Is it Sex or Personality?

The Impact of Sex-Stereotypes on Discrimination in Applicant Selection

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ABSTRACT

This paper investigates whether differential treatment of men and women in the labor market is due to unobservable differences in productivity or if it is motivated by a taste for discrimination. While studies on sex-discrimination typically control for human capital (formal education, job-experience etc.), there is usually no information on personality traits available.

We argue that personality might affect productivity just as human capital: For many traditionally male occupations (e.g. managers) stereotypically masculine characteristics – like being ambitious, competitive, dominant – seem to be required. On the other hand, stereotypically feminine characteristics – like being gentle, cheerful, friendly – are particularly acknowledged in traditionally female occupations (e.g. nurses). The central question of this paper is whether women are treated differently because *"they are different"* (they posses more *"feminine"* and less*"masculine"* personality traits on the average) or because they are discriminated against.

To gather the necessary data a field experiment is conducted. Job applications of candidates, who are equivalent in their human capital but differ in sex and personality are sent out in response to various job advertisements.

We found minor indicators that signaling a masculine personality slightly reduces unfavorable treatment of women in typically male professions; nevertheless discrimination in hiring prevails even after controlling for personality characteristics.

Keywords: Sex-Discrimination, Matching Process, Experimental Economics, Economic Psychology

JEL-Code: C93, J16, J70, J24, J42

1 Introduction

There is a large number of studies investigating sex-discrimination in the labor market. One common approach to test for discrimination is through a wage decomposition[1], that combines the estimated coefficients for male wages and the values of the explanatory variables for women (education, job-experience etc.). The difference to what women actually do earn in the labor market is assigned to discrimination. A disadvantage of this method is that it gives *"no conclusive proof of discrimination as long as all other possible relevant variables have not been identified"* (Bovenkerk, 1992, p. 4) because wage differentials might be driven by unobservable productivity differences.

Firth (1982) and Riach/Rich (1995) measured sex-discrimination via an experimental technique called Correspondence Testing. Although they adopted an undeniably very appealing methodology previously used for race-discrimination, they did not manage to exploit a particular advantage of experimental investigation: the possibility to *include usually unobservable characteristics* and test whether *these* can explain differences in labor market outcomes of men and women. Instead, they focused exclusively on individual characteristics like formal education and job-experience, which are typically available for wage-regressions and wage-decompositions respectively. As Heckman (1998) has noted, experiments of this kind do not provide new insights, since differential treatment might be due to differences in individual characteristics that have not been controlled for.

This paper goes one step further than previous experimental studies by adopting Correspondence Testing *to investigate the impact of usually unobservable variables.* When testing for discrimination it may not be sufficient to control for human capital only. In many attractive, high paid jobs specific personality traits seem to be particularly successful, which are more commonly associated with men than with women in general. For example, a successful manager is supposed to be ambitious, competitive and dominant, which are stereotypically masculine traits. On the other hand, in many traditionally female occupations stereotypically feminine characteristics are preferred. For example, a good nurse or kindergarten teacher seems to require feminine characteristics like being gentle, cheerful and friendly. So apart from human capital, personality might affect productivity just as well! Consequently when testing for discrimination, one would also want to control for personality besides typical hu-

man capital variables to have complete information on all productive characteristics of an employee.

This paper investigates whether women have less access to attractive, traditionally male jobs because their sex-stereotypical personality does not fit. If women as a group are assumed not to possess the required characteristics for a male occupation, they will not be hired for such jobs. In this study we contrast the labor outcomes of a woman who *can not be mistaken* for lacking the required masculine characteristics with those of a traditional female. If a woman can *demonstrate* that she does not correspond to her sex-stereotype and in fact does have the stereotypical personality traits of a man, she should be treated like him. A woman with *identical human capital* and *personality* should be equally productive as a man – there are no other variables conceivable that might determine productivity apart from knowledge and personality traits. Consequently, she should receive equal treatment. If such an equal treatment is not observable, we argue, discrimination has been documented.

To gain the necessary data an experiment is conducted. The labor market outcomes of three hypothetical job applicants with identical human capital are compared. One man and two women, the latter differing in their perceived gender role, are applying for the same jobs. One of the women is perceived as stereotypically feminine, the other masculine. The goal is to investigate, whether it is sex or personality what determines women's unfavorable position in the labor market. We find that even when controlling for personality discrimination prevails in the labor market.

The paper is organized as follows: the next section elaborates the theoretical background of the study, section three describes the design of the experiment, results are presented in section four and further discussed in the concluding section five.

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[1] See Altonji/Blank (1999) for a survey.

2 Theoretical Background

2.1 Measuring discrimination

A standard definition of discrimination is that *"individual workers who have identical productive characteristics are treated differently because of the demographic groups to which they belong"* (Ehrenberg/Smith, 1994, p. 402). The most well-known theoretical framework has been provided by Becker (1957) who modeled discrimination as the result of some majority group members' "taste" against working with members of a minority group.[2]

One common way to measure discrimination is to decompose wage differentials into explained components (differences in personal and job characteristics) and unexplained residuals by Blinder's (1973) and Oaxaca's (1973) method. Wages are estimated separately for individuals i of the different groups g (e.g. males and females):

$$W_{gi} = \beta_g X_{gi} + \varepsilon_{gi}, \qquad (1.1)$$

where g = (m, f) represents the two sexes; W_{gi} the wage and X_{gi} the control characteristics of an individual i of group g, β_g is a parameter.

The difference in mean wages then can be written as:

$$W_m - W_f = (X_m - X_f)\beta_m + (\beta_m - \beta_f)X_f, \qquad (1.2)$$

where W_g and X_g denote the mean wages and control characteristics of group g. While the first term stands for the effect of different background characteristics the second term represents the unexplained residual due to differences in the estimated coefficients for both groups and is often referred to as "discrimination effect".

Traditional labor market data typically provide information only on some productive characteristics like schooling, job-experience, age etc. So while the employer has exact knowledge on *all* the productive characteristics of an employee and sets the wage accordingly, the researcher usually possesses only the data for the above mentioned indicators of productivity. The lack of information on other variables that affect productivity can lead to an unexplained wage differential, that does not necessarily document discrimination. If the omitted variables correlate with sex, then the second term in equation (1.2) in fact captures

[2] If employers maximize utility not profits, they will not hire equally and possibly even more productive people from the minority group. Since this type of discrimination does not serve profit-maximizing goals, discrimination should not persist in the long run in a perfectly competitive market where non-discriminatory employers can produce at lower costs. As a result discriminatory tastes should vanish over time.

not only discrimination, but *unobserved group differences* in productivity as well.[3] Since it is not possible to distinguish between these two components, wage decomposition does not allow one to test for discrimination directly.

As a result it has been argued (e.g. by Altonji and Blank, 1999), that *experimental techniques* could examine *more directly*, whether labor market discrimination exists. Experimental methods to measure discrimination typically focus on the hiring process instead of earnings and follow one simple procedure: The labor market outcomes of matched individuals, who possess "identical productive characteristics" but come from different demographic groups, are compared. If the two are matched in all conceivable productive characteristics but are not equally successful, this can be assigned to discrimination according to above definition.

