

**Stress Reactions of Women in Response to Preferential Treatment in the Workplace;
The Role of Self-Esteem**

Eftyhia Helis

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of Master of Science

Department of Psychology

**Carleton University
Ottawa, Ontario**

May 2006



Library and
Archives Canada

Published Heritage
Branch

395 Wellington Street
Ottawa ON K1A 0N4
Canada

Bibliothèque et
Archives Canada

Direction du
Patrimoine de l'édition

395, rue Wellington
Ottawa ON K1A 0N4
Canada

Your file *Votre référence*
ISBN: 978-0-494-16497-6

Our file *Notre référence*
ISBN: 978-0-494-16497-6

NOTICE:

The author has granted a non-exclusive license allowing Library and Archives Canada to reproduce, publish, archive, preserve, conserve, communicate to the public by telecommunication or on the Internet, loan, distribute and sell theses worldwide, for commercial or non-commercial purposes, in microform, paper, electronic and/or any other formats.

The author retains copyright ownership and moral rights in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

AVIS:

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque et Archives Canada de reproduire, publier, archiver, sauvegarder, conserver, transmettre au public par télécommunication ou par l'Internet, prêter, distribuer et vendre des thèses partout dans le monde, à des fins commerciales ou autres, sur support microforme, papier, électronique et/ou autres formats.

L'auteur conserve la propriété du droit d'auteur et des droits moraux qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

In compliance with the Canadian Privacy Act some supporting forms may have been removed from this thesis.

While these forms may be included in the document page count, their removal does not represent any loss of content from the thesis.

Conformément à la loi canadienne sur la protection de la vie privée, quelques formulaires secondaires ont été enlevés de cette thèse.

Bien que ces formulaires aient inclus dans la pagination, il n'y aura aucun contenu manquant.

**
Canada

Abstract

Preferential treatment of women in the context of workplace policies such as Employment Equity, have often resulted in adverse cognitive, behavioural and physiological reactions of the beneficiaries. The present study assessed the reactions of women towards preferential treatment in a context of gender discrimination. In an experimental paradigm, female participants ($n=105$) were exposed to selection conditions based on merit or preferential treatment and they experienced these conditions either alone or in the presence of another participant (female or male). Their perceptions of the fairness of the procedures as well as their emotional and physiological reactions (cortisol levels) towards preferential selection and discrimination were assessed in relation to the social context (when another participant was informed of their selection status). The role of self-esteem of women was also assessed in relation to these effects. Findings of the present study support the notion that women perceive procedures of preferential treatment less favourably than merit-based procedures. It was shown that conditions of discrimination had a more prominent effect on women's emotional reactions compared to conditions of preferential treatment. The presence of another woman during the selection procedures was related to women's cognitive and affective reactions in situations of success and failure. It is suggested that self-esteem had a prominent role in reactions of women as the experimental conditions more readily affected women with low self-esteem.

I dedicate this thesis to a wonderful person, my mother Yiota.
For having stood by me in every step of the way during my studies and especially during
the course of this thesis, and for having made the distance between Greece and Canada
feel insignificant.

Acknowledgements

At the end of this “journey”, I would like to thank a number of people who contributed in their own way to the making and the completion of this work.

First, my thanks go to my supervisor, Dr. Hymie Anisman, for supervising this project and for his help and advice that improved me and matured me as a student.

Many thanks to Dr. Kim Matheson for her input in this project, her time, cooperation, advice and invaluable guidance for the statistical analysis.

I thank my committee members, Dr. John Zelenski and Dr. Steven Murphy for their time and feedback on my work, Dr. Peter Fried for chairing my defense and Dr. Jerzy Kulczycki for conducting the cortisol assays of this project.

I would also like to thank the graduate students who assisted in the administration of the experiment and collection of data: Ritu, Kelly, Marc, Chris and Owen. But most of all, I would like to thank Ersin Asliturk for his wonderful cooperation and for being a great confederate.

Many thanks to Etelle Bourassa and Natalie Pressburger for their assistance and for always being kind and friendly.

I thank my friends Nectaria, Helen, Cezar, Nahid and Agnes for sharing their experiences and time with me and for supporting me and motivating me, each in their own way.

A big thank you to Tim, for being the person that he is, for his patience, understanding and for being there for me, always.

Finally, thank-you to my family in Greece for their love and support; my sisters Mpia and Katerina, and my mother Yiota to whom this thesis is dedicated.

Table of Contents

	Page
Introduction	1
Affirmative Action and Employment Equity policies in Canada	4
The Preferential Treatment Controversy	6
Women in Relation to Preferential Treatment Programs; Opposition and Possible Side Effects	8
Preferential Treatment in the Presence of Others and the Role of Social Support	10
The Role of Self-Esteem in the Context of Preferential Treatment	12
Neuroendocrine Alterations in Relation to Preferential Treatment	14
The Present Study	17
Method	19
Participants	19
Procedure	20
Measures	25
Results	28
Overview of Analytic Approach	28
Manipulation Checks	29
Relative Effects of Failure Under Varying Conditions	32
Perceptions of Fairness of Selection Procedures	32
Self-Reported Affect	33
Neuroendocrine Alterations	34

Table of Contents (Continued)

Assessing Factors Moderating Stress of Women Successfully Selected	39
Perceptions of Fairness	39
Self-Reported Affect	40
Neuroendocrine Alterations	40
Relations Among Outcome Variables	45
Discussion	46
Effectiveness of Manipulations	47
Perceived Fairness of the Selection Conditions	49
Affective Outcomes of Women as a Result of Selection Conditions and Status	51
The Role of Social Context	53
The Role of Self-Esteem	54
Neuroendocrine Alterations	55
Merit and Preferential Treatment in This Study	56
Future Considerations	57
Conclusions and Contributions of the Present Study	59
References	61
Appendices	71

List of Tables

Table	Description	Page
1	Observed Frequencies (% of total) on Manipulation Check for Selection Criteria	32
2	Descriptive Statistics (Mean (SD)) on Perceptions of Fairness for Selection Conditions Among Women	34
3	Significant Bivariate Correlations (Pearson Correlation Coefficient r) Among the Outcome Variables of Perceptions of Fairness, Anger, Anxiety and Cortisol Ratios	46

List of Figures

Figure	Description	Page
1	Mean cortisol levels ($\mu\text{g}/\text{dl}$) ($\pm SE$) of women at each of the measurement times (prior to selection feedback (Panel A), 15 minutes after selection feedback (Panel B), 30 minutes after selection feedback (Panel C)) as a function of selection procedures and social context	37
2	Mean cortisol levels ($\mu\text{g}/\text{dl}$) ($\pm SE$) of successful women at each of the measurement times (prior to selection feedback (Panel A), 15 minutes after selection feedback (Panel B), 30 minutes after selection feedback (Panel C)) as a function of selection procedures and social context	43

List of Appendices

Appendix	Description	Page
A	Recruitment Notice	71
B	Experimenter's Instructions to Participants	72
C	Informed Consent	78
D	Part I of Questionnaire	79
E	Writing Task I	80
F	Part II of Questionnaire	81
G	Writing Task II	82
H	Part III of Questionnaire	83
I	Suspicion Questionnaire	86
J	Debriefing	87
K	Informed Consent for the Use of Data	90

Stress Reactions of Women in Response to Preferential Treatment in the Workplace; The Role of Self-Esteem

Affirmative action programs, such as employment equity policies in Canada, have, over the last two decades, improved the positions and increased the representation of women and members of other disadvantaged social groups within the workforce (Crosby, Iyer, Clayton & Downing, 2003; Heilman, 1997; Hing, Bobocel & Zanna, 2002). However, a considerable amount of controversy and resistance has been also encountered regarding these programs. These difficulties have been concerned with the overall effectiveness of their implementation strategies, as well as the behavioural / psychological outcomes on the beneficiaries (Brutus, Parra, Hunter, Perry & Ducharme, 1998; Falkenberg & Boland, 1997; Heilman, Battle, Keller & Lee, 1998; Heilman, Lucas & Kaplow, 1990).

Opposition to these programs stems mainly from the frequent use of preferential treatment in order to enhance the job-related status of individuals belonging to traditionally disadvantaged groups. As a result, concerns about hiring on the basis of quotas, reverse discrimination, and the destruction of merit in the workplace, have emerged within the public at large as well as by the beneficiaries of these programs (Falkenberg & Boland, 1997). Interestingly, the resistance expressed by the individuals who benefit from the preferential selection procedures employed by such programs might also be related to undesired psychological effects (Heilman et al., 1990; Hing et al., 2002). Women, for example, one of the groups targeted by affirmative action policies, have often reported adverse cognitive and emotional effects as a result of having been preferentially treated in the implementation of these plans.

Indeed, procedures that employ gender as the exclusive selection / hiring criterion, regardless of qualifications, can adversely affect women in multiple ways. For instance, these programs may instigate the stereotype of incompetence of female beneficiaries, since the individual who is perceived to have benefited from preferential treatment may also be perceived to have been in need of special assistance in order to succeed (Heilman & Alcott, 2001). Moreover, even the perception that someone else is aware or believes that they have been chosen on the basis of gender can affect women's motivation, performance and behaviour. In effect, preferential selection on the basis of sex may induce unfavorable views of self, negative emotions, and a greater expression of distress and anxiety among women (Crosby et al., 2003; Heilman & Alcott, 2001; Heilman, McCullough & Gilbert, 1996; Matheson, Majka & Giglio, 2002; Turner & Pratkanis, 1994).

Although sex-based preferential selection can have profound adverse effects on the benefiting individuals, not all women are negatively impacted by such procedures. Actually, variables such as personality differences or perceived social support might moderate the negative effects stemming from preferential treatment. In this regard, it has been shown that among individuals confident about their abilities, negative preferential selection effects on self-perceptions of competence and on affective outcomes may be moderated (Heilman, 1994; Heilman, Kaplow, Amato & Stathatos, 1993; Heilman et al., 1990). Moreover, social support might also have a moderating effect for the unwanted impact that these procedures can create on the female selectees, as the perception of social support availability has been linked to more effective coping in response to negative events (Ruggiero, Taylor & Lydon, 1997).

In addition to the multiple impacts of preferential treatment on the social status, self-esteem and affective reactions of the beneficiaries, there is reason to suppose that the distress associated with preferential selection procedures may also influence neuroendocrine processes, and thus may have pronounced effects on both psychological and physical well being. Specifically, physiological indicators of stress reactions, such as cortisol levels, have indicated that neuroendocrine alterations may occur as a result of preferential selection procedures (Heilman et al., 1990; Matheson et al., 2002). Even though these neuroendocrine changes are likely of adaptive significance in that they facilitate effective coping, when these hormonal processes are activated for extended periods, they may adversely affect well being (McEwen, 2000). Although there has been considerable research examining the neuroendocrine changes that accompany job strain and burnout (Aronsson & Rissler, 1998; Karasek & Theorell, 1990; Melamed et al., 1999; Siegrist, Klein & Voigt, 1997; Sluiter, Van der Beek & Frings-Dresen, 1998; Steptoe, Cropley, Griffith & Kirschbaum, 2000; Yang et al., 2001; Zeier, Brauchli & Joller-Jemelka, 1996), little attention has been devoted to the impact of the distress associated with preferential selection employed by workplace programs, such as affirmative action.

One goal of the present study was to examine the physiological stress reactions, namely salivary cortisol levels, of female participants who experienced preferential selection in a simulated affirmative action context. Moreover, given that women beneficiaries may be aware of the societal stigma attached to preferential selection and may consequently be concerned about the way others view them (Heilman & Alcott, 2001), this study examined the effects of preferential selection of females in presence of

other individuals. The impact of group members' awareness of the selection process and the role of perceived social support were examined for their effects on women's reactions towards their selection based on preferential treatment. Moreover, psychological attributes of the female beneficiaries, and particularly self-esteem, were also assessed in order to determine their role on the behavioural effects and experienced stress reactions attributed to preferential selection.

Affirmative Action and Employment Equity Policies in Canada

Affirmative action policies originated in the United States in 1965 when President Johnson issued Executive Order 11246, creating the first affirmative action policy (Crosby et al., 2003). Since then, different countries have adopted various forms of affirmative action plans as a means of promoting the representation of disadvantaged group members in the workplace (Brutus et al., 1998). The focus of affirmative action programs lies mainly on active steps taken to prevent discrimination in employment on the basis of race, sex, colour, religion, age or national origin (Brutus et al., 1998).

In Canada, Employment Equity is the term used to describe the process for achieving equality and improving the status of designated group members (i.e. women, Aboriginal people, visible minorities and persons with disabilities) in all aspects of employment (Government of Canada, 2004; Human Resources Development Canada, 2005). The primary goal of Employment Equity is to ensure that "no one is denied employment opportunities and benefits for reasons unrelated to ability" (Human Resources Development Canada, 2005). On this basis, the implementation of Employment Equity intends to improve access, distribution and participation throughout

all occupations and at all levels, for the members of these different social groups (Abella Report, 1984; Government of Canada, 2004).

Canada has embraced and implemented affirmative action programs since the 1960's (Government of Canada, 2004). It was in 1960, when the term of Equal Opportunity was introduced and constituted one of the first concepts used to define equal access to employment opportunities for all Canadians (Government of Canada, 2004). Later, in 1984, Employment Equity would become the term used to describe the process of a systemic response against discrimination in the workplace (Government of Canada, 2004). Employment Equity, as affirmative action policies in the United States, is applied to the federal government and to all private organizations that work with the federal government (i.e., all federal contractors) (Crosby, 1994; Crosby et al., 2003; Government of Canada, 2004; Human Resources Development Canada, 2005).

In theory, these policies involve proactive examination by the aforementioned employers, whether equality of opportunity exists or not; in case it does not, a plan is implemented to eliminate the barriers and establish equitable representation of members of the designated groups in workplaces across the country (Crosby et al., 2003; Hing et al., 2002; Human Resources Development Canada, 2005). In some cases, these policies could be applied as a preventative measure, even in the absence of (or in advance of) specific documented discrimination (Crosby, 1994). For this reason, affirmative action plans such as Employment Equity, are characterized as active, on-going employment remedies, which call for actions to ensure that equal opportunity exists and do not require individuals to come forward and protest on their own behalf (Crosby, 1994; Crosby et al., 2003).

Different implementation strategies of such programs concentrate on making adjustments in the workplace to accommodate equitable representation of designated groups' members. These strategies could be applied during any of the recruitment, hiring, promotion and/or earnings stages (Abella Report, 1984; Human Resources Development Canada, 2005). Among other things, they could include active recruitment of applicants from underrepresented groups, formalizing personnel practices such as informing of job postings to ensure that members of all groups are aware of job opportunities, job training to ensure qualification for hires or promotions, and in some cases, considering gender and race when making employment/hiring decisions (Crosby et al., 2003).

The Preferential Treatment Controversy

Even though strict quotas or unjustified preferential treatment are not outlined in affirmative action plans (Supreme Court decision) or Employment Equity policies (Employment Equity Act 1995), in most forms of these programs, use of preferential treatment is required (Crosby et al., 2003, Giglio, 2001; Plous, 1996; Wegierski, 2004). In fact, affirmative action efforts may be thought of as being on a continuum, ranging from soft efforts such as expanding the applicant pool on one end, to hard efforts such as strict hiring quotas of specific individuals on the other end (Seligman, 1973). Indeed, as a way to correct for inequity, some of these programs explicitly take into account defining characteristics of target-groups (i.e. sex or race), which have been the basis of discrimination for underrepresented groups, in the decision-making process (Crosby, 1994; Hing et al., 2002).

A direct consequence of explicitly considering target group status in the selection criteria, may be the violation of the merit principle as this may allow for the hiring of a less qualified target-group member (e.g. a woman or visible minority) over a more qualified non-target group member (e.g. white man), a situation known as *reverse discrimination* (Crosby et al., 2003; Hing et al., 2002; Matheson, Warren, Foster & Painter, 2000; Plous, 1996). It is mainly for this reason that affirmative action programs have met resistance despite their successful impact on improved employment opportunities and inclusion of traditionally disadvantaged group members (Nelson, 2004). Indeed, programs of this type are often viewed with negativity and increased stereotyping by scholars and the public, including the individuals who are intended to benefit by them (Crosby et al., 2003; Heilman, 1997).

