Affect IAT



Appendix D

Study 1: Information sheet and consent form



INFORMATION SHEET

Principal Investigator: Jo Kandola (PhD student)

Supervisors: Professor Gerard P Hodgkinson, Professor Nick Chater

Department: Behavioural Sciences Group, Warwick Business School

Project Title: Multiple research tasks

Participation Duration: 90 minutes

Date: June 2013

Contact: Jo Kandola

E-mail: - _____

Research Purpose: You are invited to take part in a number of tasks, each related to different research projects within The University of Warwick.

Information on Research: The session consists of a series of tasks. Some of the tasks will be completed on the computer whilst others will be completed on paper. Should you choose to participate, you will be supplied with instructions describing the experiment in further detail. The instructions will be read aloud by the experimenter. If at any point you are unclear on what is required please raise your hand and the researcher will come to you.

Risks: There are no physical risks of any kind involved in this research study.

Benefits: The data from this session will help to advance our knowledge in a number of areas such as attitudes, motivation, problem solving and decision-making.

Anonymity: You will not receive any information about identities of other participants in this experiment. Likewise, other participants will not receive any information about your identity. Information about participants in this experiment (names and identifying information) will be kept separate from the study data in a secure environment only authorized research staff will have access to this information. The study data will include only a random identification number for each participant. All of the data will be stored in a secure environment. At the end of the experiment, you will need to verify the receipt of your payoff by signing the payment form. This form will be used only for accounting purposes.

Compensation: You will be paid £9 for your participation in this study.

Voluntary Participation: Participation in this study is voluntary. If at any point you wish to stop your participation in this study, you can do so without giving any reason and without being penalised or disadvantaged in any way. Please sign the form attached to confirm your consent to take part in the study.

Complaint's Procedure: Should you have any complaints relating to this study, in the first instance please contact: Associate Dean for Research at Warwick Business School, Steve Brammer (_____)

or via the departmental office on _____.

Further information about the complaints procedure is available

at: http://www2.warwick.ac.uk/services/rss/researchgovernance/complaints_procedure/

Appendix E

Study 1: Decision materials

Instructions

Ragley is a large company that is currently undergoing a major restructure. As part of this they need to appoint a new Head of Sales to help them profitably grow the business. They also need to make some spending cutbacks. You have been asked to help Ragley make some of these crucial decisions. In total, you have three tasks to complete.

Three folders are attached to these instructions. Each folder contains information on the task and details of the decisions you need to make. **Please work through each task in numerical order.** Once you have completed a task, place all the information back in the folder. **Do not return to a task once it is completed.**

Promotion Decision Task

Ragley is keen to appoint a new Head of Sales to help them increase their revenue. This is a key strategic position within the business and the individual appointed must be able to lead and motivate a sales team to meet ambitious growth targets.

The role has been advertised within the company and four employees have applied for the position.

Your task is to review the information and decide which applicant to promote. You will be asked about your decision later so it is important that you can explain your choice.

Information in this pack includes:

- A job description
- Applications from 4 individuals
- An evaluation form for each applicant to be completed
- An overall evaluation form to be completed

Job Description

Position: Head of Sales

Reporting to: National Sales Director

Key Responsibilities

- Deliver sustainable sales growth
- Develop and maintain relationships with customers
- Lead and motivate a sales team to deliver growth targets
- Direct and influence the development of new sales initiatives
- Monitor and report sales performance

Key Competencies

Quality	Indicators
Sets Direction	Interprets and translates organisational vision and strategy into relevant, stretching objectives, actions and strategies for the business area.
Drives Results	Takes personal responsibility for defining appropriate standards for delivery by self and department, challenging self and others to rise to challenges and to seek to exceed expectations.
Executes Successfully	Makes things happen, involving key stakeholders and seizing the opportunities offered by change.
Customer Focus	Meets the expectations and requirements of internal and external customers. Demonstrates a clear understanding of customers, their needs and the market and ensures they receive a high quality service.
Build Effective Teams	Recognises the different ways that different people and teams contribute to organisational performance. Works to provide a climate of autonomy and empowerment that encourages engagement, motivation and development of others in order that they may work collaboratively effectively and achieve both results and their own potential.