Although very appealing, this technique - as Heckman (1998) has pointed out - is likewise unable to prove discrimination if the experimental design has not been carefully elaborated. Heckman points out the difficulty to control for all possibly relevant productive characteristics. In the framework of the experiment this means that the tested employer is not provided with sufficient information on all relevant variables. If information on one variable is lacking, employers have to form expectations: When men are on average better than women in this dimension and no individuating information is available, then a man will be hired because his expected total productivity is higher. This argument follows the general idea of *statistical discrimination*, developed by Phelps (1972) and Arrow (1973), which posits that under conditions of incomplete information or uncertainty, individuals are judged on the basis of beliefs about group averages. Note that statistical discrimination is not regarded to be discrimination according to above definition because workers do not have identical productive characteristics on the average and employers only make profit-maximizing decisions under uncertainty – solely driven by productivity considerations but not discriminatory tastes.

In contrast to earlier experimental investigations this paper considers the often stated concern that convincing evidence for discrimination is still missing and that it may not only be human capital variables, like schooling and experience, that determine the productivity of an individual. We argue that if it is not only human capital, it must be personality that affects productivity as a second component. Many researchers, e.g. Schein (1973), have emphasized, that different personality traits are considered successful in different occupations. Consequently if an experiment does not only control for schooling and job-experience but for per-

[3] Note that in fact the first term of equation (1.2) can be affected by discrimination too: pre-market discrimination can have a strong effect e.g. on the human capital of individuals.

sonality as well, there will be little room left for statistical discrimination. After all, what could influence productivity apart from human capital and personality variables?

The goal of this study is to conduct an experiment where applicants are not only matched in human capital but also in personality traits. If differential treatment remains, then it really can be assigned to discrimination, since all relevant characteristics have been controlled for. In the following section the mechanism how personality traits affect the hiring process is discussed in detail.

2.2 Personality and the matching process

2.2.1 Categorization of personality traits by gender

Although the words *sex* and *gender* are often used interchangeably, they actually have distinct meanings. While *sex* refers to the biological state of being male or female, *gender* points to stereotypical roles and personality traits assigned to men and women by society.

Stereotypical characteristics are generally attributed to groups of people with certain observable demographic features (e.g. biological sex or ethnic background) to structure complex data and to simplify the cognitive processing of information (Heilman, 1995).

Table 1 gives an overview of sex-stereotyped traits that constitute gender. Believes about the nature of the typical man and woman serve as indicators for masculinity and femininity. Generally, it can be said that men are considered task-oriented and active while women are perceived as emotional and expressive. A “typical man” is regarded to be ambitious, analytical and assertive, while a “typical woman” is deemed affectionate, cheerful and child-loving.

The problem about stereotyping is twofold: On the one hand stereotypes give rise to the belief that all individuals within a social category can be viewed as the same, which neglects the heterogeneity *within* the group. On the other hand there is much skepticism that sex-stereotypes actually reflect reality even on the average. In fact clear evidence on the empirical value of sex-stereotypes is lacking.[4] For these two reasons sex-stereotypes are not perfect predictors for individuals’ personality traits: A man can be very child-loving and understanding (feminine), while a woman can be assertive and competitive (masculine). That means that one’s gender does not have to match one’s sex and biological sex does not *deter-*

mine gender.[5] Instead, all combinations of sex (male and female) and gender (masculine and feminine) are conceivable. This is crucial to the study.

Masculine personality traits	Feminine personality traits
Acts as a leader	Affectionate
Ambitious	Cheerful
Analytical	Compassionate
Assertive	Eager to soothe hurt feelings
Competitive	Gentle
Dominant	Loves children
Individualistic	Sensitive to the needs of others
Makes decisions easily	Sympathetic
Strong personality	Understanding

Table 1: Sex-stereotyped traits constituting gender. Selected items from the Bem Sex-Role Inventory (BSRI) for measuring psychological gender identity (Bem, 1974).[6]

2.2.2 Categorization of occupations by their sex-types

Just as individuals are categorized by their sex and gender role, occupations can be distinguished by their sex-type. Economists call an occupation "feminine" when the large majority of employees is female.[7] Some psychologists stress an additional inherent characteristic of normative belief that reflect such unequal proportions as *"how it should be"*. (Merton in Schein, 1973, p. 95)

There is clear evidence for horizontal and vertical segregation in Austria like most western countries. The segregation index for the year 1993 is 56 % (Weichselbaumer 1999, p. 71), which means that 56 % of women (or men) would have to change occupations, so that an identical distribution of sexes could be achieved. Traditionally female occupations are primarily caring and cleaning jobs (e.g. cleaning personnel, hairdressers, housekeepers, nurses,

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[4] For a review of studies testing the empirical value of sex stereotypes see e.g. Heilman (1995).
[5] Feminist scholars e.g. in philosophy and rhetorics understand gender as a performative act constituted through „doing" or „enacting gender". (Butler, 1990; Ussher, 1997)
[6] Out of approximately 200 human traits Bem extracted those, that were considered as differently socially desirable for men and women. The BSRI consists of 20 „feminine" and „masculine" characteristics each - supplemented by 20 „neutral" characteristics - considered as equally socially desirable for men and women. In Bem's understanding femininity and masculinity constitute two independent dimensions and not opposites on a bipolar continuum – therefore an individual can score high in masculine and in feminine characteristics at the same time. If a person is equipped with approximately similar amounts of feminine and masculine traits, he or she is called "androgynous" according to Bem.
[7] The cut-off point is usually drawn at the proportion of one sex of 70 % or 80 %. (Wootton, 1997, p. 19).

textile workers, welfare workers) while traditionally male occupations are often characterized by the use of physical labor or financial/political power (e.g. electricians, mechanics, architects, lawyers, politicians, managers).

Since some of the best paid jobs (architects, lawyers, managers) can be found within the second category, the question arises, why women tend to be clustered in unattractive, low paid occupations with little career opportunities, while the more attractive ones seem to be reserved for men.

Certainly sex-discrimination can be one reason for the sex-segregation we observe in the labor market, but there is a number of other relevant factors as well. For example, differences in human capital and in preferences for work characteristics (work environment, flexible hours, compatibility with family obligations etc.) crucially affect one's productivity and suitability for a job.

In this study an elaborate experimental design allows to isolate the role of discrimination in sex-segregation while holding all other factors constant.

2.2.3 The role of personality traits in the hiring process

While standard economic theory often supposes that solely the matching of the human capital required for a job with the education and job-experience of an applicant is relevant in the hiring process, psychological literature can challenge our thinking.

A number of psychologists (e.g. Heilman, 1984; Riehle, 1995) have emphasized, that one factor determining who is hired for a job is "*the degree of congruence between the gender of the applicant and the sex type of the job*" (Glick et al., 1988, p. 178). For example Schein (1973) documented in her much cited paper, that managers (holders of a traditionally masculine job) believe that to be successful in their occupation it takes more of those characteristics typically ascribed to men than to women in general.

While in traditionally male occupations (such as management) employees are expected to obtain traditionally masculine characteristics (e.g. being ambitious, analytical, assertive, dominant), the requirements for traditional female jobs seem to be very different. Hiring an assertive person as a nurse is usually not considered a promising choice; the ideal employee for such a position is regarded to be sensitive, sympathetic and gentle – in short: feminine.

We infer from this, that *not only human capital* but as well *matching personality traits* increase workers' productivity at a job.