The widely shared view of affirmative action by the public appears to involve selection in the form of quotas, which is based solely on group membership and not qualifications (Heilman et al., 1996). It might be worth noting, though, that most members of the public seem to oppose extreme forms of preferential selection. However, they oppose these programs less when perceptions of discrimination in the workplace exist and also when they are aware that merit is a salient aspect of the selection process (Hing et al., 2002; Matheson et al., 2000).

For the purpose of this paper, preferential selection on the basis of group membership was considered to be a significant component of the implementation of affirmative action policies. Specifically, the affirmative action procedure was operationalized in terms of differentially scoring women's qualifying test, and in particular by adding a constant to women's raw scores (thereby also including an element

of merit) to increase their probability of success. Women's responses to success when this procedure was in place were compared to their responses when they succeeded without such preferential treatment, and in comparison to when they failed under merit conditions (i.e., the continued status quo that was discriminatory against women).

Women in relation to preferential treatment programs; opposition and possible side effects. Women constitute a target group for inclusion within affirmative action programs, as sex discrimination and sex-role stereotypes continue to exist in the workplace. Indeed, prejudice based on gender appears to influence employee selection processes, decisions about pay raises, promotions, employee utilization and training opportunities, thus contributing to women's disproportional underrepresentation in certain occupational areas and in leadership/managerial positions (Crosby et al., 2003; Heilman, 1994, 1997; Hing et al., 2002).

A common assumption about women's work-related skills, which may contribute to the discrimination against them, is the belief that women are less competent than men (Heilman, 1997). Therefore, even when successful performance is acknowledged it may be attributed to factors such as luck or hard work rather than skill (Heilman, 1997). Although research has indicated that differences between men and women in abilities, attitudes and behavior may not be real, stereotypic characterizations may prevail even when women occupy powerful positions. This may also explain the fact that although women have increasingly become more represented in the corporate ranks, they are noticeably absent from higher ranks (Heilman, 1994, 1997). In addition, these stereotypes may be the reason for a persistent male-female wage gap that continues to exist (i.e.

women earn less money for the same work than exactly comparably employed men) (Crosby, 1994; Department of Justice Canada, 2004).

As a result of the perceived unequal treatment towards their group, women have been found to experience weak social identity (i.e. lowered collective self-esteem) as well as negative psychological consequences (Schmitt, Branscombe & Postmes, 2003). In particular, it has been suggested, that when discrimination is perceived as pervasive, members of the disadvantaged groups, may experience rejection, devaluation and reduced feelings of control. Moreover, their physical and emotional health may be impacted negatively, including feelings of anxiety, depression, hopelessness and lowered self-esteem (Pavalko, Mossakowski & Hamilton, 2003; Schmitt et al., 2003). For all these reasons, sex-based selection procedures have been adopted by affirmative action policies resulting in improved conditions that reinforce and maintain gender equality and accomplishing a decrease in frequency of sex-discrimination violations in the North American workplace (Crosby, 1994; Giglio, 2001; Plous, 1996).

Despite their numerous advantages, these procedures may also create adverse behavioural and/or psychological effects on women. (Heilman et al., 1996; Heilman, Simon & Repper, 1987; Summers, 1991). Specifically, sex-based selection inherent in most affirmative action programs may result in women's competence and deservingness being regarded suspiciously and even negatively, since they are being subjected to the presumption that selection was based on gender rather than ability (Heilman, 1997; Heilman et al., 1996; Wegierski, 2004). Consequently, when women are aware that others consider them to have benefited from this process, they may come to believe that these individuals are likely to infer that they might be incompetent (Heilman & Alcott,

2001). In turn, this may affect women's behavior, confidence, self-evaluations of abilities and performance and exacerbate doubts and insecurities that they might have about their abilities (Heilman & Alcott, 2001; Heilman et al., 1993; Turner & Pratkanis, 1994). Indeed, there is substantial research indicating that when female group members, who are selected "because they are women" devalue their own qualifications and competence, they show reduced motivation to excel, and express greater stress and less organizational commitment (Chacko, 1982; Heilman, Block & Lucas, 1992; Heilman et al., 1987; Heilman, Rivero & Brett, 1991; Nacoste, 1989, 1990). These effects, including stigmatization by others, may be exacerbated when "harder" preferential selection policies are used, thus leading many women to oppose these types of programs (Heilman, 1994).

Preferential treatment in the presence of others and the role of social support.

When used as a method of hiring, sex-based selection seems to elicit negative inferences about the beneficiaries in the work environment and may also affect impressions of an individual's work effectiveness (Heilman, 1994; Heilman, & Alcott, 2001; Heilman et al., 1992). In fact, when women are presumed to have been hired on the basis of preferential selection, they are negatively regarded and characterized by their co-workers as more passive and impotent than are others. This might occur as a result of the out-group members' sense of being negatively affected or deprived by the implementation of such selection procedures (Kleugal & Smith, 1986).

When beneficiaries believe that others attribute their hiring to selection on the basis of their gender and view them as representatives of their group rather than as

individuals in their own right, they may accept and internalize this presumably negative view of their competence (Crosby & Clayton, 1990; Heilman, 1994; Heilman & Alcott, 2001). These reactions, however, might be minimized when women's qualifications are being evaluated and explicitly considered. Specifically, as Matheson et al., (2000) demonstrated, when qualifications were considered even in conjunction with use of preferential selection procedures, women's self-views and motivation were not reduced.

It seems that women are likely to behave in accordance with what they believe to be another's view of themselves (*expectancy confirmation process*). Thus, when they succeed solely on the basis of group membership criteria, they seem to engage in task behaviors that limit performance excellence, show timidity in their task-choices, and also exhibit low self-competence ratings (Heilman, & Alcott, 2001). Although behavioural confirmation of negative expectations has repeatedly been found to occur in situations in which there is uncertainty about performance effectiveness (Swan & Ely, 1984), it appears that even women who are self-assured of their competence may also be affected by their teammate's view of them as having benefited from preferential selection (Heilman & Alcott, 2001). Women's awareness of the others' knowledge of the status of their selection (i.e. on the basis of gender), as well as having to interact with out-group members, may also have affective consequences wherein they experience negative emotions such as embarrassment, guilt, or even anxiety (Heilman & Alcott, 2001).

Even though it is generally unpleasant to be associated with a group that is negatively regarded or with those we believe regard us in a negative way (Heilman & Alcott, 2001), when a social support system is available for the beneficiary, opposite effects may ensue. Specifically, social networks may enhance feelings of personal control

by providing certain resources to the individual, such as emotional support (enhancement of self-esteem and feedback that one is valued and respected by others) and informational support (provision of information, advice and guidance) in times of distress (Ruggiero et al., 1997). By receiving acceptance and approval from others, a person's own self-evaluation and self-esteem may be enhanced; these are functions that may be sought by distressed persons or individuals vulnerable to stressful circumstances, within social networks (McNicholas, 2002; Vilhjalmsson, 1993; Wills, 1985). Therefore, social support provision, especially from in-group members (i.e. other women) might be of importance for female beneficiaries since it could counteract the possible negative impact of preferential treatment.

Indeed, it has been shown that social support and the availability of a reliable network of social relationships might also work as a buffer modifying the effects of stressful events, thus enabling the individual to cope with stress more effectively (Lackovic-Grgin, Dekovic, Milosavljevic, Cvek-Soric & Opacic, 1996; Vilhjalmsson, 1993; Wills, 1985). Specifically, adequate support may inhibit physiological responses to stressors. For instance, lower mean cortisol levels have been associated with higher perceived social support (Berkman, 1985; Turner-Cobb, Sephton, Koopman, Blake-Mortimer & Spiegel, 2000). Thus, it is possible that more tangible support enables an individual to perceive stressful events as less demanding and hence cortisol activation is less readily elicited (Turner-Cobb et al., 2000).

The role of self-esteem in the context of preferential treatment. Sex-based preferential selection can trigger negative self-regard among women targeted for favored

treatment (Heilman et al., 1987, 1990). This might happen as a result of women defining their self-conceptions by using the feedback from others about their performance and abilities (Major & Schmader, 1998). In support of this argument are research findings reported by Heilman and Alcott (2001) which show that women accept and internalize the negative view that others had about them when they were preferentially selected. Moreover, as individuals assign different value to different aspects of self, when stigmatization occurs in a highly important domain for them, such as work, they are most likely to be negatively affected by it. Therefore, when women receive negative social feedback that often stems from preferential treatment, they may believe that it is deserved and reflective of their abilities (Major & Schmader, 1998; Pelham & Swann, 1989; Rosenberg, 1979).

Interestingly, the aforementioned effects have been shown to be especially true for persons with low self-esteem. Indeed, individuals who are characterized by low self-esteem exhibit strong emotional and distress reactions as well as impaired motivation and performance in response to negative feedback or failure in a social context (Brown & Dutton, 1995; Dodgson & Wood, 1998; Josephs, Bosson & Jacobs, 2003). These effects might persist, even when these individuals are confronted with a situation in which externally generated feedback is missing or ambiguous (Josephs et al., 2003), which is often the case in preferential treatment situations.

Not all members of stigmatized groups, including women, have equal levels of self-esteem (Major & Schmader, 1998), and individual differences in confidence can play a decisive role in moderating reactions and adverse consequences of preferential selection for the individuals involved (Heilman, 1994; Heilman et al., 1987). For example, if an

individual feels competent to do a job, external verification of her skills might be unnecessary (Heilman et al., 1990). Moreover, as it has been shown, high levels of global self-esteem are related to less negative effects and more successful coping strategies in situations of failure. As such, high self-esteem individuals seem to be able to dismiss the implications stemming from negative or ambiguous feedback (Brown & Dutton, 1995; Dodgson & Wood, 1998; Josephs et al., 2003) and they are able to maintain their positive self-view even in adverse for them conditions (Dodgson & Wood, 1998). Therefore, the ambiguity about competence and self-worth created by preferential selection procedures is apt to more adversely affect those who lack confidence and are unsure of their ability to perform the job well (Heilman et al., 1987, 1990). For individuals who have doubts about their abilities (regardless of whether such doubts and expectations are warranted), competence affirmation is essential. However, the absence of competence verification, which stems from selection on the basis of nonwork-related criteria, is likely to fuel these perceptions further. This may lead to diminished views of one's work and one's ability, reduced motivation to persist in the role, and possibly greater impact from other's views of their abilities (Heilman, 1994; Heilman et al., 1987, 1990).

Neuroendocrine alterations in relation to preferential treatment. Beyond the cognitive and affective reactions, the beneficiaries of preferential treatment programs might also report high anxiety and exhibit physiological stress symptoms, including higher cortisol levels, in response to being aware of their selection being based on their group status rather than their qualifications (Heilman et al., 1990; Matheson et al., 2002). Indeed, there have been indications that women who perceived that they might have

gained their positions due to sex have reported feeling more stressed when working on a task, than did those who were selected on a merit basis (Heilman et al., 1990; Matheson et al., 2002). Interestingly, neuroendocrine indicators, such as cortisol, have been associated with elevated stress reactions among preferential treatment beneficiaries even when their self-assessment was to the contrary (Matheson et al., 2002). As physiological measures of stress are not under volitional control, they might accurately reflect the stress levels associated with preferential treatment, independent of individuals' assessments (Matheson et al., 2002).

Considering that preferential treatment conditions can be an acute stressor for females, they may increase hypothalamic-pituitary-adrenal axis (HPA) activity, including release of the hormones corticotrophin releasing hormone (CRH), adrenocorticotropic hormone (ACTH) and cortisol, (i.e., key molecules in the activation of a coordinated response to stressful events) (Sapolsky, Romero & Munck, 2000). Dysregulations of HPA activity, including elevations of morning cortisol levels, may be a physiological indicator of accumulated physical and psychological stress, which in turn may affect mood and behaviour (Kirschbaum, Kudielka, Gaab, Schommer & Hellhammer, 1999; Sher, 2004; Turner-Cobb et al., 2000).

It is known that the emotional and physiological responses elicited by a given stressor, including cortisol reactivity, may vary across individuals, but they can also vary between gender, wherein females display a more robust neuroendocrine response to stressors in comparison to their male counterparts (Handa, Burgess, Kerr & O'Keefe, 1994; Kirschbaum et al., 1999; Scarpa & Luscher, 2002). Greater cortisol responses among females have also been found as reactions to embarrassing situations or social

rejection (Lewis & Ramsay, 2002; Stroud, Salovey & Epel, 2002). These sex differences in HPA functioning may, in part, be due to differences in circulating gonadal steroid hormones (Handa et al., 1994), as male sex hormones (e.g. testosterone) act to inhibit HPA function, whereas female sex hormones (e.g. estrogen) enhance neuroendocrine activity.

In view of the high level of HPA reactivity among females, it is possible that when preferential hiring occurs, particularly if the nature of the hiring is known by others (i.e. a potentially embarrassing situation), excessive cortisol release may occur. Moreover, distress, as reflected by the mood states of negative affect and agitation (possible outcomes of preferential selection), has also been associated with higher cortisol levels (Davidson, 2003). Such effects could potentially be offset by social support, since this may alter the way in which the stressor is appraised (Cohen & Wills, 1985; Roy, Steptoe & Kirschbaum, 1998; Wills, 1985).

Patterns of neuroendocrine responses to challenges have also been found to be predictable from the individual's psychological attributes, such as self-esteem (Seeman, Berkman, Blazer & Rowe, 1994). For example, in a study addressing the relationship between self-esteem, cortisol reactivity and uncontrollability, a combination of low self-esteem with low internal locus of control was associated with increased cortisol reactivity in response to a task designed to induce failure (Pruessner, Hellhammer & Kirschbaum, 1999; Scarpa & Luscher, 2002). Thus, it may be that women with low self-esteem might exhibit increased stress responsiveness when experiencing situations such as preferential treatment.

The Present Study

The present investigation assessed the effects of gender-based preferential selection procedures on stress reactions of female beneficiaries. In this regard, it was of particular interest to establish whether preferential selection acted as a potential source of stress for women who benefited from it, especially if it occurred with the knowledge of other individuals. It was hypothesized that individual difference factors might moderate the effects of preferential treatment. In particular, levels of self-esteem were expected to moderate the impact of preferential selection on the extent of distress and cortisol levels of the beneficiaries.

In order to examine the differential effects of preferential treatment, a simulated selection process in an allegedly competitive meritocratic context was established. Since individuals within the population under study (i.e. undergraduate university students) lack extensive experience with job selection contexts and employment equity policies, the experimental framework was designed to fit the life experiences of the target population. Of course, employment equity policies are significant to university students, as they anticipate job market entry and many of their attitudes and beliefs are similar to those of the general population (Kravitz et al., 1997).

The experimental design included conditions in which participants were exposed to either a so called merit-based (i.e., despite the presence of systemic biases against women) or a preferential selection method. In addition, female participants were randomly assigned to completing the study individually, in female-female pairs, or in the presence of a male. The groups were structured in this way in order to assess the impact that the selection procedures and outcomes (i.e. success or failure) would have on female

participants i) when they were alone, and ii) when members of their group (another woman) or a member of an outgroup (a man) were present and fully aware of the procedures used.

In the individual and female-female conditions, half of the women were randomly assigned to succeed and half to fail under either the *merit-based* or the *preferential selection* procedure. In the female-male group, the females were always assigned to succeed irrespective of whether they were in the merit-based or the preferential treatment condition, whereas the males were always assigned to fail under both treatment conditions. These manipulations were intended to address explicitly the issue of discrimination against women, i.e., whether the experience of failure under the discriminatory status quo (merit) was less stressful than success under preferential treatment. Second, this study assessed the reactions of female participants who succeeded based on preferential selection, knowing that the outcome of success might be perceived by others as undeserved. Under these conditions, the affective and physiological reactions (i.e., cortisol levels) of women were assessed.