Applicant Name: Anna Greaves

Personal Statement

Well networked and results oriented, possessing excellent sales management experience. Proven record of achieving a high level of sales turnover through the development of accounts in a very competitive region and industry. Highly customer oriented with good commercial awareness – believing maximum sales results from sound customer service and advice. Highly rated within the business with in excess of 15 years experience in sales. Now looking for greater responsibility to achieve personal ambitions.

Key Achievements:

- Successfully implemented department restructure, reducing staff costs by 4%.
- Opened over 15 new accounts per year for past 3 years.
- Developed revenue from existing customers and hit all personal targets.
- Scored 88% on customer satisfaction survey.
- Spotted brand and product opportunities and led their implementation.
- Delivered the right products to customers, accurately and on time, understanding their specific requirements.
- Negotiated favourable product rates with customers.
- Led and coached regional sales team, developing each individual's ability to achieve their own targets.
- Scored 93% staff engagement against business average of 69% in global engagement survey.
- Achieved sales growth year on year for the region, meeting all objectives in the company business plan.

Applicant Name: Thomas Redwood

Personal Statement

I have had a long and fulfilling career in sales management that has led to a broad and well developed network. I am adept at identifying opportunities, maximising ROI, improving client relationships and expanding the customer base. I am commercially aware, results focused and driven to succeed. I am keen to further progress my career, taking on more responsibility and challenge.

Key Achievements

- My team enjoys working for me and feedback has been very positive. I am known for my supportive approach and clear leadership. Staff engagement scores are in excess of 90%.
- I am adept at managing relationships and maintain good connections with key stakeholders helping me complete successful negotiations.
- I have achieved all of my personal objectives and business targets over the past three years.
- My region has been in the top 5 for sales performance since I have been in role and I have personally generated over 30 new accounts in the past 2 years. I have also increased revenues from my existing client base.
- I have delivered key performance indicators and efficiently managed my department resulting in overhead savings of 5%.
- My performance rating has been grade 1 (the highest grade possible) for the last two consecutive years.
- I have been successful in securing new clients and developing new relationships. I have a good understanding of clients' needs and this has led to increased revenue for the business. My customer satisfaction scores are above 85%.
- I am able to spot new opportunities and I have successfully implemented new brand strategies in key markets.

Applicant Name: Paul Lancaster

Personal Statement

Over 15 years of experience of working both within the business and in sales. Deep and broad understanding of the business and its customers. Strong commercial awareness within the industry. A natural leader with a proven ability to engage people and drive team performance. Influential and broad network both internally and externally. Strong negotiation skills. Highest rated performance, now seeking further progression and opportunities to achieve.

Key Achievements

- Results focused, hitting all business targets.
- Met regularly with customers and developed good understanding of their needs, leading to increased sales revenues.
- Created business retention strategy resulting in proactive retention of targeted customers.
- Spotted new opportunities for product penetration and implemented a 'go to market' strategy.
- Led and coached numerous teams. Successfully developed their own ability to target the market and increase personal revenues.
- Engagement scores on the staff survey >90%.
- Developed over 60 accounts in past 4 years via deep and robust understanding of customer needs.
- Improved department efficiencies leading to costs savings of approximately 4%.
- High customer service scores (consistently above 85%), within top 5 in company.
- Good negotiation tactics that have led to enhanced product rates.

Applicant Name: Mary Whittle

Personal Statement

I am a vastly experienced, results driven and resourceful Regional Sales Manager. I have been in sales my whole career and as a result have a well-established and broad network. I am driven and keen to progress. I am now looking for the next challenge in my already successful career.