Situation of incomplete information

When personality is taken into account and a vacant position has to be filled, productivity of an applicant can not be predicted with certainty, because the employer faces incomplete information on two ends: Not only does she often miss reliable information about which personality traits are productive on a job and has to use stereotypes to infer from instead.[8] The personality traits of applicants are usually not even observable at the point of hiring. While it is possible to achieve knowledge on the productivity of certain personality traits in particular occupations in the long run, the lack of information about an individual applicant is a more severe problem leading to statistical discrimination. To form expectations about their potential future employees, entrepreneurs will make use of observable characteristics such as biological sex (or race) that are assumed to correlate with the unobservable variables. This means employers draw on sex-stereotypes to predict the productivity of an applicant on the job. Consequently a randomly chosen biological woman will be expected to have more feminine and less masculine characteristics than a randomly chosen man.[9] As Heilman has stated in her Lack of Fit Model (1983), this leads to the fact that under incomplete information women are perceived as less suitable for typically better paying male jobs, although there are many individual women who possess the required male characteristics.

Since formal education and to some degree job experience is often observable to an employer by means of school reports and CV, the important contribution by Heilman to the theory of statistical discrimination is that personality characteristics could be one decisive unobservable factor that affects productivity and actually does need to be estimated. While all formal qualifications can be tested more easily, personality traits are difficult to evaluate. This might therefore be the crucial factor driving statistical discrimination against women.

Let us shortly summarize the matching process when the importance of personality traits and the effect of imperfect information is taken into account. In an occupation with a large majority of men as employees, masculine characteristics are usually perceived as successful. If can-

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[8] Chiplin and Sloane (1976) have argued, that usually personality characteristics of previous job-holders (being white, male, middle-aged) are considered "successful", while in fact they do not necessarily have to be productivity relevant.

[9] One might presume, that *incorrect* „stereotypes" will be revised through Bayesian updating in the long run just as incorrect beliefs. This is conditional on the fact that members of the incorrectly assessed group have a chance of proving their "*true nature*" and do not adapt to the stereotype. But women confronted with sex-stereotypes might have an incentive to behave in socially more rewarded feminine ways, which means that stereotypes have a self-enforcing character. As a result no objective assessment of *real and stable traits* can take place.

didates are equivalent in formal qualification (e.g. schooling, experience), the appropriate personality of the applicants becomes crucial. If there is no individuating information on personality traits, the biological sex is used as an indicator to infer from. An average man is presumed to be more likely to possess the required masculine characteristics and therefore - everything else equal – receives preferential treatment.

A number of studies (Cohen/Bunker, 1975; Rosen/Jerdee, 1974; Cash et al., 1977) have documented, by means of laboratory experiments, that the described matching between sex-stereotype and sex-type of a job is taking place: Equally qualified women are more successful applying for traditional feminine jobs, and men in masculine jobs.[10]

Situation of complete information

The need to make use of stereotypes only exists in a situation of incomplete information. If individuals have features that clearly distinguish them from their stereotype, their difference from the stereotype is well recognized.[11] So when a woman, who is seeking a male position, can give individuating information that she does not correspond to traditional sex-stereotypes, she should face better chances of actually getting the job. Laboratory studies (Glick et al., 1988; Dipboye/Wiley, 1977; Heilman/Saruwatari, 1979) and an ex-post evaluation of hiring decisions (Van Vianen/Willemsen, 1992) have supported the hypothesis that appearing masculine increases women's chances to be hired in a masculine occupation. This lets us presume that in traditionally masculine occupations there is a positive effect from masculinity which is due to a reduction of statistical discrimination.

Violation of one's stereotypical sex-role

While signaling a masculine gender identity reduces uncertainty about an applicant's personality and thereby statistical discrimination, there is an antagonistic effect conceivable at the

[10] The results of an audit study by Neumark et al. (1996) could be interpreted along similar lines. They found that men were more successful applying as waiters for high-price restaurants, while women received more job offers at low-price ones. It is most likely, that the different sex types of the jobs were responsible for this outcome. Levinson (1975) conducted another field experiment, where equally qualified male and female students applied for masculine and feminine jobs. It was found that women suffered clear-cut discrimination in 28 % when applying for a masculine job, while men's chances for an out-of-role job were even lower – they were clearly discriminated in 44 % of the cases.

[11] As Fiske et al. (1991, p. 1050) have emphasized: „Stereotyping is most likely when evaluative criteria are ambiguous" and „[the] most open to interpretation".

same time. A number of studies show that women who violate their gender role are *less liked* and *rated less favorably*.[12] This could be described as a "distaste against *masculine women*" in the sense of Becker's "taste for discrimination"-model: Employers might not only have a distaste against women in general, but even more so against women who violate traditional gender roles.

The issue of interest in this study is, which of the two effects (i.e. reduction of statistical discrimination on the one hand, increase of a taste for discrimination on the other) dominates or if they cancel each other out. While it might be beneficial to signal masculine characteristics since they are required for attractive male jobs, female masculinity could also evoke a taste for discrimination. This dilemma that women are caught in has best been described by the U.S. Supreme Court in the law case Hopkins vs. Price Waterhouse, where Ann Hopkins was denied partnership, because she was considered too "macho" and little lady-like: *"An employer who objects to aggressiveness in women but whose positions require this trait places women in an intolerable and impermissible Catch-22: out of a job if they behave aggressively and out of a job if they do not."* (Hopkins, 490 U.S. at 295 in Case, 1995, p. 45)

2.2.4 Hypotheses

In the following we shall first assume that there is no discrimination (motivated by taste) and that sex-stereotyped personality traits are productive. We have three types of candidates applying for a job: a male, a feminine female and a masculine female, all with the same human capital. The male and the masculine female are equally assertive, competitive and dominant, while the feminine female is more affectionate, cheerful and gentle. Who will be hired for what kind of job?

In a situation of *incomplete information*, where gender identity is not observable, the male will receive preferential treatment in a *masculine job*, while the two women will be treated the same. This is because the employer can not distinguish between the two women. Masculinity is highly valued in the job, but the masculine female cannot be identified as providing the required characteristics and suffers statistical discrimination. In a *feminine job* on

[12] For example assertive women are less popular, women supporting equal rights are considered less likable and feminists are rated less favorably than housewives. For a review of these studies see Riehle (1996). Laner and Laner (1980) argue that one of the reasons why gays and lesbians are sometimes disliked, is due to the fact that they more commonly violate traditional gender roles.

the contrary, where feminine characteristics are required, the masculine female *benefits* from statistical discrimination. Although in fact she would be less suited for the job, since she is lacking the feminine characteristics, she will be treated like the feminine female, because the employer just uses sex as an indicator for gender and expects both to have equivalent personality traits. The two women will be more successfully applying for this job than the man.

What if the masculine female adopts visual and other cues to *indicate her gender identity*? If she manages to give *individuating information* that distinguishes her from the stereotypical woman, she should be treated like a man. After all she possesses the same masculine characteristics as her male counterpart and can be identified as doing so. In such a situation of complete information the masculine female and the man should be treated more favorably than the feminine female in a masculine job, while in a feminine occupation the two should be at a disadvantage against their feminine competitor.

If, on the contrary, the masculine female is treated differently than her male competitor even though she has and reveals identical human capital and personality traits, this pattern cannot be reconciled with statistical discrimination but only with a taste for discrimination.