It was hypothesized that:

- a) There would be a main effect on women's perceptions for the selection procedures, in that procedures based on preferential treatment would be perceived as less fair than procedures based on merit. In addition, these differential perceptions were expected to be more intense when women had been exposed to these conditions in the presence of another participant (male or female).
- b) There would be a main effect of success vs. failure, in that women would experience failure as more stressful than success, irrespective of the selection procedures

employed. This stress would be evident in terms of more negative affective reactions and higher cortisol elevations.

c) The effects of the social context would vary depending on whether women

failed or succeeded. Specifically,

i. when women failed in the presence of a woman who succeeded, they would experience more stress (more negative affect, higher cortisol) than if they failed without a direct social comparison (alone), irrespective of the selection procedures employed.

ii. among women who succeeded, not only would preferential selection on the basis of sex be experienced as more stressful (negative mood, cortisol elevations) than success on the basis of merit, but in addition, when preferential selection occurred in the presence of another participant (male or female, but especially male), negative mood and cortisol levels would be higher relative to that of women who succeeded without the presence of another participant.

d) Women's levels of self-esteem would moderate their stress reactions, in that women with greater esteem would demonstrate less marked cortisol and mood reactions in response to the manipulations of selection procedure, success vs. failure, or the presence of others.

Method

Participants

Male ($n = 20$) and female ($n=105$) students (M age = 19.8, $SD = 2.5$) enrolled in Introductory Psychology at Carleton University were recruited to participate in a study on "logical skills and the analysis of university- related issues". Participants volunteered

through sign-up sheets, or were contacted directly by phone or e-mail and invited to participate in the study. Participants received experimental credit for their time. In addition, all participants were eligible for a \$100.00 lottery upon completion of the study. Based on the responses of those participants who provided racial background, the sample comprised 67.2% ($n = 84$) Caucasian, 8% ($n = 10$) Asian, 5.6% ($n = 7$) Black, 5.6% ($n = 7$) East Asian, 2.4% ($n = 3$) Middle-Eastern and 3.2% ($n = 4$) other.

Procedure

The experimental sessions were held between 1200 and 1600 hr. This time frame was used to limit cortisol differences associated with the circadian variations that typically occur. The participants were randomly assigned to one of the three groups that were constructed and they were tested either individually or in pairs; the latter were tested in either female-female pairs or in female-male pairs. In the individual and female-female conditions, half of the women were randomly assigned to succeed and half to fail under either the *merit-based* or the *preferential selection* procedure. In the female-male group, the females were always assigned to succeed in both the merit-based and the preferential treatment procedures, whereas the males were always assigned to fail under both treatment conditions.

Each experimental session began with a female experimenter introducing the study as an experiment about logical abilities and the characteristics associated with highly logical individuals (see Appendix B for experimenter's instructions). The study cover story was designed to minimize demand characteristics and to establish a realistic context for the participants. Participants were provided with a general overview of the

experiment, including description of the saliva samples collection in order to determine levels of cortisol. The experimenter rationalized the need for measuring this stress indicator (i.e. cortisol) by explaining to the participants that performance can be affected by stress.

After completion of the informed consent form (see Appendix C), participants were provided with a more detailed study description and then they were asked to complete a background information questionnaire (see Appendix D). Once these questionnaires were completed, participants were asked to complete an essay-writing task, which consisted of three questions (see Appendix E for essay writing task I). The essay-writing task required them to express their opinions and elaborate on a hypothetical university-related issue. The purpose of the essay task was to provide a basis for discrimination and subsequent preferential treatment (Matheson et al., 2000).

Participants had been told that their essays would be marked for their logical content and that this task would be used to screen for highly logical individuals. It was emphasized that the marking of the essays would be carried out by a group of “judges”, consisting of three male students from the Engineering Department. The experimenter explained that these students were participating in the experiment as part of their training on psychological issues, and promoting attitudes toward community service. Participants were informed that if their essays passed a predetermined score of 80%, they would qualify for the “high-status” group, but if their stories scored less than 80%, they would be categorized in the “low-status” group.

Subsequently, the activities of the high and low logical groups were described, with the status of the work as well as the rewards associated with the work performed in

each group, reflecting differential respect for skill levels. Allegedly, the participants who would meet the criteria for the high-status group were “highly logical individuals”, and they would join the judges in order to work on a set of recommendations for student related issues. These recommendations would supposedly be transferred to the university administration. Additionally, they would be eligible for a full credit for their participation, as well as participation for a \$100.00 lottery. Those participants who failed to meet the criteria for the high-status group would be required to complete a number of tedious tasks (arithmetic problems, alphabetizing, sentence completion), in order for the experimenters to assess the relation between low logical abilities and other basic skills. Furthermore, they would supposedly receive half a credit for their participation and would be eligible for only \$10.00 lottery, since they were not as “competent”. In reality, all participants were included in a \$100.00 lottery, and all of them received a full credit. The objective of this manipulation was to offer sufficient incentive to the participants, so that they would desire to belong to the high-status position. Moreover, the incentive as well as the consequences, were such that the participants cared about (i.e. fulfilling the 1 credit requirement of the Introductory Psychology), and were consistent with real world concerns.

After reading about the issue, students were given a time frame of 10 minutes, in which they had to provide their opinions based on the issue presented in the paragraph. When participants had finished the writing task, the answers were collected and the experimenter explained that she had to leave the room and give the essays to the judges who would mark the students’ stories. While their stories were allegedly being scored, they completed a measure of trait self-esteem (Rosenberg, 1965) (see Appendix F). A

second issue and set of essay questions was also provided for the students to think about (see Appendix G).

After “the judges had finished scoring the essays”, a male confederate returned with the results. The confederate addressed the experimenter and in the presence of the participant(s), commented on the “evident” lack of ability on most essays written by female participants. Specifically, when he was passing the essays back to the female experimenter he said to her “I don’t know why we bother with women’s essays. They are rarely worth passing”. He then left the room, and the experimenter explained to the participants that the number of women who fail in this task is “constantly and significantly higher than the proportion of men who do not succeed on it”. Moreover, participants were informed that a similar kind of imbalance in the performance of men and women is not unusual in personnel tests used by many organizations, despite the fact that other research indicates no difference in the logical abilities between men and women. Finally, the experimenter concluded that this imbalance was due to either the scoring key used for the experiment or the judges who were possibly biased against women. Therefore, consistent with the context in which preferential treatment procedures are implemented, the presence of sex discrimination under the status quo was made salient.

Following this, participants were presented with one of two selection procedures for the high status group, based on the experimental condition that had been decided for the session. Specifically, in the *merit* condition session, participants were told that eligibility for the high-status group would be granted to the individual who would have obtained the highest score on the essay. In this case, participants were told that despite

the attitude of the judges, the experimenters had decided that it was important to be consistent with their policy of promoting the participants based on the scores obtained in the task. In the *preferential treatment* condition, participants were informed of a policy that had been decided by the experimenters, for promoting women into the high status group. The correction factor stated that women would be awarded 10% on top of their score and then, the participant with the highest score after this intervention would qualify for the high status group. The experimenter then verbally informed the participants of whether they had been successful in being selected into the high status group or had been assigned to the low status group. In actuality, the experimenter decided the selection of the participants' status randomly.

After being informed of their success or failure, participants were separated and asked to complete the final part of the questionnaire, which assessed attitudes toward group placement and procedures (perceptions of fairness) and mood state (see Appendix H). Finally, they were asked to complete a measure assessing any suspicions that they might have had about the study procedures (Appendix I).

During the study, participants provided four saliva samples from which the stress hormone cortisol was extracted and determined. The salivary sample collection comprised the student inserting a piece of dental cotton into their mouth for approximately 2 minutes. Once the cotton was thoroughly wet, it was placed in a test tube (salivette) and kept frozen at -70°C for subsequent analysis. Saliva samples were collected at baseline (following completion of the background questionnaire), 20 minutes after the commencement of the essay writing task, and 15 and 30 minutes after the participants had been informed of their group status.

Participants were fully debriefed (see Appendix J), and then asked to complete a second informed consent that allowed the use their data (Appendix K).

Measures

Manipulation checks. To assess the effectiveness of the manipulation of selection procedure (merit vs. preferential treatment) and outcome (success vs. failure), participants were asked to i) indicate in which category of logical ability they had been categorized (high or low), ii) provide an estimate of the score that they believed they actually deserved based on their performance on the task (on a scale of 0% to 100%), and iii) assess on a scale of *not at all* (1) to *very much* (7), how “qualified” they felt to express their opinion on the topic raised in the logic task. In addition, an open-ended question asked participants to describe in their own words what they thought “the criteria were that were used in scoring logical ability”.

Self-esteem. The Rosenberg Self-Esteem Scale (Rosenberg, 1965) was used to assess global self-esteem. This is a 10-item scale wherein agreement with the items are answered on a 7-point rating scale ranging from *strongly untrue for me* (-3) to *strongly true of me* (3). Responses were averaged (with relevant items reversed), such that higher mean scores represented higher self-esteem ratings (Cronbach's $\alpha = .84$).

For the purposes of the analyses examining whether self-esteem moderated the effects of the manipulated variables, participants who scored below the median (Median = 1.7) were categorized as demonstrating low self-esteem, whereas those who scored at 1.71 or above the median were considered to have high levels of self-esteem. Although concerns have been expressed regarding the use of the median split to categorize

individuals on the basis of their responses to a continuous measure (Pedhazure, 1997), this is a highly common approach used in research assessing the role of self-esteem, and is consistent with how this construct is often understood.

Self-reported affect. A modified and much reduced version of the Multiple Affect Adjective Checklist (Zuckerman & Lubin, 1965) assessed how the participants felt at that moment in relation to 15 emotions that were designed to tap into a number of mood dimensions that may be relevant in the present study, including anxiety (e.g., “anxious”, “worrying”), anger (“irritated”, “angry”) and distress (e.g., “discouraged”, “blue”). Participants rated each adjective using a 7-point rating scale ranging from *not at all* (1) to *very much* (7).

The dimensionality of the 15 mood items was assessed using principle components analysis. Examination of the scree plot indicated two components, explaining 51.97% of the total variability. Following a varimax rotation, based on loadings greater than .45, the first component was comprised of 10 items that, taken together, appeared to reflect *anger*, including irritated, cooperative (rev), agreeable (rev), angry, discouraged, blue, fine (rev), hostile, frustrated, enthusiastic (rev). The second component comprised 5 items reflecting *anxiety*, which included calm (rev), secure (rev), anxious, worrying, active (rev). Subscales were created by reverse coding relevant items, and calculating the unit-weighted means, wherein higher scores reflected greater anger (Cronbach’s $\alpha = .90$), and anxiety (Cronbach’s $\alpha = .70$), respectively. These two mood dimensions were moderately correlated, $r = .48, p < .05$.

Perceptions of selection procedures. To assess the participants’ perceptions about the selection method for the high status group 7 bipolar items including

fairness/unfairness, discrimination/ non-discrimination against women, being necessary/unnecessary, appropriateness/ inappropriateness, biased/unbiased, called/ uncalled for and discrimination/non-discrimination against men, were rated using 7-point scales. Mean responses were calculated (with relevant items reversed), such that higher mean scores reflected perceptions that the procedures were fair (Cronbach's $\alpha = .75$).

Salivary cortisol. Women provided saliva samples for the determination of circulating cortisol levels. This comprised placing a piece of dental cotton in their cheek for a 2-min period. Once the cotton was thoroughly wet, it was placed in a *salivette* for subsequent analysis. This procedure was conducted 4 times: baseline levels were assessed 15 min after participants arrived to the experimental session; following the performance task but before the selection procedures and outcomes were announced; and 15 and 30 min following the feedback, but prior to debriefing. These times were chosen as they represent the peak levels of cortisol in saliva following a stressor event (Schmidt-Reinwald et al., 1999). Salivary cortisol levels were determined, in duplicate, by means of a solid phase radio-immuno assay using ^{125}I kits (ICN Biomedicals Inc., CA). The intra- and extra-assay variability was less than 10%.

Because cortisol levels vary in a diurnal fashion, participants were tested between 12:00 and 16:00 hours. As expected, on average, cortisol shifted over the course of the experimental session, $F(3, 98) = 8.12, p < .001, \eta^2 = .077$. It appears that there was a mild anticipatory increase of cortisol from baseline ($M = 0.76 \mu\text{g/dl}, SD = 0.35$) to just prior to the performance feedback, ($M = 0.89 \mu\text{g/dl}, SD = 0.35$) after which cortisol levels progressively dropped (15 min following feedback, $M = 0.83 \mu\text{g/dl}, SD = 0.31$; 30 min following feedback, $M = 0.75 \mu\text{g/dl}, SD = 0.33$). To eliminate any confounding of

cortisol reactivity attributable to time of day and other individual difference variations, for analytic purposes, cortisol levels were converted to proportion of change scores by calculating the ratios at the three latter measurement points relative to baseline cortisol levels. Time of day was not significantly related to any of the cortisol ratios, r_s ranged from -.001 to .017. Although 42 women were using oral contraceptives, independent sample t-tests analyses showed that there were no significant differences as a function of this variable on cortisol ratios ($t(93) = -1.53, ns$; $t(95) = -1.30, ns$ and $t(94) = -1.57, ns$, respectively for each ratio).

Results

Overview of Analytic Approach

In order to test for the effects of the different variables as outlined in our hypotheses, two main analytical designs were employed. In the first, the primary goal was to evaluate whether the effects of failure were any more or less stressful than the effects of success under preferential treatment selection procedures, and whether these differences were moderated by social context and self-esteem. To assess these effects, a 2 (success vs. failure) x 2 (selection procedures: merit vs. preferential treatment) x 2 (social context: alone vs. in the presence of another woman) x 2 (self-esteem: high vs. low) between groups analysis of variance (ANOVA) was employed.

A second set of analyses was conducted to evaluate further the responses *only of women who succeeded*, with the goal of more fully assessing the differential effects of selection procedures under varying social conditions. These analyses entailed a 2 (selection procedures: merit vs. preferential treatment) x 3 (social context: alone vs. in the

presence of another woman who fails vs. in the presence of another male who fails) x 2 (self-esteem: high vs. low) between groups design ANOVA.

As cortisol reactivity was a within subjects measure, these designs were further crossed with time of cortisol measurement (ratios prior to feedback vs. 15 and 30 min following performance feedback). In all instances, where interactions were significant, they were followed up with simple effects analyses. Bonferroni's correction for family-wise error ($\alpha = .05$) were employed for the follow up comparisons.

Manipulation Checks

A chi-square analysis was conducted to evaluate whether participants' self-reported status (i.e. "low ability" vs. "high ability") was in accordance with the experimental condition they were assigned to. As expected, there was high correspondence between women's assigned status and their reported group categorization, $\chi^2(1, N = 104) = 88.30, p < .001$. Only four participants failed to correctly identify their group. Given that 3 of the 4 indicated that they were of high ability even though they had been informed that they failed, the decision was made to include them in subsequent analyses, as it was possible that these respondents were indicating the group they thought they should have been categorized into, rather than what they were told that their category was.

To further assess the effectiveness of the manipulations, a 2 (merit vs. preferential treatment) x 2 (success vs. failure) analysis of variance was performed on the participants' self-reported ratings of whether they believed they actually deserved their outcomes based on their performance on the task. Indeed, women's status in the

experiment had a significant effect on the estimated scores that they indicated, $F(1, 98) = 4.34, p < .05, \eta^2 = .042$. As expected, women who had succeeded in the study reported higher estimates of deserved scores on the task ($M = 74.48, SD = 7.30$) compared to women who had failed ($M = 70.45, SD = 12.00$), although, interestingly, women in both groups indicated average scores below the cut-off for success (i.e., a score of 80). One sample t-tests analysis showed that these reported scores were significantly different from the cut-off score for success, ($t(57) = -.576, p < .001$ and $t(43) = -5.28, p < .001$, respectively, for each reported deserved score).

A similar 2 (merit vs. preferential treatment) x 2 (success vs. failure) ANOVA was performed in order to evaluate whether the experimental procedures were related to women's reported scores of how "qualified" they felt. A marginal main effect of selection procedure, $F(1, 98) = 2.95, p = .089, \eta^2 = .029$, confirmed that when women were selected based on merit they felt more qualified ($M = 5.11, SD = 0.99$) compared to women who were selected based on preferential treatment conditions ($M = 4.72, SD = 1.22$). Moreover, there was a significant main effect for women's success versus failed status, $F(1, 98) = 3.67, p = .058, \eta^2 = .036$, indicating that women who succeeded felt more qualified ($M = 5.10, SD = 0.91$) compared to women who had failed ($M = 4.68, SD = 1.32$).