Key Achievements

- I take time to get to know my customer base and this has lead to me being able to increase revenue from existing clients and sell more product volume.
- I have delivered excellent customer service with high client feedback scores (over 85% satisfied/extremely satisfied).
- I have been active in the market and have developed over 45 new clients over the past three years.
- I have a strong track record for achieving sales targets across a wide range of products.
- I am commercially aware and have spotted numerous opportunities within the market for product expansion.
- Since being in role I have managed costs and created efficiencies of around 5%.
- I have handled difficult relationships and always negotiate favourable rates.
- I have led various teams during my career and supported the development of others. Feedback shows that I have had a major impact on others personal effectiveness.
- I am proud that my staff engagement scores are over 90%.
- Since joining Ragley I have had the highest performance rating.

Overall Evaluation Form

Rank each of the four applicants suitability for the job where:

1 = most suitable for the job

4 = least suitable for the job

Note, the applicant you rank number 1 will be the person promoted.

1	
2	
3	
4	

Please provide a brief explanation for your decision to promote the applicant you have selected. You will be asked about this later.

--

What development, if any, would you recommend for each of the applicants not selected for promotion?

Applicant name:	
Development required:	

Applicant name:	
Development required:	

Applicant name:	
Development required:	

Redundancy Decision Task

As a result of the tough economic climate Ragley needs to make some cutbacks to the number of people in the Finance team. Four individuals have been selected for potential redundancy.

The Line Managers of the four people selected have been asked to provide a brief summary of the person they manage and to indicate what they believe the individual's performance rating will be for the coming year. This information is attached.

Your task is to review the information provided and decide which individual should be made redundant.

Name: George Headley

George works from home two days per week. I do not believe he has any drive to further his career and he seems happy in the role he is doing (which he has been in for about 4 years). His work can be a bit hit and miss - sometimes it is of the standard I would expect of someone in their grade but others times it is below the standard required. As a result, I need to closely supervise his work. I do not see him progressing any further in the company and I believe his performance rating this year will be a 3 or a 4 ('meets expectations' or 'below expectations'). I often see George chatting with others in the office, he is outgoing and well liked by the rest of the team. He is easy to get on with and friendly.

Name: Frank Williams

Frank has worked for Ragley for over 4 years. He now splits his week spending half the time working in the office the other half working from home. He shows no ambition to progress and I don't think he has the potential to develop beyond the role/grade he is in. I would describe him as cheerful and friendly when he is in the office. Whilst he is liked by other team members and has good relationships his work is not always of the standard required. Frank's work often needs to be monitored. As a result his performance rating will either be 'meeting expectations' (grade 3) or 'below expectations' (grade 4).

Name: Clare Grey

I have been Clare's line manager since she joined the business about 4 years ago. She seems happy in her role and I get the impression from comments that she has made that she has no desire to be promoted further or progress her career. Even if she had the desire to progress, I don't believe she has the potential to move further within the business. Clare will probably be rated 3 or 4 this year since I frequently have to check her work for mistakes and it does not always meet the level I require of someone in her role. Clare has a positive nature and makes others feel welcome. She gets on well with the rest of the team and is sociable when in the office – she works from home two days per week.

Name: Helen Winchester

Helen is very sociable and has a warm personality. She gets on well with the team and is good to have around the office. She is quite content in the role and I don't see any desire from her to progress – even if she did have the desire I don't think that she has the ability since her work can at times be poor and I often have to check for errors. Helen is likely to be rated as 'performing below expectations' (= Grade 3) or 'meeting expectations' (= Grade 4) in her annual review. She works from home part of the week and has been with Ragley for about four years.

Redundancy Evaluation Form

Rank each individual in the order in which they should be considered for redundancy.

1 = most likely to make redundant

4 = least likely to make redundant

Note, the individual you rank number 1 will be the person made redundant.

1	
2	
3	
4	

Please provide a brief explanation for your decision to make redundant the individual you have selected. You will be asked about this later.

--

Budget Decision Task

As part of the cutbacks required a number of initiatives within the business are under review. Funding needs to be cut from each of the budgets below and ideally one of them cancelled completely.

A brief summary of each of the three initiatives under review is below.

Your task is to rank order which initiative should receive the most funding and which should receive the least funding.