3 Empirical Study

3.1 Methodology

As has been noted earlier, one common approach to test discrimination experimentally is to contrast the experiences of one individual with those of another with identical characteristics, when the two are only distinguishable by the different demographic groups they belong to. If two individuals can be identified as identical apart from their sex or ethnic background, differential treatment can be assigned to discrimination by definition. Experiments to measure sex or race-discrimination[13] can be conducted in laboratory and real life settings. While psy-

[13] In general similar experimental techniques can be used to investigate sex or race-discrimination. Novelist John Howard Griffin conducted one of the first experiments to investigate race-discrimination: In 1960 he published his book “Black Like Me” (Griffin, 1960), where he reported the experiences he encountered in America’s Deep South after taking on an Afro-American look by using some skin-color device. 25 years later Günther Wallraff repeated a similar experiment in Germany, when he adopted the looks and name of a Turkish citizen and summarized his observations in his book “Ganz Unten” (Wallraff, 1988). Both of these reports documented unfavorable treatment based on ethnic origin and had a big impact on public opinion, since an immediate comparison was given: The treatment these writers received changed dramatically after they had manipulated only one variable: their skin-color (and perceived ethnic background, respectively). Even though these two experiments were executed by writers, the methodology is sound and similar techniques have been used for scientific purposes.

chologists have a much longer tradition[14] in experimental investigation of sex-discrimination than economists, they have usually restricted themselves to laboratory studies. Economists, on the other hand, have conducted field experiments predominantly to examine race-discrimination[15].

One general drawback of previous experiments measuring sex-discrimination is that testers usually have not been provided with sufficient information on all relevant productive characteristics and had to form expectations as a result. Consequently, differential treatment might have been due to statistical discrimination and not discrimination as has been claimed.

Laboratory Studies

The first widely cited laboratory experiment investigating the impact of sex on hiring decisions was executed by Fidell (1970). She asked different psychology institutes to evaluate hypothetical applicants who were described in a short written paragraph. The occupation in question, the job of a department member in psychology, was a male dominated one. It was found that when the candidate was given a female name, she was systematically offered a lower position than a male. This study was repeated by various authors for different types of occupations. A meta-study by Olian et al. (1988) over 19 experimental studies (from which 75 % of the examined occupations were traditionally masculine ones) found that men do receive preferential treatment in hiring, but sex accounts for only 4 % of the variance and is – not surprisingly – of far less importance than variables like education and experience.

Cohen and Bunker (1975), Rosen and Jerdee (1974), Cash et al. (1977) have carried out similar laboratory studies investigating *male* and *female* dominated occupations to test whether a matching of an applicant's sex and sex-type of a job is taking place when a position

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But not only skin color has been artificially altered in the past: A number of historical records exist on women, who for various reasons adopted male identities. Often a male identity gained them not only respect, but access to jobs in masculine fields, that at times were the only ones which allowed them to financially self-support themselves. Furthermore, it provided the possibility to travel. See Dekker/van de Pol, 1990; Wheelwright, 1990.

[14] In 1968 Goldberg conducted his famous experiment, where he found that the same articles were received more favorably when the author's name indicated a male writer than when a female name was given. The result was, however, significant only for those articles covering a traditionally masculine topic and for one of two dealing with a gender-neutral issue. There was no significantly different treatment for authors who wrote on a feminine topic. These results – known as the Goldberg-paradigm – motivated a large body of research repeating the original study. Swim (1989) conducted a metastudy over 123 experiments and found – contrary to the original result – a negligible effect of sex in performance evaluation.

[15] While there are only three experimental studies that examine sex-discrimination within economics (Firth, 1982; Riach/Rich, 1995; Neumark 1996), there is a large number of experiments investigating race-discrimination in a whole range of different contexts (see, e.g. Firth, 1981; Yinger, 1986; Newman, 1978; Riach/Rich, 1991b; Cross et al. 1990; Turner/Fix/Struyk, 1991; Kenney/Wissoker, 1994).

has to be filled. Their results show that women equally qualified as men are preferred for traditionally female jobs and vice versa for male jobs. Gerdes and Garber (1983) as well as Heilman (1984) argue that this pattern only holds true as long as there is some ambiguity about the productivity of the applicants. If the candidates can clearly demonstrate to provide the required characteristics and proof their previous success via a CV, then no stereotyping is necessary and women are treated like their male competitors.

These results show that there *is* symmetrical, differential treatment of men and women in applicant selection: Men receive preferential treatment in masculine and women in feminine occupations. The last two authors suggest that this pattern is due to statistical discrimination though – i.e. due to the belief that, on average, women and men fit best into different types of jobs – and not due to a taste for discrimination: If there are no doubts about an applicant's productivity, sex apparently does not matter.

An interesting result emerged from a study by Heilman and Saruwatari (1979) who tested for the effects of physical beauty. Beauty increased men's employment chances consistently in all types of occupations. On the contrary, it proved to be an advantage for women only in feminine occupations, while their employment opportunities in male occupations were actually lowered. A covariance analysis showed that, in fact, it was the perceived *gender identity* mediated by the physical looks of female applicants, that was driving the result: An attractive woman was perceived as *more feminine* which increased her chances in a feminine but reduced them in a masculine job in comparison to a less attractive female.[16]

From this finding can be concluded, that *gender* as a set of personality traits plays a role in the hiring process which has been postulated earlier.

Glick et al. (1988) have tried to examine the effect of gender on applicant selection via an interesting laboratory study. By providing information on an applicant's summer job, campus work-study job and extracurricular activity experiences, they attempted to indicate that the applicant possessed either stereotypically masculine, sex-neutral, or feminine personality traits. They found that masculinity increased women's chances in male jobs, but could not completely eliminate differential treatment. Since the information given in the experimental material (resumé) was extremely brief, the possibility of mere statistical discrimination cannot be dismissed though[17].

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[16] On the contrary, Marlowe et al. (1986) observed that women of low physical beauty received the worst treatment of all applicants even in masculine jobs.

[17] All information given in the resumés was that the applicant was a recent college graduate who financed 30 % of his or her own education and a short list of activities.

Results from laboratory studies obviously cannot be reliably transferred into real life. In the laboratory the test person might be more supportive of women's equal rights, not only to give a socially desirable response, but also because the decision is "costless" - the test person does not have to live with the consequences of the own decision, i.e. does not have to work with the chosen employee he actually dislikes. On the other hand there is a financial motive in real life that does not exist in the laboratory: In real life the employer has a much stronger financial interest to correctly evaluate the true productivity of a potential candidate, and if he finds that the female is highly productive, he should hire her. On the contrary, the incentive of evaluating the productivity in a laboratory situation without any financial reward is rather low, which might lead to more traditional hiring recommendations.

Consequently, it is unclear in which direction real life results might deviate from laboratory studies (if they do) and the goal of this study is to examine how employers evaluate candidates of different sex and gender *in real life settings* for masculine and feminine jobs, when provided with *detailed information* on personal characteristics (human capital, personality), where statistical discrimination can be dismissed.

3.2 Field Experiment

Field experiments can either investigate whether equally qualified people of different demographic groups are discriminated in getting an interview (Correspondence Testing), or examine the entire hiring process (Audit Studies).