Finally, to evaluate whether participants had accurately understood the selection criteria used to select individuals into the high status group, responses to the open ended question "In your own words, what do you think the criteria were that were used in scoring logical ability?" were coded based on whether the criteria that participants described indicated merit considerations (0), preferential treatment of women (e.g., sex,

changed score etc.)(1), or other criteria were described (2) (i.e., the criteria they thought were applied did not seem to pertain to either merit or sex preference). All responses were coded by the researcher and an independent coder into one of these three categories. Any coding disagreements were resolved through discussion. Such disagreements only occurred in 2 cases.

A chi square analysis indicated that participants' perceptions of the selection criteria employed in the study were not significantly related to the selection conditions to which they were actually assigned, $\chi^2(2, N = 82) = 1.11, ns$. Specifically, as shown on Table 1, 70.73% ($N = 58$) of women who had been selected on the basis of either merit or preferential treatment, believed that their status in the experiment was exclusively based on merit. Moreover, 28% ($N=23$) of women attributed their status to reasons unrelated to merit or selection based on their gender (e.g. morality, if the points raised in their essays matched the views of the judges, etc.). Interestingly, none of the women who had been selected based on preferential treatment identified the actual selection procedure correctly. On the basis of these results, it would appear that the manipulation of preferential treatment was fairly ineffective. However, as will be discussed later, it is certainly possible that participants were aware of the role of preferential treatment more generally (particularly given that women selected under these procedures reported feeling less qualified), but were not willing to acknowledge that it could have played a role in their own personal outcomes. Thus, the effects of this variable were nonetheless examined in subsequent analyses.

Table 1

Observed Frequencies (% of total) on Manipulation Check for Selection Criteria

Selection Conditions		
	Merit	Preferential Treatment
Criteria reported by participants		
Merit	28 (34.14%)	30 (36.58%)
Preferential Treatment	1 (0.01%)	0
Other	12 (14.63%)	11 (13.41%)

Relative Effects of Failure Under Varying Conditions

Perceptions of fairness of selection procedures. In order to assess the factors that might have influenced women's perceptions regarding the fairness of the selection procedures as a function of whether they succeeded or failed, a 2 (merit vs. preferential selection) x 2 (success vs. failure) x 2 (social context: alone vs. in the presence of another woman) x 2 (self-esteem: high vs. low) between groups ANOVA was conducted.

Although the two-way interaction between levels of self-esteem and presence of another woman was significant, $F(1, 69) = 5.32, p < .05, \eta^2 = .072$, this appeared to be qualified by a meaningful, albeit marginal, 3-way interaction between status, levels of self-esteem, and social context, $F(1, 69) = 3.62, p = .061, \eta^2 = .050$.

This latter interaction was followed up with simple effects analyses to evaluate the significance of the two-way interaction between women's status and the social context as a function of participants' levels of self-esteem. Among women with high levels of self-

esteem, as seen in Table 2, perceptions of the fairness of the selection procedures were neither affected by success vs. failure status, $F(1,69) = 1.86, ns$, social context, $F(1,69) = 2.48, ns$, nor a significant interaction, $F < 1$. However, among women with low self-esteem, the interaction effect of status and presence of another woman on perceptions of fairness was significant, $F(1, 42) = 7.56, p < .05, \eta^2 = .157$.

As seen in Table 2, simple simple effects analysis conducted to evaluate the effect of the presence of another woman as a function of women's success vs. failure indicated that among women with low self-esteem who failed, the procedures were perceived as fairer in the presence of another woman (who succeeded) than when they failed alone, $F(1, 69) = 11.30, p < .01, \eta^2 = .375$. When women with low self-esteem succeeded, the presence of another woman did not influence perceptions of fairness, $F < 1$.

Self-reported affect. A multivariate analysis of variance (MANOVA) was conducted in order to determine the effects of self-esteem, status, presence of another woman and selection procedures on self-reported affect dimensions, namely, anger and anxiety. The only significant effects were the main effects of self-esteem, Pillai's $= .110, F(2, 68) = 4.19, p < .05$, and status, Pillai's $= .394, F(2, 68) = 22.14, p < .001$.

Univariate follow-up analyses of these effects indicated that self-esteem had a significant effect on both anger, $F(1, 69) = 7.5, p < .05, \eta^2 = .09$, and anxiety, $F(1, 69) = 4.82, p < .05, \eta^2 = .065$. Specifically, women with low self-esteem expressed greater anger ($M = 3.19, SD = 1.13$) and anxiety ($M = 3.85, SD = 0.92$) compared to women with high self-esteem (anger $M = 2.37, SD = 1.21$; anxiety $M = 3.32, SD = 1.10$). Women's success versus failure was found to have a significant effect only on anger, $F(1, 69) = 31.03, p < .001, \eta^2 = .310$ in that, women who failed reported greater anger ($M = 3.50, SD = 1.17$)

compared to women who succeeded ($M = 2.15$, $SD = 0.85$). This effect was not significant for anxiety, $F < 1$.

Table 2

Descriptive Statistics (Mean (SD)) on Perceptions of Fairness for Selection Conditions Among Women

Selection Conditions	High self-esteem	Low self-esteem
Success		
Alone	5.18 (0.84)	4.50 (1.30)
With another woman	4.66 (0.97)	4.25 (0.72)
Failure		
Alone	4.69 (1.23)	3.88 (0.79) _a
With another woman	4.12 (0.94)	5.14 (0.92) _b

Note. Values with different subscripts were significantly different from one another at $p < .05$.

Neuroendocrine alterations. As cortisol alterations may serve as an index of women's stress responses under the various experimental conditions, a mixed measures ANOVA was conducted on cortisol ratios prior to the feedback, and 15 and 30 min following feedback (all relative to baseline). Huynh-Feldt correction to the degrees of freedom was employed in order to compensate for violations of sphericity. As expected, the within subjects effect of time of measurement was significant, $F(2, 62) = 11.97$, $p < .001$, $\eta^2 = .162$. Post hoc comparisons using Bonferroni's correction for family wise error $p < .05$, indicated that women demonstrated significantly lower cortisol ratios 30 minutes after the performance feedback ($M = 1.08$, $SD = 0.073$), in comparison to levels seen following the

task but prior to feedback ($M = 1.33$, $SD = 0.069$), and 15 minutes after receiving performance feedback ($M = 1.25$, $SD = 0.076$).

In addition, there was a significant 2-way interaction between selection procedures and social context, $F(1, 62) = 7.49, p < .05, \eta^2 = .108$. Given that this effect did not interact with measurement time, $F < 1$, this interaction would normally be followed up by examining these effects collapsed across measure times. However, because the selection procedures had not been described prior to feedback, it was viewed as appropriate and meaningful to assess the significance of this between groups interaction at each of the measurement times.

Surprisingly, as seen in Figure 1, these simple interaction analyses indicated that interaction between selection procedures and social context was significant in relation to cortisol ratios prior to the selection feedback, $F(1, 63) = 5.81, p < .05, \eta^2 = .084$. As noted earlier, given that participants had not received any performance feedback at that time, this interaction could not be viewed as meaningful, and so was not pursued any further. Moreover, it renders questionable the meaningfulness of these effects on the subsequent cortisol levels.

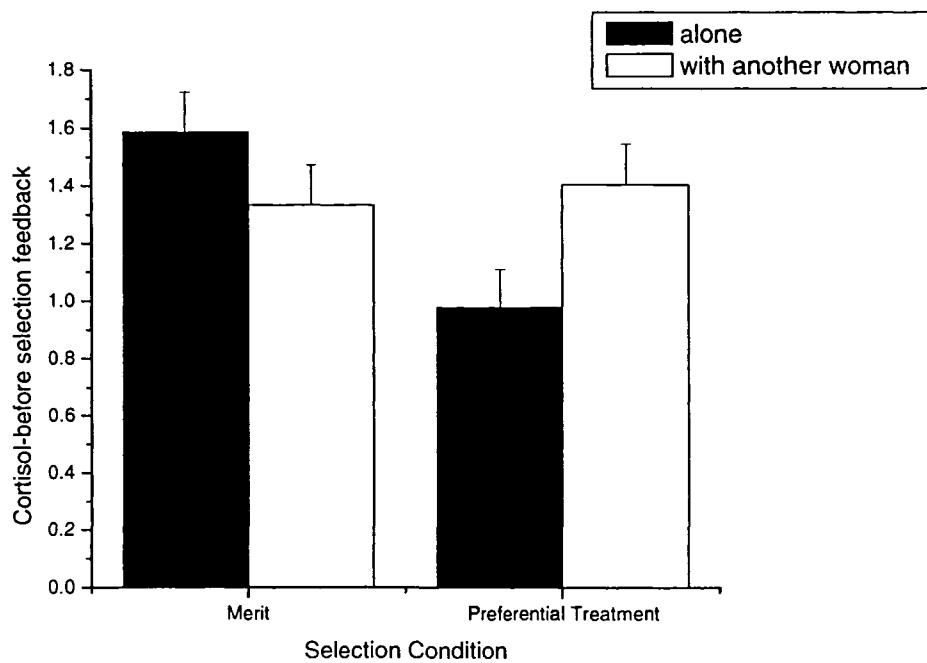
A significant interaction between selection procedures and social context was also shown to be related with changes of cortisol 15 min after participants had been informed of their status in the study, $F(1, 64) = 7.52, p < .05, \eta^2 = .105$. Simple effects analyses indicated that when women were selected preferentially, the presence of another woman had a significant effect on their cortisol levels, $F(1, 64) = 4.75, p < .05, \eta^2 = .191$. Specifically, women who were exposed to preferential treatment conditions in the presence of another woman exhibited higher cortisol levels ($M = 1.31$, $SD = 0.63$)

compared to when they were informed of preferential treatment but they were tested alone ($M = 0.93$, $SD = 0.30$). This effect was not evident when the selection procedures were based solely on merit, $F(1, 64) = 2.88$, *ns*.

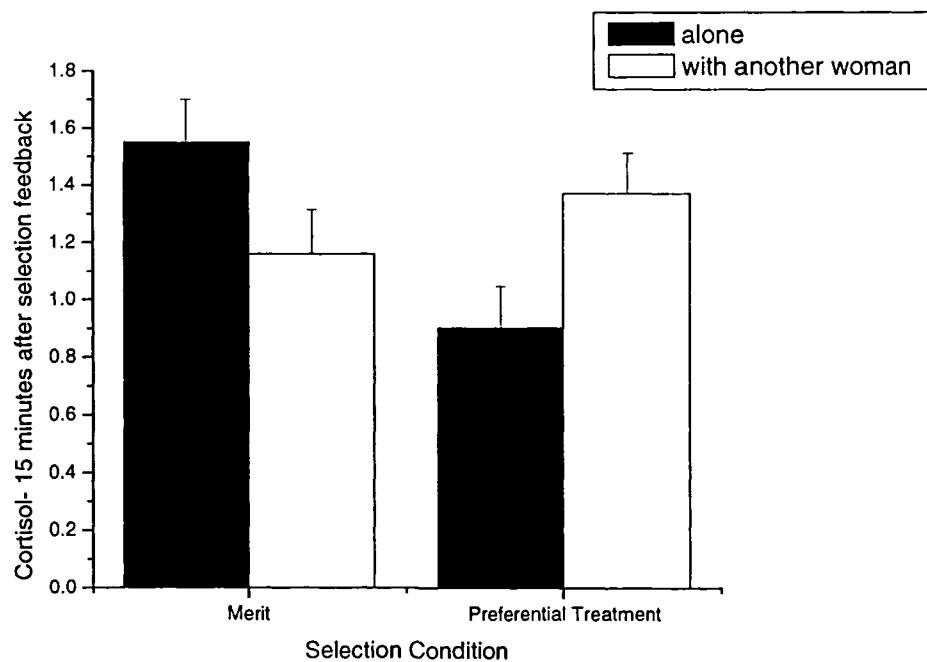
The interaction between social context and selection procedure on cortisol levels 30 min following feedback was also significant, $F(1, 63) = 5.31$, $p < .05$, $\eta^2 = .078$. Simple effect analyses indicated that in the preferential selection condition, the presence of another woman had a significant effect on cortisol levels of the female participants, $F(1, 34) = 5.46$, $p < .05$, $\eta^2 = .138$. Specifically, women who were exposed to preferential treatment in the presence of another woman exhibited higher cortisol levels ($M = 1.14$, $SD = 0.59$) compared to women who were alone ($M = 0.83$, $SD = 0.39$). This effect was not evidenced when the selection procedures were based solely on merit, $F(1, 63) = 2.04$, *ns*.

Figure 1. Mean cortisol levels ($\mu\text{g}/\text{dl}$) ($\pm SE$) of women at each of the measurement times (prior to selection feedback (Panel A), 15 minutes after selection feedback (Panel B), 30 minutes after selection feedback (Panel C)) as a function of selection procedures and social context.

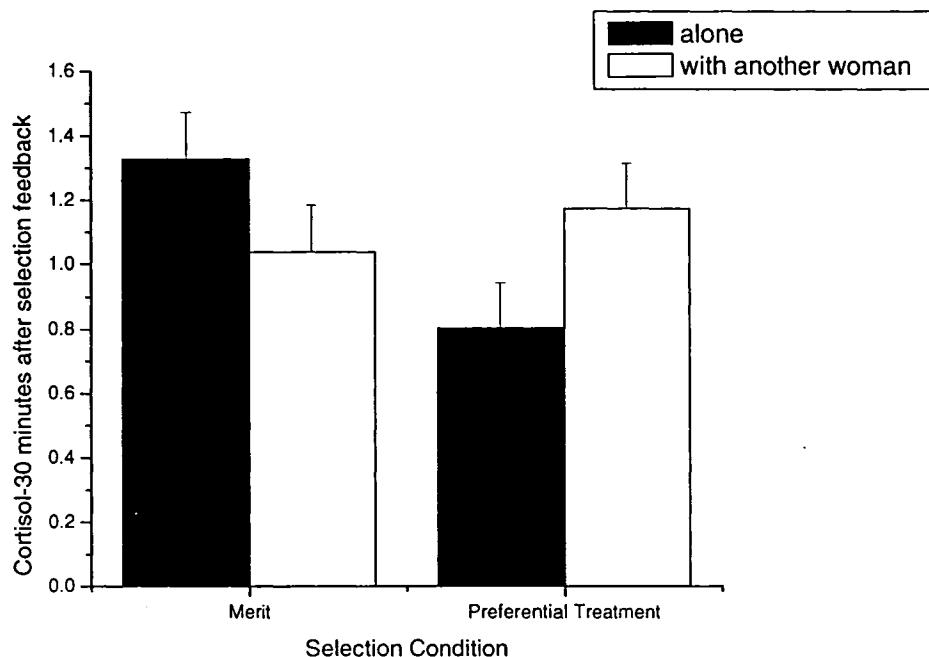
A



B



C



Assessing Factors Moderating Stress of Women Successfully Selected

Perceptions of fairness. To assess whether successful women's perceptions of the fairness of the selection procedures varied, a 2 (selection procedure) x 3 (social context: alone vs. with another female participant vs. with another male participant) x 2 (self-esteem) between groups ANOVA was conducted. With only women who had succeeded being included in the analyses, perceptions of fairness were found to be significantly affected by the selection procedures used, $F(1, 47) = 4.31, p < .05, \eta^2 = .084$, as well as by women's levels of self-esteem, $F(1, 47) = 4.84, p < .05, \eta^2 = .093$. In particular, selection based on merit was considered fairer ($M = 5.11, SD = 1.01$) compared to selection based on preferential treatment ($M = 4.49, SD = 0.86$). In addition, women with high self-

esteem evaluated the selection procedures as fairer ($M = 5.08, SD = 0.90$) than did those with low self-esteem ($M = 4.44, SD = 0.97$). There were no further significant effects.

Self-reported affect. In order to assess the effects of the selection procedures on the mood of women who were told that they had succeeded, a MANOVA was conducted on their affective reactions (anger, anxiety). The multivariate tests showed a significant main effect of self-esteem, Pillai's $\eta^2 = .124$; $F(2, 47) = 3.32, p < .05$, and social context, Pillai's $\eta^2 = .175$; $F(4, 96) = 2.29, p = .065$. Follow-up univariate tests of these effects revealed that self-esteem had a significant effect on anger, $F(1, 48) = 5.12, p < .05, \eta^2 = .096$, and also marginally influenced anxiety, $F(1, 48) = 3.08, p = .086, \eta^2 = .060$. In particular, high self-esteem women who were told that they had succeeded reported less anger ($M = 1.72, SD = 0.70$) and anxiety ($M = 3.08, SD = 1.07$) compared to women with low self-esteem (anger $M = 2.33, SD = 0.78$; anxiety $M = 3.71, SD = 1.02$).