Initiatives:

Men's 5-side football: most of the offices within Ragley have a 5-side football team who play against teams from other local companies. The men involved really enjoy playing and can often be heard talking in the office about how their team is getting on. Ragley provides funding for the venue and refreshments at 'home' games. This initiative has been great for developing relationships across the local business community.

Supply of fruit in every office: as part of the company's Well-Being @ Work initiative, each office in the country supplies free fruit to staff. Fruit bowls can be found in all coffee areas. The aim is to educate people on healthy eating and help them achieve some of their 5-a-day. This has proved extremely popular with staff and supports a broader education programme on maintaining a healthy lifestyle.

Women's netball: this is a well-supported initiative that has helped developed a women's network across a number of organisations. Those involved have welcomed the opportunity combine sport with building relationships outside of Ragley. Each office has a netball team and women play against teams from other businesses in the region. Ragley covers the cost for hiring the netball court and refreshments after the match.

Budget Cut Evaluation Form

Rank each initiative according to the amount of funding it should receive in the next financial year:

1 = should receive most funding

3 = should receive least funding

1	
2	
3	

If you feel funding should be withdrawn completely from any of the initiatives, please write the name of the initiative in the box below.

--

Please provide a brief explanation for your decision. You will be asked about this later.

--

Appendix F

Study 2: Information sheet and consent form



INFORMATION SHEET

Principal Investigator: Jo Kandola (PhD student)

Supervisors: Professor Gerard P Hodgkinson, Professor Nick Chater

Department: Behavioural Sciences Group, Warwick Business School

Project Title: Multiple research tasks

Participation Duration: 30 minutes

Date: Oct 2013

Contact: Jo Kandola

E-mail: _____

Information on Research: You are invited to take part in two studies, each related to different research projects within The University of Warwick. Should you choose to participate, you will be supplied with instructions describing each of these tasks in further detail.

Risks: There are no physical risks of any kind involved in this research study.

Benefits: The data from this session will help to advance our knowledge in a number of areas such as managerial decision-making, memory and attitudes.

Anonymity: You will not receive any information about identities of other participants in this study. Likewise, other participants will not receive any information about your identity. Information about participants in these studies (names and identifying information) will be kept separate from the study data in a secure environment and only authorized research staff will have access to this information. The study data will include only a random identification number for each participant. All of the data will be stored in a secure environment.

Compensation: £5 Amazon voucher will be emailed when you complete **both** studies.

Voluntary Participation: Participation in this study is voluntary. If at any point you wish to stop your participation in this study, you can do so without giving any reason and without being penalised or disadvantaged in any way.

Complaint's Procedure: **Complaint's Procedure:** Any complaint about the way you have been dealt with during the study or any possible harm you might have suffered will be addressed. Please address your complaint to the person below, who is a Senior University of Warwick official entirely independent of this study:

Jo Horsburgh
Deputy Registrar
Deputy Registrar's Office
University of Warwick
Coventry, UK, CV4 8UW.

T:

E: _____

CONSENT FORM

Principal Investigator: Jo Kandola (PhD student)
Supervisors: Professor Gerard P Hodgkinson, Professor Nick Chater
Department: Behavioural Sciences Group, Warwick Business School
Project Title: Multiple research tasks
Participation Duration: 30 minutes
Date: Oct 2013
Contact: Jo Kandola
E-mail: _____

I confirm that I have read and understood the Information Sheet for the above project and have had the opportunity to ask questions.

I agree to take part in the above study and am willing to follow experimental instructions and procedures and complete all experimental tasks.

I understand that my information will be held and processed for the purposes of publication in scientific journals and presentation on scientific conferences.

I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without being penalised or disadvantaged in any way.

Signatures:

Study Participant

Signature _____ Print name _____ Date _____

Person obtaining consent

Signature _____ Print name _____ Date _____

Principal Investigator (if different from person obtaining consent)

Signature _____ Print name _____ Date _____

Appendix G

Study 2 and 3: Decision materials

Managerial Decision Making

For several years, researchers have been investigating various factors that could affect how managers make decisions. Your cooperation is exceedingly important in terms of advancing scientific knowledge about the managerial decision making process. Please be as honest and open as possible in answering each of the questions asked. All of your responses will be completely confidential.