"Correspondence Testing", the method used in this paper, was first applied in 1970 by Jowell and Prescott-Clarke to measure race-discrimination (Riach/Rich, 1991b, p. 239) and later adopted by Frith (1982) and Riach/Rich (1995) to examine sex-discrimination. The procedure is the following: Matched letters of applications are sent out in response to job advertisements. The job seekers exhibit *identical productive characteristics* (e.g. age, qualification, job-experience), but have a *male* and *female name* respectively. If all applicants are invited to a job interview[18], this is interpreted as a case of equal treatment, if one applicant is invited but

[18] Obviously testing whether somebody gets invited for an interview captures differential treatment at the initial stage of hiring only, while some employers might delay their "discriminatory activity" until later. Still, the possibility to receive a job offer is conditional on being invited to an interview, which means that differential treatment in hiring has to be equal or larger to what is measured by Correspondence Testing (Riach/Rich, 1995). Researchers at the Urban Institute (e.g. Kenney/Wissoker, 1994) have extended this method to the next stage of the hiring process: In their "Audit Studies" they have not only sent out written applications but also matched pairs of real applicants of different ethnic groups who actually met employers for an interview. This allows to

another is not, this is assigned to “discrimination”. Since both previous experiments have been conducted in England and Australia, where relatively short résumés are common, the employers were not supplied with very detailed information about the candidates and might have been forced to form expectations on the value of variables that have not been controlled for. In particular there was no information on personality traits, so the significantly differential treatment of men and women, that was found, might be due to statistical discrimination.[19] In Austria, on the contrary, a more detailed set of documents is required to be considered a serious applicant. Consequently, this vast amount of information largely cancels out the possibility of statistical discrimination. Furthermore, in this study strong indicators for personality traits were given, attempting to provide an entrepreneur with complete information in *all* relevant dimensions.

3.2.1 Application material

To meet Austrian standards it was necessary to put together application material including not only a letter of application but also an elaborate curriculum vitae, a fake school report and a photograph. The failure to provide letters of references of previous employers did usually not become evident since the fake applicants were still employed in their first job after a number of years in most occupational types. Obviously the need to attach photographs of equally good looking applicants made the preparation of the application material considerably more demanding, but also served as an advantage for the research question: Physical looks are one of the clearest indicators for gendered personality traits and could be used as a signal accordingly.

To avoid any detection, names of employers were avoided in the CVs and job-experience was formulated in a rather general way. All candidates applying for one particular occupation had identical human capital and obtained their education in exactly the same school-type only at different locations. The school marks in the attached school reports were identical for all applicants in those subjects of primary relevance for the jobs under investigation and equal on average in subjects of lower interest. The photograph was attached in the

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observe discrimination in actual job-offers, although it suffers from the disadvantage that real life applicants which meet all the required criteria are hard to find. Furthermore, it is impossible to control for differences in real life interactions that might take place during an interview. Neumark et al. (1996) conducted the only small scale study adopting this method to measure sex-discrimination in restaurant hiring.

[19] While Frith (1982) only examined the market for accountants, Riach/Rich (1995) examined seven different occupations in total. They found that two of the most masculine jobs (computer analyst and gardener) were also those where women received significantly unfavorable treatment.

form of a (digitally manipulated) image color-printed on the CV, which is a common cost-saving practice used by Austrian job-applicants.

3.2.2 Applicants

Application material was created for three fake applicants: For one man and two women, the latter differing in their perceived gender role. While all three applicants obtain identical human capital, the two women vary in their personality: One of them is constructed as a stereotypically feminine woman, the other masculine. [20]

3.2.2.1 Gender Types

The different gender roles of the two female applicants were indicated by non-human-capital-relevant items in the CV (e.g. hobbies, photograph), while all the human-capital- as well as non-gender-relevant aspects that might influence the probability of being invited to an interview (e.g. looks), were held constant.

Indicators for gender identity	**masculine**	**feminine**
Choice of font, layout	plain	nice, playful
Hobbies	rock-climbing, canoeing, playing drums, motorcycling	drawing, designing and making of clothes
Physical looks (indicated through photographs)	short, dark hair, broad shoulders, business jacket	long, blond hair; flowing clothes
International experiences[21]	motorcycle-tour through Australia for one and a half years (jobs in Perth, Alice Springs, Melbourne, Darwin)	stayed in Portland, USA, as an au-pair girl for one and a half years

Table 2: Indicators for female applicants‘ gender identity. (See Appendix: Indicators for gender identity for details)

[20] A number of reasons is responsible for our choice, that the gender identity of the male was not varied accordingly. Firstly, the primary interest was whether sex-stereotypes put women in a unfavorable situation in the labor market. The question whether men might be discriminated in feminine occupations seemed of less practical importance, since these are typically less attractive and of lower pay. Secondly, a feminine looking man evokes much more social rejection than a masculine women (Levinson, 1975). While there is some understanding that women might „aspire“ to masculinity (since stereotypically masculine characteristics like strength and leadership abilities are commonly perceived as more positive traits), this tolerance seems to be lacking when a man renounces his male privileges to appear feminine. Last but not least „out-of-role“ males are more often perceived as gay than out-of-role women as lesbian (McCreary, 1994). This association of gender and sexual identity would have made it impossible to disentangle the discriminatory effects caused by the violation of stereotypical gender and sexual orientation norms.

[21] This information was only given for applicants in accounting, since they were of older age and consequently the fact that all of them had international experiences was less striking.

The application materials allowed us to use criteria listed in Table 2 as indicators for the two females' gender identities. While the manliness of the masculine female was indicated via her good but strikingly masculine looks, hobbies and style, the feminine applicant appeared much more playful and traditionally feminine in her leisure time activities and looks.

3.2.2.2 Pretest: Bem Sex-Role Inventory

A pretest was conducted to verify the successful representation of the two females' gender identity and to ensure that the differences of all job-applicants in their self-presentation (in particular by the photograph) did not cause distortions in general favorability.

119 business students with an average age of 24 years were asked to rate one applicant each - represented by his or her CV - according to the Bem Sex-Role Inventory (BSRI) (Bem, 1974), that provided a sufficient tool to test the dimensions „femininity", „masculinity", and „social desirability". Each of the three dimensions given by the BSRI consists of 20 items which were evaluated on a 7-point scale.

Two items were important to be added to the social desirability dimension provided by the BSRI: Beauty has repeatedly been shown to have major impacts on labor market decisions (Biddle and Hammermesh, 1994, 1998; Averett and Korenman, 1996), similarly, "making a competent impression" seemed important to include in the pretest as well to ensure that photographs and other variations in the CVs did not cause one applicant look relatively more proficient than others.[22]

As Table 3 indicates, the two female applicants were rated differently in the dimensions of masculinity and femininity, while the scores for social desirability are relatively similar for all candidates.

Comparing the two females along the dimensions indicating gender identity, the feminine female achieved significantly higher scores in femininity (the t-test allowing to reject the H_0 hypothesis of equal means at the 1 % level) and the masculine female in masculinity. (Since the masculine female's scores of masculinity were not normally distributed a non-parametric Kolmogoroff-Smirnoff test was conducted rejecting the hypothesis that both sam-

[22] While the BSRI was originally used to provide information about the self, it served to gain knowledge on how a particular other is perceived in the present study. Devlin (1997) adopted the test for the same purpose.

ples are drawn from the same population at the 1 ‰ level.)[23] Comparing the scores of all three candidates on social desirability we find that we can not reject the hypothesis of equal means at the 5 % significance level.[24]

		male	masculine female	feminine female
Masculinity	mean	---	**5.37**	**4.3**
	sd		(0.56)	(0.99)
	n		40	34
Femininity	mean	---	**3.84**	**4.47**
	sd		(0.8)	(0.71)
	n		40	34
Social	mean	**4.75**	**4.57**	**4.54**
Desirability	sd	(0.65)	(0.63)	(0.57)
	n	45	40	34

Table 3: mean from 7-point scale, standard deviation and number of observations for the different dimensions of the BSRI for all three job-candidates.