The presence of another participant was also found to have an effect on successful women's anxiety levels, $F(2, 48) = 3.33, p = .044, \eta^2 = .122$. However, this effect was not significant for anger $F(2, 48) = 2.12, ns$. Post hoc comparisons using the Bonferroni's correction to maintain family wise error at $p < .05$, indicated that women who succeeded in the presence of another female participant exhibited higher anxiety ($M = 3.91, SD = 0.83$) compared to when they succeeded in the presence of a man ($M = 2.82, SD = 1.00$). However, neither of these groups was significantly different from women who were provided their performance feedback while alone ($M = 3.33, SD = 1.17$).

Neuroendocrine alterations. A mixed measures ANOVA on cortisol levels indicated, as discussed previously, a significant effect of time, $F(1, 42) = 4.89, p < .05, \eta^2 = .104$. This effect, however, was qualified by a significant 2-way interaction between

time of measurement and selection procedure, $F(1, 42) = 3.30, p < .05, \eta^2 = .073$. In addition, the between subjects effect of the 2-way interaction between selection procedures and social context was again significant, $F(2, 42) = 4.04, p < .05, \eta^2 = .161$.

As in the previous analyses of the effects on cortisol, these interactions were evaluated at each of the three time points. Once again, as seen in Figure 2, the main effect of selection condition, $F(1, 43) = 3.04, p = .08, \eta^2 = .066$, and the 2-way interaction between selection procedure and social context, $F(2, 43) = 2.44, p = .09, \eta^2 = .102$, were marginally significant prior to the participants having received performance feedback. As such differences did not make conceptual sense, they were not pursued any further, but once again, ought to be kept in mind in evaluating the meaningfulness of any effects found at the subsequent measurement times.

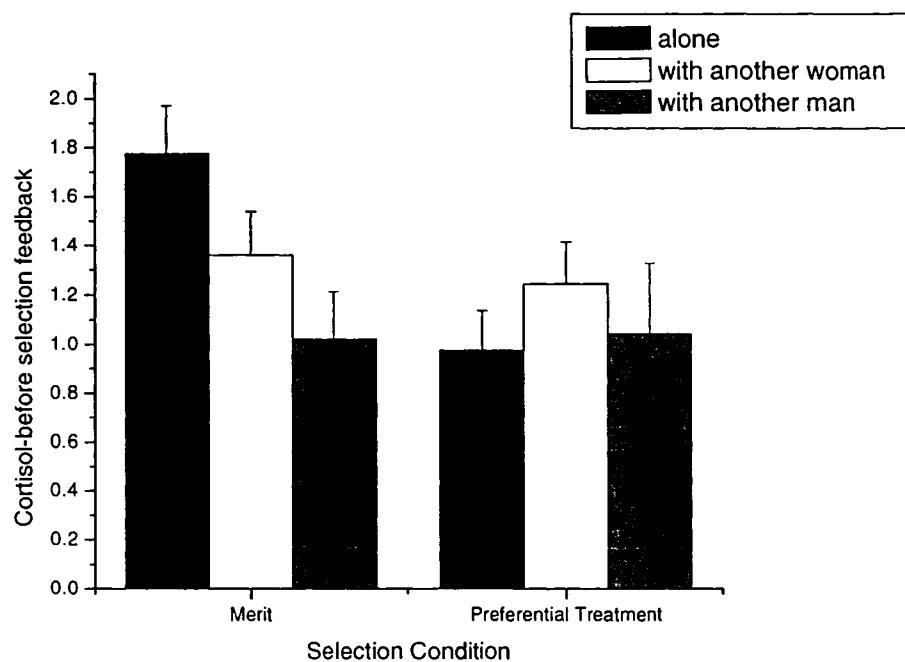
A significant interaction between selection procedures and social context was also shown to affect changes of cortisol 15 minutes after participants had been informed of their status in the study, $F(2, 44) = 3.20, p = .05, \eta^2 = .124$. Simple effects analyses indicated that when women succeeded under merit, the presence of another participant had a significant effect on their cortisol levels, $F(2, 20) = 3.92, p < .05, \eta^2 = .282$. Specifically, post hoc comparisons using the Bonferroni's correction to maintain family wise error at $p < .05$, indicated that when women succeeded in the presence of a male participant, they exhibited lower cortisol levels ($M = 0.81, SD = 0.30$) compared to when they succeeded alone ($M = 1.52, SD = 0.63$). However, cortisol levels of women who were provided their performance feedback while in the presence of another woman did not significantly differ from those exhibited by the other two groups ($M = 1.09, SD = .09$).

0.42). When women succeeded under preferential treatment, the presence of another participant had no significant effect on their cortisol levels, $F < 1$

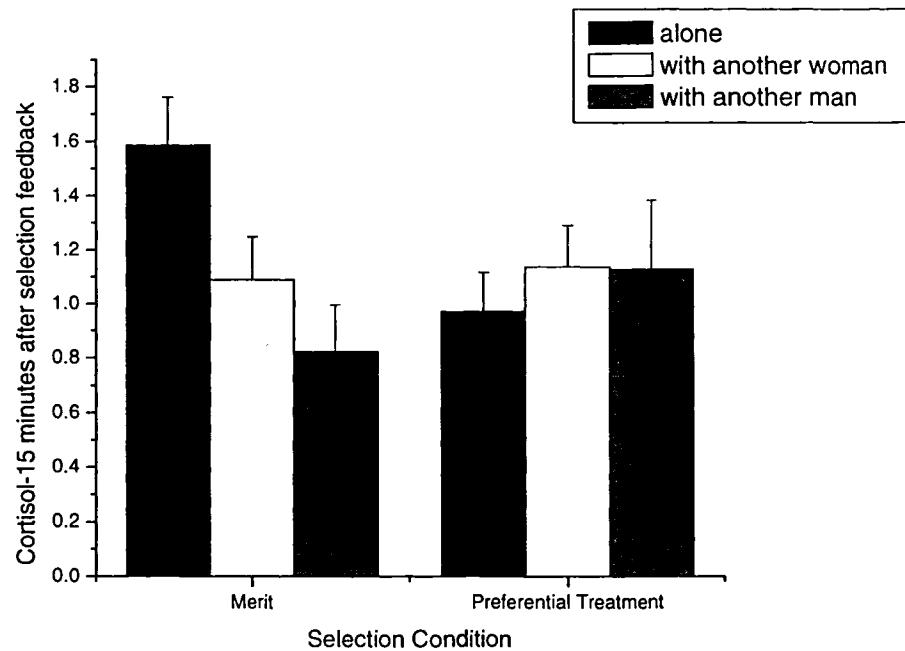
Finally, the interaction between selection procedure and social context continued to influence cortisol ratios 30 minutes after women had received feedback about their performance, $F(2,43) = 3.58, p < .05, \eta^2 = .143$. Once more, simple effects analyses indicated that when women's success was under conditions of merit, the presence of another participant had a significant effect on their cortisol levels, $F(2, 19) = 3.97, p < .05, \eta^2 = .295$, but this effect was not significant under preferential treatment, $F < 1$. Post hoc comparisons indicated that, once again, women who succeeded in the presence of a male exhibited lower cortisol levels ($M = 0.80, SD = 0.34$) than when they succeeded alone ($M = 1.38, SD = 0.51$). The levels of cortisol among women in neither of these groups differed significantly from those of women who succeeded in the presence of another woman ($M = 0.93, SD = 0.39$).

Figure 2. Mean cortisol levels ($\mu\text{g}/\text{dl}$) ($\pm SE$) of successful women at each of the measurement times (prior to selection feedback (Panel A), 15 minutes after selection feedback (Panel B), 30 minutes after selection feedback (Panel C)) as a function of selection procedures and social context.

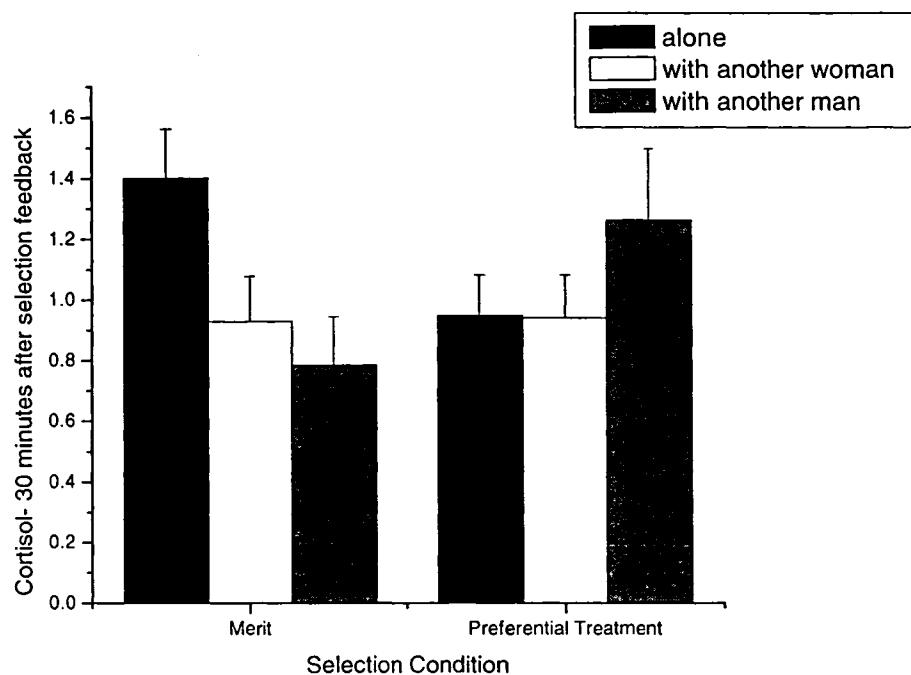
A



B



C



Relations Among Outcome Variables

Pearson zero-order correlations were examined in order to assess the relations among the outcome variables used in this study, i.e. perceptions of fairness of selection procedures, anger, anxiety, and the three cortisol ratios. As shown in Table 3, significant correlations existed among all three cortisol ratios and among the mood dimensions of anger and anxiety. Moreover, lower levels of self-reported anger and anxiety were correlated significantly with perceptions of the selection procedures as more fair. As shown in Table 3, none of the cortisol ratios was significantly correlated with the self-reported variables of fairness, anger or anxiety.

Table 3

Significant Bivariate Correlations (Pearson Correlation Coefficient r) Among the Outcome Variables of Perceptions of Fairness, Anger, Anxiety and Cortisol Ratios.

	Fairness	Anger	Anxiety	CortR 1	CortR 2	CortR 3
Fairness						
Anger		-.416**				
Anxiety	-.228*		.461**			
CortR 1	.141	-.004	.002			
CortR 2	.010	.108	.016	.805**		
CortR 3	-.012	.053	-.071	.675**	.861**	

Note. CortR1 = Cortisol ratio 1; CortR2 = Cortisol ratio 2; CortR3 = Cortisol ratio 3

* $p < .05$; ** $p < .01$

Discussion

The use of preferential selection practices by plans such as Employment Equity is highly controversial even among group members, such as women, who are benefiting from it. Even though the main concern stemming from such procedures is the violation of procedural justice and possible stigmatization of the target group members, numerous studies have shown that women may experience negative psychological symptoms including poor self-evaluations, negative affect and increased stress, as a result of preferential treatment (Heilman, 1994, 1997; Heilman et al., 1990; Matheson et al., 2002; Nacoste, 1989, 1990; Turner & Pratkanis, 1994).

The present investigation assessed the perceptions of women towards preferential treatment practices and the emotional effects, which such practices might inflict upon female beneficiaries. As impacts of preferential treatment may not be evident in self-

report indicators (Matheson et al., 2002), possible stress reactions of women who experienced preferential treatment were examined in terms of physiological effects (i.e. cortisol alterations). Moreover, given that reactions of beneficiaries to preferential treatment might vary among individuals and across different conditions (Crosby et al., 2003; Heilman, 1994), in this study, it was of interest to assess these effects in relation to social context (i.e. preferential treatment takes place in the knowledge of other individuals) and to the self-esteem levels of the women who participated in the study.

Effectiveness of Manipulations

Most of the women's answers on questions pertaining to the effectiveness of the experimental manipulations indicated that procedures were effective on the whole. Interestingly though, when women were asked to describe the criteria which might have affected the decision about their group placement (i.e. criteria based on merit or preferential treatment), the majority attributed their selection to criteria based on merit. Indeed, in all cases in which their status in the study was a result of preferential treatment, women attributed their selection to merit criteria or conditions unrelated to either merit or preferential treatment. This happened despite the fact that women had been informed of the specific changes that were made in the selection procedures in order to rectify issues of discrimination against their group and also possible biases of the male judges.

Although these results might point to the manipulation as being ineffective, it is equally possible that these women were not willing to acknowledge that preferential treatment could have played a role in their own personal status. In fact, female

participants who were preferentially selected in the study reported feeling less qualified for the task, which indicates a general awareness of the role of preferential treatment in relation to their group selection.

Hence, similarly to a study by Heilman et al. (1987), the majority of women showed an atypical tendency to take responsibility for failure (i.e. they preferred to report merit-based selection conditions, even when they failed). According to Taylor and Dubé (1986), these reactions might indicate an attempt on behalf of these women to distance themselves from the negative connotations associated with their group and the group treatment (i.e. preferential treatment). Thus, it is possible that even though they perceived the injustices against their group, they preferred to cope individually in an effort to prove and establish themselves as different from the other group members (Crosby et al., 2003; Heilman, 1994; Taylor, Wright, Moghaddam & Lalonde, 1990). Specifically, in the case of preferential treatment, which encompasses the element of group treatment without explicitly addressing the issue of discrimination, it seems that women preferred to attribute their selection to discrimination or personal inadequacy rather than associate themselves with a group that is being intentionally benefited.

These findings might have also been the result of the way that preferential treatment was implemented during the study. Specifically, preferential treatment took place by adding 10% to the scores women had actually obtained. This strategy, consistent with past research (Heilman, 1994; Matheson et al., 2002) and also with what most likely happens in the real world (Crosby et al., 2003), maintained the importance of merit which many women might have chosen to select as the criterion for their status.

A final remark on the experimental manipulations is that when women were asked to estimate a deserved score on the assigned task, they reported higher scores when they had succeeded and lower scores when they had failed to be placed in the desired high status group. These data are indicative of successful manipulations; however, it is noteworthy that both groups reported an estimated deserved score that was significantly lower than the described cut off score (i.e. 80% for success). This finding might be attributed to either lack of clarity of the importance of the specific cut off score or to the success of the manipulation (i.e. women believed that they were not as qualified to make it to the high status group).

Perceived Fairness of the Selection Conditions

Generally, procedures of preferential selection are viewed less favourably and are perceived as less fair in comparison to procedures based on merit (Heilman, 1994; Heilman et al., 1990; Matheson et al., 2002; Nacoste, 1990). As predicted, merit-based selection was perceived to be fairer than preferential selection among women who were successful in this study. Interestingly though, in the case of women who failed, what seemed to influence perceptions of fairness overall, was not the condition of selection (i.e. merit or preferential treatment), but rather a combination of their status in the study (i.e. failure), their self-esteem and the social context (i.e. presence of another woman). Specifically, when women with low self-esteem failed in the presence of another woman (who succeeded), selection procedures, overall, were perceived as fairer than when they failed alone. For these women, as with most low self-esteem people (Brown & Dutton, 1995), it seems that failure in direct comparison to another in-group member (another

woman), might have confirmed their doubts about their abilities and their performance and, hence was not perceived as an unfair outcome.

Among women with low-esteem who succeeded, the presence of another participant (woman or man), did not seem to affect perceptions of fairness regarding the procedures that were followed. These women might have been satisfied with the outcome for themselves (even though they might have thought they had low abilities) so that the failure of another woman did not affect their perceptions regarding fairness. Similar results were observed among women with high self-esteem for whom perceptions of fairness of the selection procedures were not affected by success vs. failure status or the presence of another woman.