Instructions

In this exercise, you will be asked to play the role of a Senior Executive of a company and, in that role, to make a number of managerial decisions. This is a commonly used approach to study and to evaluate managerial decision-making. The name of the approach is the “in-basket” technique. In order to make these decisions, a set of action alternatives will be given and you will be asked to choose among them. At times you may feel that you would not want to choose any of the alternatives; however, in order to ensure comparability across research participants, it is important that you make a choice among the alternatives given.

Please read each part very carefully, and read them in the order presented. Pay very close attention to all of the instructions that will be provided to you, and do not skip any questions asked.

You may begin by turning the page. Thank you.

The situation

You are a Senior Executive within HighTeq.

HighTeq is a multinational company that has in the past seen rapid growth and success in the market. However, over the past year profit has dropped dramatically and as a consequence the Board has decided to implement a major restructure of the business. They are hoping this will lead to both cost savings and increases in revenue. As a Senior Executive within HighTeq you have an important role in delivering the new business plan.

It is 7.30 AM and you have a really busy day ahead of you. As usual, your trusted PA, Anita, has printed out all the critical emails you need to respond to before you attend your first meeting in 30 minutes. Your task is to deal with each email and indicate your decisions clearly for her to action. She wants to be able to follow your instructions precisely. For some of the items, you may not like some of the options proposed; however, it is very important that in each case you choose one of them (i.e., the ones that you are most happy with, within the confines of the scenarios presented). After you make each of your choices, you will be given an opportunity to make additional comments if you so desire.

Please begin the in-basket

EMAIL

From: Mike Fairbrother

Re: Travel Budget

I was just made aware we will probably be 15% over our Travel and Entertainment Budget by year-end. Nevertheless, I'd like to send my top four sales people to attend the annual Sales and Marketing Association Conference next week in Madrid. However, in view of the spending cutbacks I thought it important to check with you before I approved this overspend. I don't see a problem approving these trips, given that by year-end I expect to be within my overall budget since my use of temporary help is expected to be under budget. What do you think?

(Please place an X by your response.)

<i>Do not approve any over-budget expenditures.</i>	
<i>Approve travel subject to an off-setting decrease elsewhere in the sales and marketing budget.</i>	
<i>Go over budget for a specified number of persons. (Please type the number of persons)</i>	

In addition to your response above, do you have any comments?

Kind regards

Mike Fairbrother

EMAIL

From: Frank Hill

Re: Recruitment of IT Manager

Sorry to trouble you, but I need your advice.

I have interviewed a number of people for the IT Manager position and have found a really good candidate who could start in a month's time. She is Clare Brown, who has great IT credentials and also has a good understanding of our industry.

Based on our recent review of salaries within the business, I feel a salary of £35,000 is a fair one for the job. However, I asked Clare what her salary expectations were and she said £22,000 to £24,000.

Given the need to lower costs in the IT department, I am not sure what salary to offer her. Please can you provide some guidance?

What should I offer Clare Brown as a starting salary?

(Please place an X by your response).

£20,000 – £22,000	
£22,001 to £24,000	
£24,001 to £26,000	
£26,001 to £28,000	
£28,001 to £30,000	
£30,001 to £32,000	
£32,001 to £34,000	
34,001 to 36,000	
Some other option, please specify	

In addition to your response above, do you have any comments?

Best wishes
Frank

EMAIL

From: Emma Regal

Re: Conference

Our annual management conference is in two months time and I wondered if you would like to come and give a presentation to update management on how we are progressing on the new business plan. As a representative of the Senior Executive Team, I am sure our managers would appreciate hearing from you directly on how we are doing. I've checked your diary and you don't seem to have any commitments that conflict with the time of the conference. Please let me know if you can attend.

(Please place an X by your response.)