3.2.3 Occupations

The occupations investigated in this study where those for which a high enough labor demand existed so that a sufficient amount of standardized applications could be sent out in response to job advertisements. The possibility to create convincing application material (e.g. by providing school-reports) and to submit written applications (in many occupations phone calls are required to test the verbal fluency of applicants) further reduced the range of testable occupations.

The jobs of network-technician, computer programmer, accountant and secretary fulfilled all these requirements and allowed us to test two traditionally masculine and two femi-

[23] The values of femininity and masculinity are not reported for the man, since it seems unclear how to interpret them for different sexes. To be equally assertive might be considered more striking on a women and therefore lead to higher scores. In fact the masculine woman received significantly higher scores in masculinity and significantly lower ones in femininity than the man. This means for the experiment to be on "the safe side": If the masculine woman is treated more unfavorable than the male in masculine jobs it can not be due to a lack of masculinity!

[24] man - masculine female: $t = -1{,}426$; $t_{(83;5\%)} = -1{,}666$
man - feminine female: $t = -1.243$; $t_{(77;5\%)} = -1{,}667$
masculine - feminine female: $t = 0{,}631$; $t_{(72;5\,\%)} = 1{,}668$

nine jobs. Table 4 presents the sex distribution, rate of unemployment and average income of the occupations contained in this study.

Sex-type of occupation	occupation	proportion of females	unemploy-ment rate	average income in Austrian Schillings
Masculine occupations	network-technician	13 %	2 %	23,312
	computer programmer	13 %	2 %	23,312
Feminine occupations	accountant	77 %	4.3 %	15,254
	secretary	97 %	6.2 %	15,605

Table 4: Female representation (Source: Austrian Census 1991), unemployment rate and average income of tested occupations in the Austrian labor force calculated from Austrian Micro-Census 1997. The occupations network-technician and computer programmer were not classified separately in the census, but constitute one subcategory of „computer-technicians".

3.2.4 Sending out the applications

From early 1998 to fall 1999 the Saturday issue of the Austrian newspaper „Kurier" was examined weekly for relevant job-announcements. The „Kurier" is the central source for job-advertisements in the Greater Vienna area and beyond, which is the largest Austrian labor market. Applications of all three candidates were sent out to all vacancies that invited written applications, except those where the selection process was carried out through a personnel recruitment agency.[25] Enterprises advertising jobs repeatedly were contacted only once to avoid detection. For the same reason the applications of the three different applicants that were sent to one firm, were posted on different days of the week (Fr., Mo., Tue.), rotating whose application was sent out first and last to avoid any systematic error.

If an entrepreneur was interested in one of the applicants, he or she could be contacted either through a Viennese address, or by leaving a message on an answering machine. When one of the applicants was invited to an interview, the proposed appointment was canceled to avoid any inconveniences on the firm's side. [26]

[25] Recruitment agencies distribute their applicants to a number of different employers which does not allow to assign their response to one identifiable vacant position.

[26] Correspondence Testing does impose some costs on the employer as the resumés of applicants who are actually not available have to be evaluated, but – as Riach and Rich (1995, p. 347) have put it – these costs are *"... in a manner which is not infrequent in the labor market, as participants carry out the process of search and acqui-*

4 Results

4.1 Unequal treatment in job offers

First, the experimentally gained data is presented to give a systematic comparison of the success-rates of different applicants (m = male, mf = masculine female, ff = feminine female) for the different tested occupations.

4.1.1 Masculine occupations

When gendered characteristics matter and masculine traits are beneficial in masculine occupations, then absent of discrimination the masculine female, who proves to obtain the classic masculine characteristics, should be treated like the male applicant. On the other hand, the feminine female should fare less successfully since she does not provide these required traits. Her unfavorable treatment would be based on a profit-maximizing decision and could not be assigned to discrimination. Consequently, when personality matters and there is no discrimination, we expect our applicants to be treated according the following order: m = mf > ff. Different results either imply, that personality traits are *not relevant* (when all people are treated the same: m = mf = ff), or that real discrimination exists (when the male and masculine female are treated differently: m ≠ mf).

In the case of *network technicians* the man proved to be the most successful, followed by the masculine female and the feminine female. From the 117 enterprises tested, 73 % contacted the male applicant, 63 % the masculine female and 58 % the feminine female for an interview.

The results are set out in Table 5, which allows for a pairwise comparison of applicants for every occupation tested. The top line of each job category always compares the results of the male applicant with those of the masculine female, the second line the male with the feminine female and the bottom line the masculine with the feminine female.

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sition of bargaining chips to negotiate with current and prospective employers." For a more exhaustive discussion on the ethical question of deception in social research see Riach/Rich (1991a) and Goode (1996).

1 Applicants	2 both failed in %	3 both succ. in %	4 1st invited, 2nd not (discr. ag. 2nd) in %	5 2nd invited, 1st not (discr. ag. 1st) in %	6 net-discr. against 2nd in % (4) – (5)	7 χ^2	8 sig.
A) masculine occupations							
Network technicians							
N = 117							
m – mf	20.51%	56.41%	16.24%	6.84%	9.40%	4.48	*
m – ff	22.22%	52.99%	19.66%	5.13%	14.53%	9.96	**
mf – ff	29.91%	51.28%	11.97%	6.84%	5.13%	1.64	
computer programmers							
N = 88							
m – mf	9.09 %	76.14 %	5.68 %	9.09 %	- 3.41 %	0.69	
m – ff	7.95 %	70.45 %	11.36 %	10.23 %	1.14 %	0.05	
mf – ff	10.23 %	76.14 %	9.09 %	4.55 %	4.55 %	1.33	
B) feminine occupations							
Accountants							
N = 149[27]							
m – mf	46.31 %	25.50 %	14.09 %	14.09 %	0 %	-	
m – ff	42.28 %	24.83 %	14.77 %	18.12 %	- 3.36 %	0.51	
mf – ff	48.99 %	31.54 %	8.05 %	11.41 %	- 3.36 %	0.86	
secretaries							
N = 123							
m – mf	47.97 %	14.63 %	5.69 %	31.71 %	- 26.02 %	22.26	**
m – ff	49.59 %	13.82 %	6.50 %	30.08 %	- 23.58 %	18.69	**
mf – ff	44.72 %	34.96 %	11.38 %	8.94 %	2.44 %	0.36	

Table 5: Results of Correspondence Testing for all occupations.

Where there is one degree of freedom, the critical value of chi squared at the 5 % level of significance is 3.84 (at the 1 % level $\chi^2 = 6.63$). One star (*) denotes that one person is treated unfavorably more often than the other at the 5 % level, two stars (**) at the 1 % level.

[27] This data contains 16 observations of firms anonymously advertising by use of a chiffre-number. Since these did not allow to associate the invitation for an interview with job requirements given in the ad, they have been rejected for further analysis. Interestingly, anonymous employers show no significantly different behavior, although their hidden identity would allow them to discriminate at lower costs.