However, when high self-esteem women succeeded, they viewed both selection procedures (merit and preferential treatment) more favourably compared to women who succeeded but had indicated low self-esteem levels. These findings emphasize the role of self-esteem and confirm other research findings that support the position that high self-esteem groups tend to accept and embrace success (Brown & Dutton, 1995). However, low self-esteem individuals tend to be more critical of their abilities and more prone to attribute success to factors other than their own deservingness (Josephs et al., 2003), while high self-esteem people are more apt to dismiss the negative implications of failure (Brown & Dutton, 1995).

Consistent with Hing et al. (2002), lack of greater discrepancy among perceptions of fairness for merit vs. preferential treatment (e.g. when women failed), might have also been due to the fact that women may have acknowledged the presence of discrimination

against their group (i.e. unfair) and therefore might have endorsed preferential treatment as a way to correct for this injustice.

Affective Outcomes of Women as a Result of Selection Conditions and Status

Consistent with our hypothesis, failing to be selected for the high status group seemed to elicit negative affective reactions among women. Specifically, women who failed reported increased anger as a result of the outcome compared to women who succeeded. This finding is not surprising given that discrimination against women has been associated with experiences of negative affect (Schmitt et al., 2003). However, contrary to prediction, and unlike findings of similar studies such as Heilman & Alcott (2001), Heilman et al. (1993) and Matheson et al. (2002), preferential selection did not influence women's affective reactions. Possibly, the status of success, irrespective of the selection condition that was followed, might have been of greater importance among successful women.

Even though the affective reactions of women were not related to preferential selection conditions, consistent with the findings of Brown and Marshall (2001), self-esteem levels seemed to play an important role in relation to experienced anger and anxiety among successful and failed women. Specifically, women with low self-esteem levels were more prone to experience increased anger and anxiety irrespective of being subjected to merit or preferential treatment conditions and irrespective of their status in the study. Interestingly, increased anger and anxiety were reported even among successful women of the low self-esteem group. This might imply a tendency of low self-esteem individuals to be more readily affected in a negative way (e.g. experience anger),

regardless of success or failure, when they participate in achievement-related contexts. (Brown & Marshall, 2001; Dodgson & Wood, 1998; Josephs et al., 2003). Therefore, as mentioned earlier, these women might not have trusted that their success was truly deserved.

In the present study, when women failed, direct social comparison with another woman did not affect their anger or anxiety levels. It seems that when somebody else succeeded, women were more affected by their status (i.e. failure) and their own low performance. Moreover, given that women were being compared to another in-group member, they might have felt less negatively than if they had failed in comparison to a man. The presence of another woman might have lessened the intensity of the sense of discrimination given that participants might have felt that they were both exposed to the same set of conditions and the same situation. This sense of commonality and the potential of social support among the in-group members might have contributed to the outcomes observed.

Interestingly, when women succeeded compared to another woman (who failed), they exhibited higher anxiety than when they succeeded in the presence of a man. In this case, women's sense of solidarity with another woman might have contributed to feelings of anxiety about their status when a member of their group failed. Even though men's failure might have made preferential treatment more obvious, it may also have created increased feelings of deservingness (especially in merit-based selection) considering the described discriminatory status quo towards women.

The Role of Social Context

According to Heilman and Alcott (2001), when preferential treatment takes place with the knowledge of others, women beneficiaries may be concerned about how they are perceived and they might report feeling unhappy and dissatisfied. In this study, however, even though participants had to interact with others who could make inferences about their qualifications as a function of the selection procedures, social context did not seem to be significantly related to neither merit nor to preferential treatment.

Contrary to findings suggesting that even women who are confident about their task ability may be affected by their teammate's view of them as having benefited from preferential selection (Heilman & Alcott, 2001), high self-esteem women in this study were not affected negatively as a result of being selected preferentially in the presence of another participant. However, social context seemed to play a different role in situations where low self-esteem women failed (i.e. they reported increased perceptions of fairness when failed in the presence of another women). It also had an important influence on women's anxiety levels when they were selected for the high status group (i.e. women who succeeded in the presence of a woman exhibited higher anxiety compared to when they succeeded in the presence of a man).

Even though these findings do not indicate negative effects as a result of being preferentially treated in the knowledge of others, they definitely indicate that social context influences cognitions and emotions of women exposed to competitive situations, such as a real workplace. Given that in an actual workplace situation, women have to deal with accountability for their success or failure in relation to a job, reactions of others and

interpersonal interactions, social context might deserve greater consideration in future studies.

The Role of Self-Esteem

In the present investigation, the global self-esteem of women was examined as a potential factor accounting for the variation among women's reactions in relation to the experimental conditions. Previous studies concerning preferential treatment of women have shown that such conditions may result in negative self-views and negative behaviour in the workplace environment among women who lack confidence in their abilities (Heilman, 1994; Heilman et al., 1990). Instead of focusing solely on confidence in task performance, in this study it was shown that the global self-esteem of women was related to differences in perceptions regarding the fairness of the procedures and differences in their emotional state.

Specifically, the influence of low self-esteem was prominent, as low self-esteem women in this study reported increased anger and anxiety and evaluated the experimental procedures and outcomes more negatively than did high self-esteem individuals. While these affective and behavioural reactions of low self-esteem women were not directly associated with preferential treatment conditions, it is worth noting that these women experienced negative feelings due to exposure to evaluation criteria of their abilities and possible failure. These findings are consistent with research on the role of self-esteem that indicated a general tendency of low self-esteem individuals to be strongly affected by feedback from others, potential failure and even domains unrelated to failure (Brown & Dutton, 1995; Brown & Marshall, 2001; Dodgson & Wood, 1998; Josephs et al., 2003).

According to Heilman et al.(1990), similar findings but in relation to preferential treatment, have indicated that a possible reason for these reactions may have been the absence of information about task-related ability of the women. Due to lack of sufficient information of their actual performance, women tend to infer their qualifications based on their own success or failure (Matheson et al., 2000). Low self-esteem women, in particular, assign more negative characterizations to themselves and their performance when feedback is lacking (Dodgson & Wood, 1998). However, as shown in this study and as demonstrated by other research, high self-esteem women are more apt to dismiss the negative implications of such conditions and, therefore, reactions to failure or preferential treatment may be moderated (Brown & Dutton, 1995; Heilman et al., 1990). Nevertheless, providing women with information about their performance might be one way of enhancing their self-esteem and eliminating negative reactions in such contexts (Heilman et al., 1990).

Neuroendocrine Alterations

Past research has shown that neuroendocrine alterations, specifically changes of cortisol levels, constitute a valid indicator of women's reactions towards conditions of discrimination and preferential treatment. In particular, it was reported that even in cases where women self-reported that they were not affected by such procedures, physiological responses suggested that women experienced stress as a result of even any hint of preferential treatment (Matheson et al., 2002). Although cortisol alterations were expected as a function of the experimental conditions (i.e. failure, preferential treatment and social context) in the present study, the cortisol values of women in the present study

were unforeseen. Despite the fact that cortisol levels, overall, exhibited an anticipatory increase just prior to feedback (Griffiths, Ravindran, Merali & Anisman, 1997), the effects of the selection conditions as well as an interaction between selection condition and presence of another participant were evident prior to feedback. These effects were also evident prior to participants being informed of the selection procedures that were to be followed. Since there is no known reason that could explain these results, these interactions are considered meaningless and are probably the result of unfortunate group assignments despite a random procedure being used.

At other time points following selection feedback (i.e. 15 and 30 minutes after feedback), regardless of status and self-esteem, a significant interaction between selection procedures and social context seemed to be present. These interactions seemed to point to increased neuroendocrine activity (i.e. increased cortisol) when women were being compared to another woman under conditions of preferential treatment. When women were successful under merit conditions, their cortisol levels were at the highest level when there was no social comparison and lowest when they were succeeding in relation to a man who failed. However, given that group differences were evident prior to any experimental manipulations being conducted, the post-manipulation data are suspect.

Merit and Preferential Treatment in This Study

In this study the impact of preferential treatment on women was less evident relative to a number of other studies that have shown significant effects on the behaviour and physiology of women stemming from the use of preferential treatment (Heilman, 1994; Heilman et al., 1990; Heilman et al., 1987; Matheson et al., 2002). A possible factor

contributing to this outcome might have been the strategy for implementing preferential treatment in the study. As preferential treatment was applied in terms of adding a certain score to that already obtained by women, a significant component of merit was still maintained. This approach was followed so that a more realistic context in terms of what happens in actual workplace settings would be established. However, participants might have viewed the selection as mainly based on merit, despite the obvious biases against women, and as a consequence, the reactions to the implementation of preferential treatment were not as negative as reported in other research. Similar findings have been reported in studies that operationalized the affirmative action procedures by considering group membership in addition to consideration of merit (Crosby et al., 2003; Matheson et al., 2000). In these studies women's reactions to these procedures were more positive compared to procedures of absolute preferential treatment and conditions of discrimination against their group.

Future Considerations

After evaluating the feedback offered by the participants, it was clear that the experimental manipulations were fairly effective. However, several factors might have moderated more intense reactions towards the selection procedures, which might explain why the results were not entirely consistent with the anticipated responses. Similar to most research related to preferential treatment (Heilman, 1994; Heilman & Alcott, 2001; Hing et al., 2002; Matheson et al., 2000, 2002), the present study was performed in a laboratory. Given that preferential treatment of women is a prominent situation in employment/organizational settings, more representative outcomes could have been

obtained if a similar study was replicated in a real work setting. In such situations, women would possibly be more conscious of employment equity strategies and, therefore, they would have developed a different degree of sensitivity towards the use of preferential treatment. Moreover, in an employment setting, the observed effects could have been monitored over a longer period of time as opposed to the limited time frame assessed in the laboratory.

By implementing similar procedures in a real employment context, a more diverse population of women could have been studied. Although the student participants formed a rather uniform sample (i.e. first year university students), it would be of interest to study these effects in a broader context, including women of different race, age and work experience. Not surprisingly, Nacoste (1990) reported that the stigma of incompetence deriving from affirmative action procedures was not only confined to women, but also to populations of minority race or ethnicity.

The effects of social context on women's reactions towards preferential selection might also have been moderated by the fact that their teammate in the study was also a student. Moreover, the two teammates lacked any history or background information about one another prior to the study and as a result, their performance had no enduring consequences after they left the laboratory. Given that students were not accountable for their status to anyone, these features may have inhibited responses that might otherwise have occurred in actual work situations where beneficiaries are in close contact with colleagues and superiors on a regular basis. The dynamics of the relationship between members of a real work place (e.g. subordinates or superiors) would provide different conditions to test for the effects of social context in relation to preferential treatment.

These effects might be negative for women but also, according to Heilman (1994), prior experience with female workers might create social support networks that can contribute to dispelling negative notions and inferences about women's competence. Thus, in order to accurately represent the attitudes and reactions of women in organizational settings, it is necessary to validate the results in natural employment settings, where employment equity decisions might play an important role in women's career paths, especially in cases where their status might be inferred by members of their workplace.

Finally, as done by Heilman et al. (1990, 1996), it would be interesting to study these effects when the experimenter is a member of the dominant group, i.e. man. Moreover, in order to increase the reliability and the representation of the measures for one particular outcome, a greater number of measures for each dependent variable can be used.

Conclusions and Contributions of the Present Study

Despite the limitations outlined, the present study provided support for previous research findings that indicated that preferential treatment is not necessarily perceived favourably even among beneficiaries. Even though the results stemming from preferential treatment, in terms of affective and physiological reactions of women, were not as intense as anticipated, it was shown that conditions of discrimination can unfavourably influence women emotionally.

This study also shed light on the role of social context when it is related to the performance of discrimination and preferential treatment. Since women's cognitive and behavioural reactions were significantly related to the presence of others, it is important to take into consideration the effects of social context when performing affirmative action

programs and perhaps aim for a more discreet implementation (not in the knowledge of others in the workplace). Yet, when these decisions are being made, it is important to supply information about the selected woman and her qualifications to others in the work setting in order to enhance her confidence, avoid stigmatization and dismiss any assumptions about her credentials.

Most importantly, the outcomes of this study indicated that individual differences, and particularly self-esteem, ought to be considered when implementing such programs. Given that the common perception is that competence is not at all a factor when affirmative action plans are applied, intervention strategies that emphasize the abilities and competence of any woman considered for preferential treatment may be effective in terms of achieving enhancement of self-esteem, especially for individuals who are in need of this. For example, Heilman and Alcott (2001) reported that when women received feedback on their qualifications and abilities, they showed less negative psychological effects and more positive attitudes in the workplace, regardless of the selection procedure. This is a rather important factor to be considered in the design and application of preferential treatment plans, as these programs may be able to achieve their goals (i.e. equality in the workplace) without being associated with negative effects on the beneficiaries.

Finally, by considering all of the above mentioned factors, the findings of the present study might also be encouraging with regard to real-life applications; when an element of merit is maintained in the implementation of affirmative action policies, higher level of effectiveness and acceptance may be achieved for target group members.

References

- Abella, R. S. (1984). *Equality in employment: A royal commission report*. Ottawa: Ministry of Supply and Services.
- Aronsson, G., & Rissler, A. (1998). Psychophysiological stress reactions in female and male urban bus drivers. *Journal of Occupational Health Psychology*, 3, 122-129.
- Berkman, L. F. (1985). Social networks, social support, and health: The evidence. In *Social Support and Health*. New York: Academic Press, Inc.
- Brown, J. D., & Dutton, K. A. (1995). The thrill of victory, the complexity of defeat: Self-esteem and people's emotional reactions to success and failure. *Journal of Personality and Social Psychology*, 68 (4), 712-722.
- Brown, J. D., & Marshall, M. A. (2001). Self-esteem and emotion: Some thoughts about feelings. *Personality and Social Psychology Bulletin*, 27 (5), 575-584.
- Brutus, S., Parra, L. F., Hunter, M., Perry, B., & Ducharme, F. (1998). Attitudes toward affirmative action in the United States and Canada. *Journal of Business and Psychology*, 12 (4), 515-533.
- Chacko, T. (1982). Women and equal employment. Some unintended effects. *Journal of Applied Psychology*, 67, 119-123.
- Cohen, S., & Wills, T.A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin*, 98, 310-57.
- Crosby, F. J. (1994). Understanding affirmative action. *Basic and Applied Social Psychology*, 15 (1 & 2), 13-41.
- Crosby, F. J., & Clayton, S. (1990). Affirmative action and the issue of expectancies. *Journal of Social Issues*, 46 (2), 61-79.

- Crosby, F. J., Iyer, A., Clayton, S., & Downing, R. A. (2003). Affirmative action. Psychological data and the policy debates. *American Psychologist*, 58 (2), 93-115.
- Davidson, R. J. (2003). Affective neuroscience and psychophysiology: Toward a synthesis. *Psychophysiology*, 40, 655-665.
- Department of Justice Canada. *Pay Equity Review*. Retrieved October 18, 2004 from <http://www.canada.justice.gc.ca/en/payeql/1200.html>
- Dodgson, P. G., & Wood, J. V. (1998). Self-esteem and the cognitive accessibility of strengths and weaknesses after failure. *Journal of Personality and Social Psychology*, 75 (1), 178-197.
- Falkenberg, L. E., & Boland, L. (1997). Eliminating the barriers to employment equity in the Canadian workplace. *Journal of Business Ethics*, 16, 963-975.
- Giglio, M. (2001). *The effects of affirmative action on rationalizing sexual harassment*. M.A. Thesis, Carleton University, Ottawa, Ontario, Canada.
- Government of Canada. (2004). *History of Employment Equity*. Retrieved October 18, 2004, from <http://www.hrsdc.gc.ca>
- Government of Canada. (2004). *What is Employment Equity?* Retrieved October 18, 2004, from <http://www.hrsdc.gc.ca>
- Griffiths, J., Ravindran, A.V., Merali, Z., & Anisman, H. (1997). Neuroendocrine measures and lymphocyte subsets in depressive illness: Influence of a clinical interview concerning life experiences. *Psychoneuroendocrinology*, 24, 225-236.
- Handa, R.J., Burgess, L.H., Kerr, J.E., & O'Keefe, J.A. (1994). Gonadal steroid hormone receptors and sex differences in the hypothalamo-pituitary-adrenal axis. *Hormones and Behavior*, 28, 464-76.