<i>Will attend.</i>	
<i>Will not attend.</i>	

In addition to your response above, do you have any concerns?

Regards

Emma

EMAIL

From: Edward Parker

Re: Vacation

After I finish our year-end statements, I'd like to take a few days off. I propose taking holiday immediately after you return from yours. Let me know if this is okay.

(Please place an X by your response).

<i>Approve vacation request.</i>	
<i>Decline vacation request.</i>	
<i>Do not take your vacation until a few days after I have returned.</i>	

In addition to your response above, do you have any comments?

--

Best wishes

Edward

EMAIL

From: Mike Williams, CEO

Re: Head of Sales Replacement

I have asked Jo Sounders in HR to send you the shortlisted candidates to replace John Briggs when he retires. I hold John in the highest regard and he has done an excellent job as Head of Sales. It is vital therefore that we get an excellent replacement whom can continue John's great work.

As you know, I value commitment to the business and whoever is appointed needs to be flexible and make work a top priority. They need to be a strong leader who is decisive and can execute the strategy. It's also important that they fit in well with the Senior Executive team. As someone I trust, I am leaving the final decision with you on whom to appoint. Jo will be in contact shortly.

Regards

Mike

EMAIL

From: Jo Saunders, HR Executive
Re: Head of Sales Replacement

With the imminent retirement of John Briggs, we need to appoint a new Head of Sales.

As you know, John has been in role for a number of years and is highly regarded so finding a suitable replacement will not be easy. It is vital that the person that replaces John is strategic, decisive, driven and can execute the new Sales business plan successfully. This is a key leadership role and we need to make sure we appoint the right person.

We've received a number of applications from within the business and I have conducted interviews with all of them. There are two individuals who may be capable of doing the role, but since it is such a vital position Mike Williams wanted to leave the final decision with you; who you appoint may determine whether or not we turn the sales function around and increase profits.

I have attached the CVs of the two people. Please can you let me know whom you wish to appoint. In addition, to help me give each candidate feedback it would be useful if you could rate each of them on the dimensions indicated below.

Who should be promoted? *(Please place an X by your response).*

<i>Helen Taylor</i>	
<i>Mark Harris</i>	

For feedback purposes, rate Helen Taylor on the following (place an X next to the rating given):

Not committed to the company	1	2	3	4	5	6	7	8	Committed to the company
Not Competent	1	2	3	4	5	6	7	8	Competent

For feedback purposes, rate Mark Harris on the following:

Not committed to the company	1	2	3	4	5	6	7	8	Committed to the company
Not Competent	1	2	3	4	5	6	7	8	Competent

In addition to your response above, do you have any comments?

Best wishes, Jo

CURRICULUM VITAE

Helen Taylor

Personal Statement

I have had a long and fulfilling career in sales management that has led to a broad and well-developed network. I am keen to further progress my career, taking on more responsibility and challenge.

Achievements

- My team enjoys working for me and feedback has been very positive. I am known for my supportive approach and clear leadership. Staff engagement scores are in excess of 90%.
- I am adept at managing relationships and maintain good connections with key stakeholders helping me complete successful negotiations.
- I have achieved all of my personal objectives and business targets over the past three years.
- My region has been in the top 5 for sales performance since I have been in role and I have personally generated over 30 new accounts in the past 2 years. I have also increased revenues from my existing client base.
- I have delivered key performance indicators and efficiently managed my department resulting in overhead savings of 5%.
- My performance rating has been grade 1 (the highest grade possible) for the last two consecutive years.
- I have been successful in securing new clients and developing new relationships. I have a good understanding of clients' needs and this has led to increased revenue for the business. My customer satisfaction scores are above 85%.
- I am able to spot new opportunities and I have successfully implemented new brand strategies in key markets, maximising ROI.

Education

University of Liverpool (1995 – 1998) *BSc in Finance (2.1)*

University of Sheffield (1999 – 2000) *MSc Sales and Marketing*

Other information

I enjoy cycling, taking our kids out to explore the countryside. I currently work 1-day per week from home and I am keen to maintain this if promoted.