Looking at the results for network technicians and comparing column 4 and 5 in Table 5 we find, that the second person is always treated unfavorably more often than the first which leaves us with a positive net-discrimination against the second person. Nevertheless this difference is only *significant* when comparing the man with the women – but not when comparing the two women with each other. Although the masculine female appears somewhat more successful than the feminine (she suffers a lower net-discrimination in comparison to the male), the hypothesis that the two women are treated the same cannot be rejected (see line 3). This implies, the applicants have been treated in the following order: m > mf = ff.

In the occupational group of *programmers*, applicants in general turned out overwhelmingly successful. With a probability of more than 80 % an applicant was invited to a job interview, which means that our candidates were considered sufficiently attractive for almost any job-opening. Out of a number of 88 firms 81 % contacted the male, 85 % the masculine female and 81 % the feminine female for an interview. Even a systematic reduction of the applicants' human capital (from a high to a poor university degree to eventually holding a moderate high school degree only) did not cause any change in employers' behavior. No differences in treatment have been observed, all applicants have been doing equally well: m = mf = ff.

The reason for this high general acceptance is to be found in the extremely tight labor market in this occupation, caused besides others by Y2K. While with an excess supply of workers a taste for discrimination is not punished by lower profits – for each female applicant an equally qualified male is available –, profit-maximizing is more binding in a tight labor market: When employees are scarce there is no room for being choosy in terms of gender if a certain productivity is being guaranteed! This observation is compatible with the predictions of Becker's (1957) taste for discrimination model.

4.1.2 Feminine occupations

Under the assumption that feminine characteristics are particularly productive in traditionally female occupations, we argued, the feminine female should receive favorable treatment in the absence of discrimination, since she has identical human capital but scores highest in feminine traits. The masculine female as well as the male applicant should fare less successful, since they lack these required characteristics. Consequently we expect the following order: m = mf < ff.

Equal treatment of all candidates (m = mf = ff) would suggest, that personality does not matter in the occupation under investigation, differential treatment of the male and masculine female (m ≠ mf) indicates the existence of a taste for discrimination.

For *accountants* we find no evidence for differential treatment. In total 149 firms were contacted, out of which 43 % got in touch with the feminine female, while an equal percentage of 40 % were interested in meeting the male and the masculine female applicant respectively. Even though the feminine women was slightly more successful than her competitors, the hypothesis of equal treatment could not be rejected and hence, statistically, all applicants have been treated the same: m = mf = ff.

The most severe unequal treatment is found in the occupation of *secretaries*. Out of 123 firms contacted, the masculine female was invited by 46 % of all employers followed by the feminine female with 44 %. The male applicant was clearly defeated with a success-rate of only 20 %. From Table 5 can be seen that the male was treated unfavorably significantly more often than the females at the 1 % level. In 32 % (30 %) of all cases he was not invited for an interview while the masculine (feminine) female was. On the other hand he only received beneficial treatment in 6 % (7 %), where he was invited but his female competitor was not. At the same time the hypothesis that the two women with differing gender identity received equal treatment, could not be rejected: m < mf = ff.

The question of this paper is whether it is perceived differences in personality traits that drives women's labor market outcomes relative to men's. Our experiment allows to compare the hiring chances of a man and woman, who are matched not only in human capital but even in personality. If there is no discrimination, the masculine female should be treated like the male in all cases, while the feminine female should receive preferential or unfavorable treatment depending on the sex-type of the occupation.

Here we find the opposite to be true. Significant differential treatment was found in the occupation of the network-technician and secretary – both times the two women were treated the same, while the man was significantly more or less successful. This means that differential treatment is not driven by gendered personality traits but solely by biological sex - which is an indication that it is *discrimination* that we are observing. Our finding can not be reconciled with statistical discrimination, since there was very detailed information on the applicants, not only on human capital, but even personality.

4.2 What determines differential treatment?

In the next step we tried to investigate, which factors determine the differential treatment of applicants. It might be the case that in more prestigious positions women are discriminated more severely or that they are considered as less suitable for jobs with particular requirements.

All the available information from the job-advertisements was coded in a number of variables that captured requirements on human capital and personality traits and indicated, whether the actual text of the ad was addressed to women or men specifically instead of being formulated in a sex-neutral way. Note that in German, contrary to English language, the sex of a job holder is usually explicit by sex-specific formulation (as in actor/actress).

The following information was extracted from those job-advertisements to which applications were submitted and captured mostly by dummy-variables:

1. *Required human capital:* special knowledge, experience, literacy in English, other qualifications;
2. *Required personality traits:* young and flexible, sociable, independent, powerful and dynamic, friendly and correct, other characteristics;
3. *Characteristics of advertisement/job:* occupation, job-prestige (combination of job-hierarchy and size of advertisement), required attachment of photograph;
4. *Sex-specification of advertisement:* sex-neutral, female, male formulated job announcement.

The number of firms advertising sex specifically is surprisingly large considering the equal treatment law from 1990 (BGBl.Nr. 108/1979, modified by BGBl.Nr. 410/1990) that demands sex-neutral advertising of vacancies and prohibits signaling – even implicitly - any preference for a certain sex. Nevertheless only 62 % of the advertisements investigated are in accordance with the law as Table 6 demonstrates.[28]

[28] These numbers take into account not only the sex specific formulation of the job title in the advertisement but also rather rare implicit signals for a desired applicant's sex. E.g. having to be „very attractive and good-looking" was classified as implicitly searching for a female applicant, advertising sex-neutral but adding „looking for males with practical skills" on the side was coded as masculine formulation. This classification follows Szabo (1990).

	sex-neutral formulation of ad	female formulation of ad	male formulation of ad
Feminine occupation	62 %	33 %	5 %
Masculine occupation	61 %	0 %	39 %

Table 6: Proportion of gender-neutral and sex-specific formulations of job-advertisements in feminine and masculine occupations.

As expected, the sex-type of a job strongly determines at which sex job-advertisements are directed: 33 % of the advertisements in feminine occupations are ex- or implicitly aimed at women, 39 % in masculine occupations at men.

As in the previous chapter we now compare the results of two candidates, but additionally all the variables on job requirements find consideration. To estimate the impact of these variables on the relative success-rate of two applicants we ran an ordered probit regression of the following type:

$$y_i = \alpha x_i + \varepsilon_i , \qquad (4.1)$$

where the outcome y_i is a dummy variable that analyzes the relative success of a candidate in comparison to another, x_i is a vector of control variables and α the corresponding vector of coefficients to be estimated. ε_i is an error term that is assumed to satisfy the usual assumptions.

The dependent variable was coded as follows:
2 ... the first person was preferred to the second
1 ... both received equal treatment
0 ... the second received preferential treatment
Consequently a positive coefficient works as an advantage for the first candidate.

Table 7 shows the results for all occupations, since they do not vary with respect to profession. Column 1 presents the pairwise comparison of male and masculine female, column 2 male and feminine female and column 3 masculine female and feminine female.

As can be seen, solely the “required sex” indicated by sex-specific formulation of a job announcement determines differential treatment – with the single exception of job prestige. Interestingly, neither requirements on human capital nor personality can explain different la-

bor market outcomes, even though the feminine female was perceived to obtain other personality traits than the others.

The variables capturing the *sex-specific formulation* of an ad clearly have the strongest impact on differential treatment. If an advertisement is using a male instead of a sex-neutral term for a vacant position, this increases the male's chances in comparison to the females', while a female term leads to a preferential treatment of women to that of men. Nevertheless these two dummy-variables have no significant impact on differential treatment of the two women with differing gender identities.