- Heilman, M. E. (1994). Affirmative action: Some unintended consequences for working women. *Research in Organizational Behavior, 16*, 125-169.
- Heilman, M. E. (1997). Sex discrimination and the affirmative action remedy: The role of sex stereotypes. *Journal of Business Ethics, 16*, 877-889.
- Heilman, M. E., & Alcott, V. B. (2001). What I think you think of me: Women's reactions to being viewed as beneficiaries of preferential selection. *Journal of Applied Psychology, 86* (4), 574-582.
- Heilman, M. E., Battle, W.S., Keller, C.E., & Lee, R. A. (1998). Type of affirmative action policy: A determinant of reactions to sex-based preferential selection? *Journal of Applied Psychology, 83*, 190-205.
- Heilman, M. E., Block, C., & Lucas, J. (1992). Presumed incompetent? Stigmatization and affirmative action efforts. *Journal of Applied Psychology, 77*, 536-544.
- Heilman, M. E., Kaplow, S. R., Amato, M. A., & Stathatos, P. (1993). When similarity is a liability: Effects of sex-based preferential selection on reactions to like-sex and different-sex others. *Journal of Applied Psychology, 78* (6), 917-927.
- Heilman, M. E., Lucas, J. A., & Kaplow, S. R. (1990). Self-derogating consequences of sex-based preferential selection: The moderating role of initial self-confidence. *Organizational Behavior and Human Decision Processes, 46*, 202-216.
- Heilman, M. E., McCullough, W. F., & Gilbert, D. (1996). The other side of affirmative action: Reactions of nonbeneficiaries to sex-based preferential selection. *Journal of Applied Psychology, 81* (4), 346-357.
- Heilman, M. E., Rivero, J. C., & Brett, J. F. (1991). Skirting the competence issue:

- Effects of sex-based preferential selection on task choices of women and men.
Journal of Applied Psychology, 76, 99-105.
- Heilman, M. E., Simon, M. C., & Repper, D. P. (1987). Intentionally favored, unintentionally harmed? Impact of sex-based preferential selection on self-perceptions and self-evaluations. *Journal of Applied Psychology, 72* (1), 62-68.
- Hing, L. S., Bobocel, D. R., & Zanna, M. P. (2002). Meritocracy and opposition to affirmative action: Making concessions in the face of discrimination. *Journal of Personality and Social Psychology, 83* (3), 493-509.
- Human Resources Development Canada, Labour Program (2005). *Document 1: Overview of Employment Equity*. Retrieved June 1, 2005, from
<http://www.hrsdc.gc.ca>
- Josephs, R. A., Bosson, J. K., & Jacobs, C. G. (2003). Self-esteem maintenance processes: Why low self-esteem may be resistant to change. *Personality and Social Psychology Bulletin, 29* (7), 920-933.
- Karasek, R.A., & Theorell, T. (1990). *Healthy work*. New York: Basic Books.
- Kirschbaum, C., Kudielka, B.M., Gaab, J., Schommer, N. C., & Hellhammer, D. H. (1999). Impact of gender, menstrual cycle phase, and oral contraceptives on the activity of the hypothalamus-pituitary-adrenal axis. *Psychosomatic Medicine, 61*, 154-162.
- Kleugal, D., & Smith, E. (1986). *Beliefs about inequality*. New York, NY: Aldine de Gruyter.
- Kravitz, D. A., Harrison, D. A., Turner, M. E., Levine, E. L., Chaves, W., Barnnick, M.

- T., et al. (1997). *Affirmative action: A review of psychological and behavioral research*. Bowling Green, OH: Society for Industrial and Organizational Psychology.
- Lackovic-Grin, K., Dekovic, M., Milosavljevic, B., Cvek-Soric, I., & Opacic, G. (1996). Social support and self-esteem in unemployed university graduates. *Adolescence*, 31 (123), 701-707.
- Lewis, M., & Ramsay, D. (2002). Cortisol response to embarrassment and shame. *Child Development*, 73 (4), 1034-1045.
- Major, B., & Schmader, T. (1998). Coping with stigma through psychological disengagement. In J.K. Swim & C. Stangor (Eds.), *Prejudice. The target's perspective* (pp. 219-241). CA: Academic Press.
- Matheson, K., Majka, K., & Giglio, M. (2002). *The untold story: Self-report and neuroendocrine reactions to simulated preferential treatment selection procedures*. Paper presented at the Society for Industrial and Organizational Psychology (APA division) Conference, Toronto, Ontario.
- Matheson, K.J., Warren, K.L., Foster, M.D., & Painter, C. (2000). Reactions to affirmative action: Seeking the bases for resistance. *Journal of Applied Social Psychology*, 30, 1013-1038.
- McEwen, B.S. (2000). Allostasis and allostatic load: Implications for neuropsychopharmacology. *Neuropsychopharmacology*, 22, 108-124.
- McNicholas, S.L. (2002). Social support and positive health practices. *Western Journal of Nursing Resources*, 24 (7), 772-787.
- Melamed, S., Ugarten, U., Shirom, A., Kahana, L., Lerman, Y., & Froom, P. (1999).

- Chronic burnout, somatic arousal and elevated salivary cortisol levels. *Journal of Psychosomatic Research*, 46, 591-8.
- Nacoste, R.W. (1989). Affirmative action and self-evaluation. In F.A. Blanchard & F.J. Crosby (Eds.), *Affirmative action in perspective* (pp103-109). New York, NY: Springer-Verlag.
- Nacoste, R. W. (1990). Sources of stigma: Analyzing the psychology of affirmative action. *Law and Policy*, 12 (2), 175-195.
- Nelson, J.C. (2004). *Affirmative action-its got a bad reputation*. Retrieved April, 26, 2004 from http://www.Msi.ms/MSJ/affirmative_action.htm
- Pavalko, E.K., Mossakowski, K.N., & Hamilton, V.J. (2003). Does perceived discrimination affect health? Longitudinal relationships between work discrimination and women's physical and emotional health. *Journal of Health and Social Behaviour*, 44 (1), 18-33.
- Pedhazure, E.J. (1997). *Multiple regression in behavioral research. Explanation and prediction* (3rd edition). Fort Worth TX: Harcourt Brace College.
- Pelham, B. W., & Swann, W. B., Jr. (1989). From self-conceptions to self-worth: On the sources and structure of global self-esteem. *Journal of Personality and Social Psychology*, 57, 672-680.
- Plous, S. (1996). Ten myths about affirmative action. *Journal of Social Issues*, 52 (4), 25-31.
- Pruessner, J.C., Hellhammer, D.H., & Kirschbaum, C. (1999). Burnout, perceived stress, and cortisol responses to awakening. *Psychosomatic Medicine*, 61, 197-204.
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press,

- Princeton, NJ.
- Rosenberg, M. (1979). *Conceiving the self*. New York: Basic Books.
- Roy, M.P., Steptoe, A., & Kirschbaum, C. (1998). Life events and social support as moderators of individual differences in cardiovascular and cortisol reactivity. *Journal of Personality and Social Psychology, 75*, 1273-81.
- Ruggiero, K. M., Taylor, D. M., & Lydon, J. E. (1997). How disadvantaged group members cope with discrimination when they perceive that social support is available. *Journal of Applied Social Psychology, 27* (18), 1581-1600.
- Sapolsky, R.M., Romero, L.M., & Munck, A.U. (2000). How do glucocorticoids influence stress responses? Integrating permissive, suppressive, stimulatory, and preparative actions. *Endocrine Reviews, 21*, 55-89.
- Scarpa, A., & Luscher, K.A. (2002). Self-esteem, cortisol reactivity, and depressed mood mediated by perceptions of control. *Biological Psychology, 59*, 93-103.
- Schmidt-Reinwald, A., Pruessner, J.C., Hellhammer, D.H., Federenko, I., Rohleder, N., Schurmerer, T.H., et al. (1999). The cortisol response to awakening in relation to different challenge tests and a 12-hour cortisol rhythm. *Life Sciences, 64*, 1653-1660.
- Schmitt, M.T., Branscombe, N.R., & Postmes, T. (2003). Women's emotional responses to the pervasiveness of gender discrimination. *European Journal of Social Psychology, 33*, 297-312.
- Seeman, T.E., Berkman, L.F., Blazer, D., & Rowe, J.W. (1994). Social ties and support and neuroendocrine function; the MacArthur studies of successful aging. *Ann Behav Med, 16*, 95-106.

- Seligman, D. (1973). How equal opportunity turned into employment quotas. *Fortune*, 87 (March), 160-175.
- Sher, L. (2004). Daily hassles, cortisol, and the pathogenesis of depression. *Medical Hypotheses*, 62 (2), 198-202.
- Siegrist, J., Klein, D., & Voigt, K.H. (1997). Linking sociological with physiological data: The model of effort-reward imbalance at work. *Acta Physiologica Scandinavica Suppl*, 640, 112-116.
- Sluiter, J.K., Van der Beek, A.J., & Frings-Dresen, M.H. (1998). Work stress and recovery measured by urinary catecholamines and cortisol excretion in long distance coach drivers. *Occup Environ Med.*, 55, 407-13.
- Steptoe, A., Cropley, M., Griffith, J., & Kirschbaum, C. (2000). Job strain and anger expression predict early morning elevations in salivary cortisol. *Psychosomatic Medicine*, 62, 286-92.
- Stroud, L.R., Salovey, P., & Epel, E. S. (2002). Sex differences in stress responses: Social rejection versus achievement stress. *Biological Psychiatry*, 52, 318-27.
- Summers, R.J. (1991). The influence of affirmative action on perceptions of a beneficiary's qualifications. *Journal of Applied Social Psychology*, 21, 1265-1276.
- Swan, W. B., Jr., & Ely, R. J. (1984). A battle of wills: Self-verification versus behavioral confirmation. *Journal of Personality and Social Psychology*, 46, 1287-1302.
- Taylor, D.M., & Dubé, L. (1986). Two faces of identity: The "I" and the "we". *Journal of Social Issues*, 42 (2), 81-98.

- Taylor, D. M., Wright, S. C., Moghaddam, F. M., & Lalonde, R. N. (1990). The personal/group discrimination discrepancy: Perceiving my group, but not myself, to be a target for discrimination. *Personality and Social Psychology Bulletin, 16* (2), 254-262.
- Turner-Cobb, J. M., Sephton, S. E., Koopman, C., Blake-Mortimer, J., & Spiegel, D. (2000). Social support and salivary cortisol in women with metastatic breast cancer. *Psychosomatic Medicine, 62*, 337-345.
- Turner, M. E., & Pratkanis, A. R. (1994). Affirmative action: Insights from social psychological and organizational research. *Basic and Applied Social Psychology, 15*, 1-11.
- Vilhjalmsson, R. (1993). Life stress, social support and clinical depression: A reanalysis of the literature. *Social Science Medicine, 37* (3), 331-342.
- Wegierski, M. (2004). '*Employment equity*'. *Affirmative action, Canadian style*. Retrieved October 14, 2004, from
<http://www.theoccidentalquarterly.com/vol2no1/mw-employment.html>
- Wills, T. A. (1985). Supportive functions of interpersonal relationships. In *Social Support and Health*. New York: Academic Press, Inc.
- Yang, Y., Koh, D., Ng, V., Lee, F.C., Chan, G., Dong, F., & Chia, S.E. (2001). Salivary cortisol levels and work-related stress among emergency department nurses. *Journal of Occupational and Environmental Medicine, 43*, 1011-8.
- Zeier, H., Brauchli, P., & Joller-Jemelka, H.I. (1996). Effects of work demands on immunoglobulin A and cortisol in air traffic controllers. *Biological Psychology, 42*, 413-23.

Zuckerman, M., & Lubin, B. (1965). *Manual for the multiple affect adjective checklist*. San Diego, CA: Educational and Industrial Testing Service.

Appendix A: Recruitment Notice

Finally! Give the University some Logical Advice!

This study involves taking part in a logical analysis of issues that have been identified as relevant to students. It includes coming up with solutions to issues and completing a set of questionnaires. As well, because we are interested in how differences in stress affect performance, we will be taking some stress measures, including blood pressure and salivary cortisol. The study should take up to 1 hour, and you will be given experimental credit for your participation. As well, your participation makes you eligible to win up to \$100 in a lottery.

Appendix B: Experimenter's Instructions to Participants

"Hello, my name is Effie and this is an experiment about logical ability in the analysis of real world problems. As you probably realize, this ability is essential to succeed in today's job market in which information is available quickly and easily and so people need to find ways to organize information and ideas to understand it. We have found that employers are interested in identifying the characteristics associated with these highly logical individuals so that they can hire the best people.

The study will take approximately 1 hour. You will be asked to complete two sets of essay type questions on issues relevant to students and a series of questionnaires about yourself and your perceptions. As well, because stress can affect performance, we will be asking you for several measures of physiological stress. One of these measures is a stress hormone called cortisol. To measure this, we will be asking you to provide us with saliva samples at several points in the study. This is relatively easy, and simply involves placing a piece of dental cotton in your cheek for a 2-minute period. Once the cotton is thoroughly wet, you will place it in the appropriate tube for subsequent analysis.

Do you have any questions?

In this study, we are going to be dividing people into high and low ability. To do this, I'm going to be asking you to complete a series of essay answer questions and your answers will be scored for how logical they are. The results of your answers will determine whether you will be put into the high ability group. When you're finished your essays, they will be scored by a group of judges. The judges are 3 guys from Engineering that we currently have working in our lab, because they are in training to better

understand, evaluate, and manage people. Based on the score given by these judges, if you achieve 80%, you'll be placed in the high ability group. Those who qualify for the high ability group are viewed as possessing superior, more advanced logical abilities. Those who make it to the high ability group will join our group of judges to go work on a student-relevant issue, so that as a group you can develop a set of recommendations to pass on to the university's administration. The issues we have been asking our more logical participants to work on have been identified as ones that are critical to the student body. Because the university is interested in these issues, they have actually asked us to forward the best suggestions to a university senate committee.

If you score lower than 80%, you're considered to be low in logical abilities. Those in the low ability group will be asked to complete basic skills tasks, which include sentence completion, alphabetizing, and arithmetic problems. The purpose of the low ability group completing these tasks is to allow us to assess the relation between having poor basic skills and lack of logical ability. Clearly though this work is not as important here or in real life, as what's being done by the high ability group. So at the end of the study, those in the high ability group will qualify for a \$100 lottery, while those who are low ability will only be eligible for a \$10 lottery. Also, considering that those placed in the low ability group are not very competent, they will only receive half of a credit as opposed to 1 full credit for this experiment, as the task was not successfully completed.

Any questions so far?

Throughout this study, we'll be taking a number of measures. Before you actually do the logic test, we would like you to complete a questionnaire and provide us with some background information.

Ask to complete Part I of the Questionnaire package.

As we mentioned to you, we believe stress may affect performance. To measure stress, we need to ask you for a saliva sample before you complete the first task.

Give instructions and collect saliva sample A

Distribute first logic task.

When I tell you, please turn over the paper in front of you. On this paper you will find a short description of the issue you'll be writing about and a number of questions. You will have 10 minutes to answer the questions as thoroughly as possible. You can use point form, as it is the logical substance of your ideas that will be important.

Give 10 minutes to read the questions and write their answers.

At the end of the 10 minutes, collect the essays.

While you're waiting for the judges to score your responses, I'll give you a brief questionnaire, and the topic we're asking the high ability group to work on in this session so that you can read it over, and think about possible recommendations".

Ask to complete Part II of the questionnaire, and distribute second logic task for them to work on when they have finished the questions.

At 12 minutes following collection of 1st logic task:

Get Saliva sample B

A male confederate then returns to the room with the graded essays. As he is passing the stories back to the female experimenter, he says to her: "I don't know why we bother even grading women's stories. They're rarely worth passing. Here are the scores".

Female experimenter looks at marked stories:

"Typically in situations like this, participants are placed in the high ability group on the basis of skill and ability, which basically means that he or she is good at the task. In our study, we have been attempting to select people who have demonstrated that they clearly have high logical abilities. Obviously, it is important that we have the best people working on the next task if we want the university to take what we are doing seriously.

Unfortunately, so far in the study, we have found that the proportion of men and women who succeed does not reflect the proportion of male and female participants who should be eligible. This kind of imbalance in the performance of men and women is not unusual in the personnel tests used in many organizations, even though other research shows that there is no difference between men and women in their logical abilities when it comes to these kinds of problems. But either the scoring key we chose to use or possibly even the judges themselves are clearly biased, because it consistently results in lower scores for women."