References

Please let me know if you need references.

Curriculum Vitae

Mark Harris

Profile

Over 15 years of experience of working both within the business and in sales. Deep and broad understanding of the business and its customers. Strong commercial awareness within the industry. A natural leader with a proven ability to engage people and drive team performance. Influential and broad network both internally and externally. Strong negotiation skills. Highest rated performance, now seeking further progression and opportunities to achieve.

Education

1994 – 1997: University of Birmingham, BSc Economics (2.1)

1997 – 1998: University of Bristol, MSc Marketing

Key Achievements

- Results focused, hitting all business targets.
- Met regularly with customers and developed good understanding of their needs, leading to increased sales revenues.
- Created business retention strategy resulting in proactive retention of targeted customers.
- Spotted new opportunities for product penetration and implemented a 'go to market' strategy.
- Led and coached numerous teams. Successfully developed their own ability to target the market and increase personal revenues.
- Engagement scores on the staff survey >90%.
- Developed over 60 accounts in past 4 years via deep and robust understanding of customer needs.
- Improved department efficiencies leading to costs savings of approximately 4%.
- High customer service scores (consistently above 85%), within top 5 in company.
- Good negotiation tactics that have led to enhanced product rates.

Interests

- I enjoy experiencing different things and love to travel with my wife and children.
- I work from home one day per week.

References

Available in request

EMAIL

From: Anita Patch, PA

Re: Lunch

Mike Williams, the CEO of HighTeq, phoned yesterday to invite to lunch on Thursday. You already have a lunch meeting booked in with a client so I am not sure what to tell Mike. Can you let me know what you would like me to do?

(Please place an X by your response.)

<i>Accept Mike's invitation and cancel the client meeting.</i>	
<i>Decline Mike's invitation.</i>	

In addition to your response above, do you have any comments?

Thanks

Anita

EMAIL

From: Mike Phillips, Customer Liason Manager

Re: Customer complaint

A client issue has arisen that I need your advice on.

Sandersons has been a valued customer of ours for over 10 years. However, Brian Porter, the account manager who looked after them, recently left our business and joined a competitor. Paul Ellis is the new account manager and as you know he is highly regarded. However, the customer has emailed me to say that they are finding Paul “unresponsive and difficult” to deal with. I have spoken to Paul and he assures me that there is nothing specific that we have done wrong but the customer has been rather demanding lately. I’ve had a further look into things and I have found out that Brian has approached another customer seeking to take their business to our competitor. I therefore think that the reason Sandersons is unhappy at present may be because Brian is trying to poach their business from us.

I was wondering whether we should offer Sandersons a loyalty discount of 20% to try to appease the situation? They are a valued customer and spend a lot of money with us per year so I wouldn’t want to loose them. Can you let me know your opinion?

(Please place an X by your response.)

<i>Do not offer any discount.</i>	
<i>Offer the 20% discount.</i>	
<i>Offer a lower discount.</i> <i>(Please indicate the discount to be offered: 5% 10%</i> <i>15%)</i>	

In addition to your response above, do you have any comments?

Regards

Mike Phillips

EMAIL

From: Alan Jones, Finance Executive

Re: Confidential

I am really sorry to say that I think we are going to have to make some redundancies in the Finance Department over the coming six months. The number of people we need to make redundant will depend on how the business performs over the next quarter but to manage imminent pressures I do think one person needs to go now.

I've reviewed the performance of all staff over the last year and although no-one is performing badly, there are two people who are not performing as good as the rest of the team. I therefore think we should make one of these people redundant. I feel really bad about this redundancy since both individuals have a young family, but with profits as they are this action cannot be avoided. I am a bit torn on who should go and so would welcome your input.

I have attached the personnel record for each of them, provided by their line manager, which includes a short summary of their performance during the last 12 months. Please can you review this and let me know whom to make redundant?

(Please place an X by your response.)

George Cummings	
Susan Hopkins	

In addition to your response above, do you have any comments?