This result indicates that sex-specific terminology is not used coincidentally in job-advertisements.[29] If the male form is used, an actually male applicant is looked for, while a female form implies that a female employee is wanted. Thus the common argument that male terminology is used for convenience only (not intending to exclude females), is not supported here.

Nevertheless there is an interesting effect of a female's "manliness" observable: While in column 2 there is a symmetric effect observable for the male and feminine female, when they are applying for a sex-term incongruent position[30], the coefficient for a male job-term explaining the differential treatment of the male and masculine female is not only considerably smaller, but also significant only at the 10 % level.[31] This indicates that a male job-term does not lead to an equally strong unfavorable treatment of the masculine female than the feminine female in comparison to the male, even if we find no significant impact comparing the masculine with the feminine female (column 3).

From this can be concluded that signaling manliness does not decrease women's chances in a female specified vacancy, but it might slightly reduce unfavorable treatment in a male-termed job.

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[29] Often employers and opponents of a German sex-neutral language argue that the male form of a job term does not intend to exclude women but is rather a historically grown general term including „all people".

[30] As the positive coefficient for „job-term male" in column 2 (m – ff) suggests, a male job-term works equally strong in favor of the male compared to the feminine female, a „job-term female" in column 1 and 2 works against him, no matter whether he competes against a feminine or masculine female (column 1).

[31] This reminds of the results for network-technicians (Table 7), where we have found that masculinity slightly reduces the level of significance of differential treatment.

	male vs. masculine female	male vs. feminine female	masculine vs. feminine female
knowledge	-0.047	-0.086	-0.055
	(0.161)	(0.158)	(0.172)
experience	0.131	0.059	-0.084
	(0.109)	(0.107)	(0.117)
English	0.124	0.043	-0.092
	(0.139)	(0.137)	(0.150)
other qualifications	0.181	0.001	-0.202
	(0.146)	(0.145)	(0.153)
young/ flexible	-0.076	0.008	0.098
	(0.117)	(0.114)	(0.123)
sociable	0.049	0.022	-0.026
	(0.101)	(0.100)	(0.108)
independent	0.006	0.026	0.024
	(0.096)	(0.094)	(0.102)
powerful/ dynamic	-0.159	-0.118	0.045
	(0.097)	(0.096)	(0.103)
nice/good (friendly/correct)	0.018	-0.031	-0.064
	(0.108)	(0.105)	(0.115)
other personality traits	-0.111	-0.153	-0.078
	(0.217)	(0.215)	(0.234)
job-prestige	-0.037*	-0.021	0.017
	(0.018)	(0.018)	(0.020)
photo	-0.014	-0.119	-0.147
	(0.167)	(0.164)	(0.179)
job-term male	0.254~	0.423**	0.241
	(0.151)	(0.150)	(0.160)
job-term female	-0.433**	-0.432**	-0.029
	(0.161)	(0.159)	(0.171)
Pseudo R-sq	0.035	0.036	0.016
# obs :	462	462	462

Table 7: Pairwise comparison of invitation probability

Ordered Probit Estimation: All Occupations (standard errors in parentheses with p<0.10 = ~, p<0.05 = *, p<0.01 = **)

Required human capital: knowledge=[0,1], job specific knowledge required: no, yes; experience=[0,1,2], job experience required: no, yes: ≤ 5 years, >5years; English=[0,1,2], English required: no, yes, fluent; otherqual: number of other required job qualifications.
Required personality traits (number of all required traits fitting into one category):
young/flexible: young, flexible, swift; sociable: sociable; independent: independent, sense of responsibility; power: committed, dedicated, self-initiative, innovative, ambitious, self-confident, dynamic, motivated; nice/good: friendly, correct, exact, reliable, loyal, sense of style, neat appearance; other characteristics: e.g. non-smoker.
Characteristics of advertisement/job: jobsize=jobhierarchy*size of advertisement; photo=[0,1], attachment of photograph required: no, yes; job-term male=[0,1], job-term female=[0,1], base: neutral job-term.

The small but significant effect of the variable job-prestige when comparing the male with the masculine female is rather unexpected. As pointed out before, this variable captures the hierarchy of the job and the advertisement size (through multiplication of the two). The reason for paying attention to ad size is the following: The more financial resources are available (leading to higher pay) and the more important a position is, the more willing an employer will be to spend money on a larger ad. So the size of an advertisement might be used in addition to hierarchy of a job as an indicator for the importance of a position. The negative coefficient means, that the more prestigious a job, the worse are the chances of the male relatively to the masculine female.

A possible interpretation of this might be that the masculine female represents a much more unconventional, almost exotic, type of personality, while still fulfilling the others' standards of beauty etc. A more prestigious position might allow for a more unconventional behavior and personal individuality - it might even be considered an integral part of a leadership personality, while it is sanctioned at a low status job. This might lead to the result that the more sophisticated masculine female has a relative advantage in more high-ranked positions in comparison to the traditional male.

5 Conclusions

Previous studies trying to measure discrimination could not satisfactorily prove that the observed differential treatment of men and women was actually due to discrimination and not to personal characteristics that have not been controlled for. Econometric studies but also labor market experiments have failed to consider one aspect, that might determine productivity (apart from human capital) the most: *individual personality*. Sex-segregation in the labor market could be driven by the requirement to obtain matching personality traits (masculine traits in male occupations, feminine in female jobs), when hiring decisions are made under uncertainty drawing on sex-stereotypes.

This study adopted an experimental technique called Correspondence Testing to examine whether it is presumed differences in personality traits of men and women that lead to different labor market outcomes. Using this methodology in a country like Austria, where very detailed application material is required, offers one big advantage: Detailed information on human capital minimizes the possibility of statistical discrimination concerning individu-

als' qualifications for a job. Furthermore, strong signals were given to indicate different personalities of applicants.

If differential treatment of the sexes in earlier studies was due to statistical discrimination, we argue, it should disappear in the setting of this experiment, where a maximum of variables is controlled for. When it is personality that leads to different labor market outcomes of men and women, then in the absence of discrimination an identically qualified male and female with observable, equally masculine personality traits should be treated the same, while a more feminine person should receive preferential treatment in feminine occupations and unfavorable treatment in masculine occupations.

We observed the contrary: Equal treatment of the two women and different treatment of the man, indicating that it is biological sex and not productivity relevant personality that is driving labor market segregation. Unfavorable treatment in masculine occupations is not significantly reduced when a woman provides a masculine identity. Similarly preferential treatment in feminine occupations is not threatened by "manliness".

Even though there are minor indicators that masculinity might slightly reduce unfavorable treatment in some cases, the unexplained residual of differential treatment remains - even after controlling for personality traits. This suggests that it is not different productivity, not different personality, but *discrimination* that leads to differential treatment and sex-segregation at the workplace.

6 Appendix: Indicators for gender identity

Name: Patricia Vorbach

My Hobbies: Drawing, designing and making of clothes

Stayed in Portland, USA, as an Au-Pair for one and a half years

NAME: ALEXANDRA AUER

Hobbies: Sports (rock-climbing, canoeing), playing drums, reading, motorcycling

Motorcycle tour through Australia for one and a half years (jobs in Perth, Alice Springs, Melbourne, Darwin)

Name: Peter Englmair

Hobbies: Travelling, sport (jogging, mountainbiking, wild-water-rafting), music (guitar)

Travelled for one and a half years (Australia, Hong-Kong, USA), various jobs

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