Give one of the following, depending on assigned experimental condition:

1. Merit-based situation

"Nonetheless, I want to make it clear that, irrespective of the attitudes of the judges you're about to work with, we believe it is important to be consistent in our policy of always promoting participants based on the scores obtained in the logic task. This is true of most organizations that continue to use this kind of test".

2. Preferential treatment

“Therefore, we have started a policy of putting women into the high status group if when we add 10% to their score, their final score is above the 80% cutoff. Many organizations now use this policy in order to override the biases against women evident in some personnel selection tests and standards. So one thing I always do now is look at women’s scores and if your score goes above 80% when I do this, I send you to work as a high ability individual to work with the rest of the judges”.

Continue for all ...

“In this instance, only one of you has met the criteria for high ability, and so will be going to work with the judges for the remainder of the study.

(Randomly) choose 1 woman and indicate that she is considered a high ability worker, and nod to the other participant that s/he unfortunately has not met the criteria to go on to that group.

Before we go any further, as I mentioned to you earlier, we believe that there are a number of perceptual characteristics associated with people’s performance. This next questionnaire is trying to identify several important characteristics. But before I give it to you, I am going to bring X (high ability participant) next door so that when you are done, the other judges can join you”.

Move to separate rooms, and ask to complete Part III of the questionnaire.

At 15 minutes and again at 27 minutes after feedback, get saliva samples C & D;

After the questionnaire packages have been finished and collected,

- give suspicion measure

- participants are debriefed and informed of the true nature of the experiment.

Participants complete the second informed consent to use their data, fill out lottery slip, and are given 1 experimental credit and contact numbers.

Appendix C: Informed Consent

The purpose of an informed consent is to ensure that you understand the purpose of the study and the nature of your involvement. The informed consent has to provide sufficient information such that you have the opportunity to determine whether you wish to participate in the study.

Research Title: Logical analysis of university problems

Research Personnel: The following people are involved in this research project and may be contacted at any time:

Effie Helis (Researcher, 520-2600, X2683)

Ritu Gill (Researcher, 520-2600, X2683)

Dr. K. Matheson (Faculty Investigator, Dept. of Psychology) 520-2648

Dr. H. Anisman (Faculty Investigator, Dept. of Psychology) 520-2699

If you have any ethical concerns about how this study was conducted, please contact Dr. M. Gick (Chair of the Carleton University Research Ethics Committee for Psychological Research, 520-2600, ext. 2664), or Dr. J. Logan (Chair, Department of Psychology, 520-2600, ext. 2690).

Purpose and Task Requirements: The purpose of this study is to explore students' logical analyses of university problems. We will be asking you to complete an essay-writing logic task. Based on this task you'll be assigned roles that will define your position in a subsequent task. In this study, we will be asking you to respond to some questionnaires about yourself and your perceptions. We will also be asking for several saliva samples to assess for indications of stress. This study should take no more than 1 hour. You will be eligible for up to 1 experimental credit and participation in a lottery of up to \$100.

Potential Risk/Discomfort: There are no physical risks in this study. There may be some stress associated with personal expectations of performance.

Anonymity/Confidentiality: The data collected in this study are kept anonymous and confidential. Your name should not appear anywhere on your questionnaire. The consent forms are kept separate from your responses.

Right to Withdraw: Your participation in this study is entirely voluntary. At any point during the study you have the right to not complete certain questions or to withdraw with no penalty whatsoever.

Signatures: I have read the above description of the study concerning logical analysis. The data in the study will be used in research publications or for teaching purposes. My signature indicates that I agree to participate in the study, and this in no way constitutes a waiver of my rights.

Full Name (Print): _____

Participant Signature: _____

Date: _____

Researcher Signature: _____

Date: _____

Appendix D: Part I of Questionnaire

TO BE COMPLETED BY THE EXPERIMENTER:	
Code:	_____
Cond: M/PT-	_____
S/F -	_____
FF/FM/A -	_____
Date:	_____
Time:	_____

Background Information

Please take a few moments to complete some background information about yourself. This kind of information can help to explain certain differences that may be found among people with differing abilities.

Sex: _____

Age: _____

What is your first language? _____

What is your religion, if any? _____

What is your ethnic/racial background? _____

The following questions are important for our analysis of stress hormones:

At approximately what time did you wake up today? _____

Are you currently being treated for any physical condition?

No _____ Yes _____ If yes, please specify _____

Are you on any of the following medications (please check all that apply):

_____ Birth control pill

_____ Anti-inflammatories (please specify) _____

_____ Anti-depressants (please specify) _____

_____ Anti-anxieties (please specify) _____

_____ Other prescription drugs (please specify) _____

Appendix E: Writing Task I

Participant Code: _____

Name: _____

Sex: Male / Female (circle one)

A number of university administrators have proposed that user fees be introduced for such things as internet use and the borrowing of library materials. Due to the cutbacks that have occurred to university funding, maintaining high standards for the library and computer labs have become very difficult. They therefore argue that charging a nominal fee, such as 25 cents for borrowing a book or connecting to the internet would help maintain these high standards and not tax the students a great deal. The student association argues that these types of services should be covered by students' fees and should not be added onto everyday living expenses.

In the space below (and the back of the page if necessary), please answer the following questions as to how you would decide whether user fees should be introduced or not:

- 1) Briefly discuss the main issues that you believe should be considered in making the decision of whether user fees should be introduced at Carleton University.
- 2) Briefly discuss how these user fees may or may not impact students.
- 3) What type of information would you need in order to make an effective decision about the introduction of user fees?

Appendix F: Part II of Questionnaire

Rosenberg's Scale

Please indicate your degree of agreement or disagreement with each of the following statements by circling the appropriate option for each statement.

-3 Strongly untrue of me	-2 Moderately	-1 Mildly	0 Neither true nor untrue	1 Mildly	2 Moderately	3 Strongly true of me
1. On the whole, I am satisfied with myself.				-3 -2 -1 0 1 2 3		
2. At times I think I am no good at all.				-3 -2 -1 0 1 2 3		
3. I feel that I have a number of good qualities.				-3 -2 -1 0 1 2 3		
4. I am able to do things as well as most other people.				-3 -2 -1 0 1 2 3		
5. I feel I do not have much to be proud of.				-3 -2 -1 0 1 2 3		
6. I certainly feel useless at times.				-3 -2 -1 0 1 2 3		
7. I feel that I'm a person of worth, at least on an equal plane with others.				-3 -2 -1 0 1 2 3		
8. I wish I could have more respect for myself.				-3 -2 -1 0 1 2 3		
9. All in all, I am inclined to feel that I am a failure.				-3 -2 -1 0 1 2 3		
10. I take a positive attitude toward myself.				-3 -2 -1 0 1 2 3		

Appendix G: Writing Task II

Participant Code: _____

Name: _____

Sex: Male / Female (circle one)

A number of students active in the politics of the university have proposed that certain programs such as psychology, criminology, political science and sociology should receive a larger proportion of university funding than other programs such as English literature or fine arts. They propose that programs such as psychology and criminology offer more to society than studies of English literature or fine arts. Other students and members of the university argue that the study of the art and literature is just as important to society since they reflect society at that particular time in history and give insights into that society. They therefore argue that psychology and other programs like it should not be favoured over the literature and fine art programs when it comes to university funding.

In the space below (and the back of the page if necessary), please answer the following questions as to how you would decide whether Carleton should give more financial support to the programs of psychology, sociology and criminology, etc. than to the fine arts and English literature programs:

- 1) Briefly discuss the primary issue that you believe should be considered in making the decision of providing more financial support to the programs of psychology, criminology, etc. than to programs in fine arts and English literature.
- 2) Briefly discuss how these changes to funding may impact you and your education.
- 3) What type of information would you need in order to make an effective decision about this issue?

Appendix H: Part III of Questionnaire

Part III

Please place a check beside how you have been categorized for logical ability in this study:

Low ability High ability

If you were estimate, based on your own personal opinion, how well you did on the logic task, how high of a score do you think you probably deserved (circle the closest value):

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

How ‘qualified’ did you feel to express your opinion on the topic raised in the logic task?

Not at all

Extremely

1

2

3

4

5

6

7

In your own words, what do you think the criteria were that were used in scoring logical ability?

Please rate how you feel at this moment in time in relation to the following items:

1. Calm	Not at all	1	2	3	4	5	6	7	Very much
2. Secure	Not at all	1	2	3	4	5	6	7	Very much
3. Anxious	Not at all	1	2	3	4	5	6	7	Very much
4. Worrying	Not at all	1	2	3	4	5	6	7	Very much
5. Irritated	Not at all	1	2	3	4	5	6	7	Very much
6. Cooperative	Not at all	1	2	3	4	5	6	7	Very much
7. Agreeable	Not at all	1	2	3	4	5	6	7	Very much
8. Angry	Not at all	1	2	3	4	5	6	7	Very much
9. Discouraged	Not at all	1	2	3	4	5	6	7	Very much
10. Blue	Not at all	1	2	3	4	5	6	7	Very much
11. Fine	Not at all	1	2	3	4	5	6	7	Very much
12. Active	Not at all	1	2	3	4	5	6	7	Very much
13. Hostile	Not at all	1	2	3	4	5	6	7	Very much
14. Frustrated	Not at all	1	2	3	4	5	6	7	Very much
15. Enthusiastic	Not at all	1	2	3	4	5	6	7	Very much

Was there another student in the testing session with you? _____ No _____ Yes

If no, please go to the next page.

If yes, is the other student _____ Male OR _____ Female

Please rate your perceptions about the method by which participants were chosen for the high ability group:

Very Fair	1	2	3	4	5	6	7	Very Unfair
Discriminated	1	2	3	4	5	6	7	Did not discriminate against women
against women								
Necessary	1	2	3	4	5	6	7	Unnecessary
Appropriate	1	2	3	4	5	6	7	Inappropriate
Uncalled for	1	2	3	4	5	6	7	Called for
Biased	1	2	3	4	5	6	7	Unbiased
Discriminated	1	2	3	4	5	6	7	Did not discriminate against men
against men								

Appendix I: Suspicion Questionnaire

We would like to make sure that you understood the nature of this study. To do so, we'd like you to complete the following questions. Point form responses are fine.

1. In your opinion, what was this study about?
 2. What do you think we hope to find?
 3. Is there anything about the conduct of this study that did not make sense to you (i.e. things the experimenters said or did, or questions we asked that seemed ‘out of place’?)
 4. To what extent do you feel this study was sexist?

Appendix J: Debriefing

Firstly, we will not be proceeding with the study any further. The group discussion will not take place, and this is actually the end of the experiment. There is more to this study than I have told you about so far. But before I tell you exactly what it is, I would like to explain why it is necessary in some kinds of psychological studies not to tell people all about the purpose of the study at the very beginning. In some kinds of studies, if we tell people what the purpose of the experiment is and what we predict about how they will react, then they might deliberately do whatever it is they think that we want them to do, just to help us out and give us the results that they think we want. If that happened, their reactions wouldn't be a good indication of how they might react in an everyday situation.

It is also possible that the opposite might occur and that people might think that if we predicted that they would do a certain thing, they might deliberately not do that to show us that we can't figure them out. That would also make the results invalid, because again what people would be responding to is what they thought we were looking for rather than responding naturally as they would in everyday situations.

This is not a problem in all studies. For example, in a study on learning, if you wanted to have people learn something and then test them, you might want them to know exactly what they were going to be asked to recall so that they would do their best and learn as well as they could.

Now I would like to explain exactly what we are trying to get at in this study, and why we couldn't tell you everything from the beginning.

The actual purpose of this experiment was to determine reactions to employment equity procedures. Such selection procedures are implemented by some companies and government departments with the intent of giving women and minority group members the same opportunities enjoyed by men and majority group members. Some studies have found that when women receive a job or promotion as a result of equity policies, their self-esteem often decreases and their evaluation of their own performance suffers as well. In addition, preferentially selected women have been found to behave more negatively toward other women, and were less likely to volunteer social support or mentorship to other women entering an organization.

To test this idea, we manipulated the selection procedure used to promote women into the high ability group. Sometimes we continued to use the biased logic score, and sometimes we used an equity strategy, where we added 10 points to women's scores. It was the goal of the present study to examine how this manipulation might influence women's perceptions of the procedure, their mood and behaviour.

Because responses to discrimination and employment equity are highly influenced by issues of political correctness, we were also interested physiological indices, namely salivary cortisol levels, as this stress hormone is sensitive to distress that is not amenable to volitional control.

One thing that you should know is that because we were interested in reactions to employment equity, we decided even before you walked into the lab today whether you were going to succeed or not. We decided in advance that half of the women would succeed and half of you would not,

and we predetermined that the men would not. We did this because we wanted to maintain experimental control. So even though we told you that you were chosen based on your score on the logic task or based on your score and your gender, this was not true. We have not tested your logic in this study at all. Your success or failure in this study is absolutely no reflection of you and your own skills, because this was decided before you even walked in here.

Given all of this, all of you will in fact be eligible for the \$100 lottery, and all of you will receive your experimental credit. We had led you to believe that some of you wouldn't be paid as much, or you might not get your credit, because this would make this study more like the real world in terms of the consequences of success or failure. But given that your position and tasks had nothing to do with your ability in the end, you are all eligible for the \$100 lottery and your experimental credit.

So, this study was not a test of your ability or your character. There were no correct responses. People's natural responses are what we are looking for. Also, we are not interested in the responses of any one individual. In order for us to draw any conclusions, we will combine the data that we got from you together with data from other people so that we can draw conclusions about the average person's reactions.

What this means is that we need to ask you not to say anything about the study to anyone else. If you talked to someone else about the study and told them all the things I just told you and then they were in the study, that would be just the same as if I told them at the beginning all about the whole purpose of the study; their reactions wouldn't be natural. If anybody asks you about the study, just tell them it was a study about logical ability and characteristics associated with logic. You're not lying, as this is really the context in which we are looking at these ideas. You don't need to make it a mystery, just something you've been asked not to talk about any more in case they bias their own reactions. If they want to know more, they can sign up for the study.

Do you have any questions? Comments? Suggestions?

Before you go, we would like you to give us your permission to use your data. Now that the study is over and you know what it is about, you are truly able to consent or not to us using the information you have given us.
give 2nd consent

Thank-you for your help. In the event that you have any concerns about this study, or anything you wish to discuss further, here are a list of people you can contact.

Give contact sheet / credits / fill out lottery stubs.

Contacts

The following people are involved in this research project and may be contacted at any time if you have any further questions about the project, what it means, or concerns about how it was conducted:

- Effie Helis (Researcher, 520-2600, X2683)
- Dr. K. Matheson (Faculty Investigator, 520-2684)
- Dr. H. Anisman (Faculty Investigator, 520-2699)

If you have any ethical concerns about how this study was conducted, please contact either of the following:

- Dr. Mary Gick, Chair of the Department of Psychology Research Ethics Committee at Carleton University at 520-2600 ext. 2664
- Dr. J. Logan, Chair, Dept. of Psychology, 520-2648

If you have any worries or concerns about your personal well-being, or study skills, you can contact the following services:

- Carleton University Health and Counseling Services 520-6674
- Student Life Services 520-6600

If you have any worries or concerns about your personal well-being, you can contact:
Carleton University Health and Counseling Services: 520-6674

If you are interested in skill development or career services for students at Carleton, you can contact: Student Life Services, 520-6600

Appendix K: Informed Consent for the Use of Data

The purpose of an informed consent is to ensure that you now understand the true purpose of the study and that you agree to allow your data to be used for research and teaching purposes. Because you were only told of the procedures and not the purpose of this study at the outset, we are now asking for your consent to allow your data to be used for research and teaching purposes.

Purpose: The true purpose of this study is to assess reactions to employment equity procedures. This research is attempting to look at how women react in terms of their emotions, support, and physiologically when they are selected or not because of either gender discrimination or preferential treatment.

Anonymity/Confidentiality: The data collected in this study are kept anonymous and confidential. The consent forms are kept separate from your responses.

Right to withdraw data: You have the right to indicate that you do not wish your data to be used in this study. If you indicate this is your choice, then all measures you have provided will be destroyed.

Signatures: I have read the above description of the study concerning women's responses to gender discrimination. The data in the study will be used in research publications or for teaching purposes. My signature indicates that I agree to allow the data I have provided to be used for these purposes.

Full Name (Print): _____

Participant Signature: _____

Date: _____

Researcher Signature: _____

Date: _____