Regards

Alan

PERSONNEL RECORD:	George Cummings
--------------------------	-----------------

Personal information

Gender	Male
Age	34
Tenure	39 months
Current job level	Level 2

Performance History* and Future Potential

2009	3
2010	2
2011	2
2012	3
2013	Expected rating 3

*Performance Rating Scale
 1 = Significantly Exceeds Expectations
 2 = Exceed Expectations
 3 = Meets Expectations
 4 = Does Not Meet Expectations

Potential to progress within the business	Yes	No X
---	-----	----------------

Paternity Leave

Yes X	No
-----------------	----

Sickness Record

11-06-2009 – 15-06-2009
28-11-2010 – 30-11-2010
25-09-2011 – 25-09-2011
12-08-2012 – 13-08-2012

Work Schedule

Flexible working	Yes X	No
------------------	-----------------	----

Part-time working	
Working from home	X
Term-time working	
Compressed working week	

Line Managers Summary of Current Performance

George is sociable and has a warm personality; he gets on well with the team. George is quite content in the role and I don't see any desire from him to progress – even if he did have the desire I don't think that he has the ability since his work can at times be poor and I often have to check for errors. Feedback from others suggests his work meets expectations; he delivers what is required but doesn't go the extra mile. Therefore, George is likely to be rated as 'meeting expectations' (Grade 3) in his annual review. George has been supporting the review of supplier contracts as part of our cost cutting exercise. He works from home part of the week.

PERSONNEL RECORD:	Susan Hopkins
--------------------------	---------------

Personal information

Gender	Female
Age	33
Tenure	41 months
Current job level	Level 2

Performance History* and Future Potential

2009	2
2010	3
2011	2
2012	3
2013	Expected rating 3

*Performance Rating Scale
 1 = Significantly Exceeds Expectations
 2 = Exceed Expectations
 3 = Meets Expectations
 4 = Does Not Meet Expectations

Potential to progress within the business	Yes	No X
---	-----	----------------

Maternity Leave

Yes X	No
-----------------	----

Sickness Record

09-01-2009 – 10-01-2009
15-03-2010 – 18-03-2010
21-04-2011 – 23-04-2011
01-08-2012 – 02-08-2012

Work Schedule

Flexible working	Yes X	No
------------------	-----------------	----

Part-time working	
Working from home	X
Term-time working	
Compressed working week	

Line Managers Summary of Current Performance

Susan works from home two days per week. I do not believe she has any drive to further her career and she seems happy in the role she is doing. Susan has been helping plan the departmental budgets and forecasting annual spends for the next 3 years. Feedback suggests she is doing an okay job; she does the work needed but nothing more. Other feedback suggests her work can be a bit hit and miss - sometimes it is of the standard I would expect of someone of a Level 2 but others times it is below the standard required. As a result, her work needs to be supervised. I do not see Susan progressing any further in the company and I believe her performance rating this year will be a 3. Susan is outgoing, friendly and well-liked by the rest of the team.

EMAIL

From: Jo Saunders, HR Executive

Re: Staff issue

Sorry to bother you again, I know you have a really busy week ahead of you. However, I do need your decision on how to proceed with a staff issue that has arisen.

I am not sure whether you are aware but two of my team entered into a personal relationship late last year. It appears that this has now ended and relations between the two individuals are not good. William is more senior to Debbie and she is now complaining that he is not giving her any interesting projects to work on. In addition, she has said she is worried about the feedback he may give on her and how this may affect her performance review.

I have spoken to William and he seems to be acting professionally so I don't think there is any truth to the claims Debbie has made. However, with these latest claims from Debbie the relationship is only going to get worse. I was therefore thinking about talking to Debbie to see if she would be interested in moving over to the marketing team for a while. She has always shown an interest in marketing and there are certainly some interesting projects to get involved in there. I think this may be the quickest and best solution. What do you think?

(Please place an X by your response.)

<i>Do not move Debbie to the marketing team.</i>	
<i>Move Debbie to the marketing team.</i>	

In addition to your response above, do you have any comments?

Best wishes, Jo